

Revised Annex 4 to OPG Amended in October 2016



ADAPTATION FUND

REQUEST FOR PROJECT/PROGRAMME  
FUNDING FROM THE ADAPTATION FUND



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PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project Category:	Regular
Country:	Lao PDR
Title of Project:	Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR
Type of Implementing Entity:	Multilateral Implementing Entity
Implementing Entity:	United Nations Human Settlements Programme (UN-Habitat)
Executing Entities:	Ministry of Public Works and Transport, Ministry of Natural Resources and Environment, Provincial Department of Public Works and Transport in Savannakhet Province, and Department of Natural Resources and Environment in Savannakhet Province
Amount of Financing Requested:	US\$5,500,000

**Project Background and Context:**

**The Problem**

**Climate change is a major impediment to the attainment of national development goals.**

Lao People's Democratic Republic (PDR) has been increasingly affected by extreme weather events. This is particularly problematic due to its high sensitivity, resulting from dependence on climate-sensitive natural resources and its low adaptive capacity. The impacts of extreme weather events have been severe to the point that in 2013 Lao PDR was named the 7<sup>th</sup> most severely affected country in the world by climate change, with 23 deaths and absolute losses of US\$ PPP 263,510,000<sup>1</sup>. Irregularity in rainfall has led to both floods and droughts, with a variation in severity from year to year. Not only does Lao PDR have a high exposure to extreme weather events, particularly floods, but recent reports by the INFORM Global Risk Index show a low ability to cope with these events<sup>2</sup>. In addition to extreme events, variation in the seasons has disrupted cropping, causing food insecurity.

The high degree of climate change vulnerability in Lao PDR is due to several factors including the physical geography, low coping capacity and reliance on the agriculture sector. Geographically, the country can be separated into several regions, each of which is susceptible to different hazards. A trend of increasing rainfall is especially apparent in the south and central

<sup>1</sup> Global Climate Risk Index, 2015, p.7. Online at <https://germanwatch.org/en/download/10333.pdf>

<sup>2</sup> Index for Risk Management (INFORM) Country Risk Profile for Lao PDR, 2018. Online through <http://www.inform-index.org/Countries/Country-Profile-Map>

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regions, leading to widespread flooding<sup>3</sup>. In rural areas, this damages or destroys food crops. In the rapidly growing small and emerging towns, there is significant damage to physical infrastructure, hindering economic development and disrupting livelihoods. Low coping capacity is a result of both the low institutional capability and the infrastructure. Currently, Lao PDR is showing a lower coping capacity than neighboring countries and also of countries which are at a similar income level<sup>4</sup>.

As this proposal was being prepared, unusually heavy rains and flooding caused a dam to break in nearby Attapeu Province, leading to dozens of deaths and thousands of people displaced. Meanwhile, roads, bridges and other critical infrastructure throughout the country has been severely impacted by heavy rainfall which is, in turn, caused by the early onset of tropical storms in the South China Sea. Such infrastructure damage has affected the provision of basic services such as water supplies. These events have once again heightened the focus in Laos of the impacts of climate change and the serious risks they pose to life, livelihoods, infrastructure and sustainable development.

Looking forward, there is an increasing risk of severe weather events. There is a need for adaptive actions to be taken to mitigate the effects of these events which have the potential to severely derail the Government's development agenda. There has been a long-term goal of graduating from Least Developed Country (LDC) status by 2020 with a vision of achieving upper-middle income status by 2030<sup>5</sup>. To achieve this, the 8<sup>th</sup> National Socioeconomic Development Plan has focuses on economic growth, sustainable development and strengthened human resource capacity. Recent indications suggest that Laos will probably miss the 2020 graduation target. It is imperative, therefore, that steps are taken to ensure the predicted climatic changes do not prevent Lao PDR from moving forward according to its development aims. UN-Habitat is already working with the government to this end on the Adaptation Fund funded project entitled, "Enhancing the climate and disaster resilience of the most vulnerable rural and emerging urban human settlements in Lao PDR." The National Designated Authority has requested UN-Habitat to build on this initial project with a continued focus on small and emerging towns in highly vulnerable provinces. This proposed project is in different provinces than the initial project but caters to the government's ongoing need to build resilience in these small urban settlements.

### Economic Context

**Climate change is already causing economic losses, but the government does not have the financial resources and technical capacity to respond.**

At the macroeconomic level, the Lao economy is characterised by strong growth, but it has the widest forecast current account deficit in Southeast Asia for 2017, at 17.5% of GDP<sup>6</sup>. As one of the least developed countries in the world, Lao PDR has one of the lowest annual incomes with

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<sup>3</sup> CLEAR: Consolidated Livelihood Exercise for Analysing Resilience. A special report prepared by the Ministry of Natural Resources and Environment's Department for Disaster Management and Climate Change (DDMCC) and the World Food Programme with technical support from the USAID Mekong ARCC project.

<sup>4</sup> INFORM Country Risk Profile for Lao PDR, 2018. Online through <http://www.inform-index.org/Countries/Country-Profile-Map>

<sup>5</sup> 8th Five-Year National Socioeconomic Development Plan (2016–2020). Online at [http://www.la.one.un.org/images/publications/8th\\_NSEDP\\_2016-2020.pdf](http://www.la.one.un.org/images/publications/8th_NSEDP_2016-2020.pdf)

<sup>6</sup> Asian Development Outlook 2017 Update- Sustaining Development through Public-Private Partnership. Asian Development Bank, 2017. Available from <https://www.adb.org/publications/asian-development-outlook-2017-update>

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GDP at US\$14.36 billion in 2015 and GDP per capita at US\$2,212 in 2015<sup>7</sup>. Despite its low level of development, the Lao economy is growing rapidly, with GDP growth hovering around 7% per year in recent years<sup>8</sup>. Economic growth is fuelled in a large part by large projects in the natural resources and extractive sectors, particularly hydropower projects. It has been estimated that 10 - 15% of the land area has been allocated for economic development purposes, including for mining, hydropower and plantations to foreign or joint venture investors for periods of up to 70 years<sup>9</sup>. However, these projects do not generate significant employment opportunities, and their benefits are not evenly distributed throughout the population, causing increased inequality<sup>10</sup>.

The greatest number of workers in Lao PDR is employed in the agricultural sector. A 2014 World Bank report calculated that, of the number of hours worked in 2013, 61% were in the agriculture sector, 30% were in the construction and services sector, 8% were in manufacturing and 1% were in mining, electricity, water and gas<sup>11</sup>. The report estimated that 70% of workers were in low-productivity agricultural jobs. The low output produced by the agricultural sector in comparison to its number of workers is shown by the percentage of output produced by each sector where 44% of output is from the construction and services sector, 27% from agriculture, 18 percent from mining, electricity, water & gas and 11 percent from manufacturing.

A high proportion of the workforce dependent on agriculture and livestock increases overall vulnerability to climate change, as work in this sector tends to lead to low incomes and is directly dependent on a conducive climate. In the event of extremes and long-term changes in the climate, low incomes in the agriculture sector are highly threatened. Meanwhile, people who work in the construction sector, are often in unsecure employment, meaning they have irregular incomes, and/or minimal opportunities to save. This also limits their ability to invest in adaptation measures at the household level, or to respond after extreme events.

Hydropower is a key contributor to the Lao economy, both by providing a reliable and affordable domestic power supply and by earning foreign exchange from electricity exports to neighbouring countries. In the first half of 2017, electricity generation increased by 34.8% year on year<sup>12</sup>. According to the Ministry of Energy and Mines, electricity has accounted for 30% of Lao exports since 2008<sup>13</sup>. This is a significant part of the revenue coming into the country. Major projects such as hydropower and construction are responsible therefore for significant growth in the economy. However, these sectors do not generate employment for a large number of people. There is therefore, a need to diversify the economy from a reliance on natural resources.

Outside of these major projects, much of the economic activity occurs in Vientiane and in some of the provincial capitals. After Vientiane and the secondary towns of Luang Prabang, Thakek, Savannakhet and Pakse, small and emerging towns are playing an increasingly important role in economic growth. These settlements are experiencing a higher growth rate of population than

<sup>7</sup> International Monetary Fund. Report for selected countries and subjects. World economic outlook database. Report requested from <https://www.imf.org/external/pubs/ft/weo/2017/02/weodata/weoselgr.aspx>

<sup>8</sup> <https://www.adb.org/countries/lao-pdr/economy#tabs-0-3>

<sup>9</sup> Background notice for ADB Governance and Capacity Development in Public Sector Management Program. Online at <https://www.adb.org/sites/default/files/linked-documents/46059-001-lao-oth-02.pdf>

<sup>10</sup> See for example the Lao Economic Monitor May 2016, which states on p.10 that "The pace of poverty reduction and inclusiveness was less commensurate to the rate economic growth." Online at <http://documents.worldbank.org/curated/en/515521468197368035/pdf/AUS17628-WP-OUO-9-Lao-Economic-Monitor-May-2016-has-been-approved-P157829.pdf>

<sup>11</sup> Lao Development Report 2014. Expanding productive employment for broad-based growth. World Bank. Online at [http://www.worldbank.org/content/dam/Worldbank/document/EAP/lao-pdr/LDR\\_2014\\_Eng.pdf](http://www.worldbank.org/content/dam/Worldbank/document/EAP/lao-pdr/LDR_2014_Eng.pdf)

<sup>12</sup> Asian Development Outlook 2017 Update

<sup>13</sup> <http://www.poweringprogress.org/new/2-uncategorised/3-hydropower-in-lao-pdr>

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the national average of 1.45% per annum<sup>14</sup>, mainly due to rural-urban migration. However, the government does not have the resources to provide the needed infrastructure for these growing towns. There is, therefore, a significant need for investment in these settlements. This is because in the absence of investment, it is likely that unplanned development will occur, resulting in low quality developments and infrastructure which is both inadequate and prevents people from being resilient to floods, storms, landslides and droughts. Furthermore, it is far more desirable to integrate climate change adaptation measures into infrastructure when it is being newly built in emerging towns, rather than trying to retrofit it. Climate-resilient infrastructure also contributes to economic growth in the towns and contribute to achievement of the government's development goals.

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### Social context

Despite realising the necessity to build resilience in the poor communities which will be most severely impacted by climate change related disasters the government is challenged to respond to the need by a lack of finance and both human and technical capacity.

The 2015 census found there were 3,237,458 females in Lao PDR and 3,254,770 males, making a total population of 6,492,228<sup>15</sup>. Since the first census in 1985, the population has grown by about a million every decade and it has grown by 1.45% since 2005. It is expected to reach 8.8 million by 2030, with 96,000 more people reaching working age every year<sup>16</sup>.

Ethnicities are classified into 49 different groups, with the main groups shown below. There is a diversity of languages, cultures and lifestyles amongst the ethnic groups. The main religion is Buddhism, practised by 65% of the population. The census recorded 2% of the population as practising Christianity, while 31% stated that they had no religion. There are many people, however, with animist beliefs. Some ethnic groups are marginalised, with limited access to education, health and other services, partly because they often live in remote areas with little access to infrastructure.

	Population	% to total Population
Lao	3,427,665	53.2
Khmou	708,412	11.0
Hmong	595,028	9.2
Phouthay	218,108	3.4
Tai	201,576	3.1
Makong	163,285	2.5
Katang	144,255	2.2
Lue	126,229	2.0
Akha	112,979	1.8
Others	749,153	11.6

Source: Table P2.7 (2015 PHC, Appendix 1)

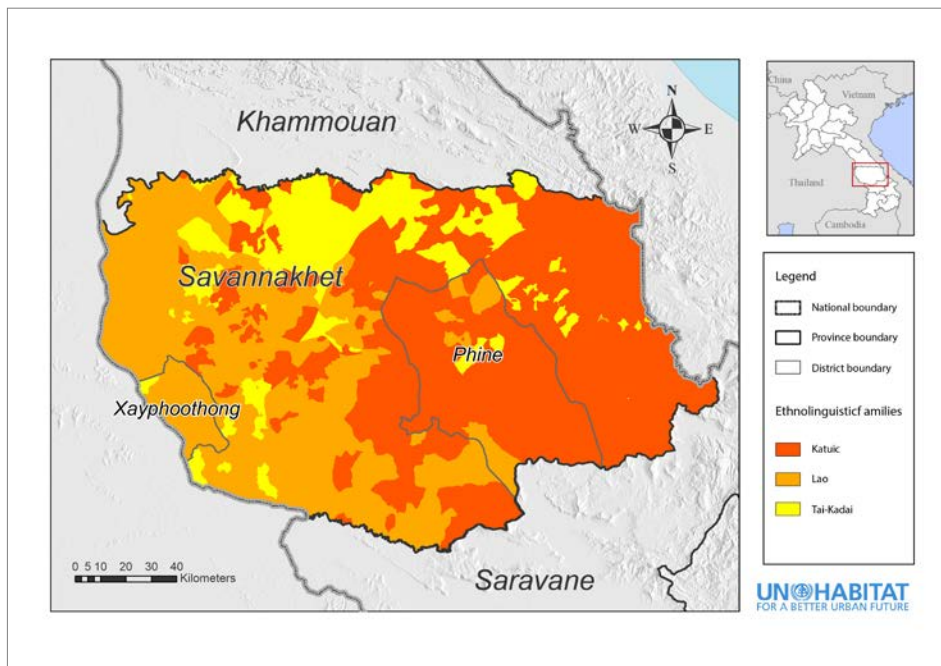
<sup>14</sup> Population growth rate 2005 – 2015 according to the 2015 census, available online at [http://lao.unfpa.org/sites/default/files/pub-pdf/PHC-ENG-FNAL-WEB\\_0.pdf](http://lao.unfpa.org/sites/default/files/pub-pdf/PHC-ENG-FNAL-WEB_0.pdf). The growth in small and emerging towns is commonly twice that of the national average.

<sup>15</sup> Census report online at [http://lao.unfpa.org/sites/default/files/pub-pdf/PHC-ENG-FNAL-WEB\\_0.pdf](http://lao.unfpa.org/sites/default/files/pub-pdf/PHC-ENG-FNAL-WEB_0.pdf)

<sup>16</sup> Lao Development Report 2014. Expanding productive employment for broad-based growth. World Bank.

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While the majority of Lao PDR's population lives in rural areas, there is rapid urbanisation. It was estimated that 37.6 percent of the population were urban dwellers in 2014, up from only 15.4 percent in 1990<sup>17</sup>. In terms of rural and urban characteristics, most towns in Lao PDR have a small population, and in 2012 there were only 10 towns with a population greater than 20,000<sup>18</sup>. It is in the small towns (with a population of at least 4,000) and emerging towns (many with a population under 4,000) that much of the urban growth is occurring. Many of these towns are in locations which are exposed to climate change related hazards and there is a need to build resilience as they are developed. Table 1: Population by Figure 1 - Location of the Two Target Districts in Lao PDR



**Ethnicities in Savannakhet Province**

<sup>17</sup> Key Indicators for Asia and the Pacific, 2015. Asian Development Bank. Online at <https://www.adb.org/sites/default/files/publication/175162/ki2015.pdf>

<sup>18</sup> Lao People's Democratic Republic: urban development sector assessment, strategy, and road map, 2012. Asian Development Bank. Online at <https://www.adb.org/sites/default/files/institutional-document/33722/files/lao-pdr-urban-sector-assessment.pdf>

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Poverty declined from 33.5% in 2002/3 to 23.2% in 2012/3<sup>19</sup>. However, the decrease in poverty was not evenly spread throughout the population, meaning some areas remain extremely poor. The uneven distribution is shown by the fact that the cumulative growth in average consumption was 25 percent over 10 years, but the cumulative growth for the bottom 40 percent was only 14%<sup>20</sup>. People living on less than \$1.25 (2005 PPP) a day made up 30% of the population in 1998 - 2012<sup>21</sup>. Poverty is more pronounced in some regions than others. Poverty is particularly concentrated in areas with high concentrations of ethnic minority groups, and remoteness, exclusion, and lack of education are all associated with extreme poverty<sup>22</sup>.

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Gender ContextThe 2013 Millennium Development Progress Report also showed a link between gender and poverty, with women finding it more difficult to escape poverty because of social norms and values that govern the gender division of labour. Female-maintained households have been over-represented amongst the poor<sup>23</sup>. Gender disparities in education are more pronounced amongst the poor. In employment, although men and women are equally represented in the workforce, there are more women than men working in vulnerable employment. Women are well represented in the National Assembly, making up 25% of its members. However, there is very low representation of women in other decision-making positions, and especially in provincial and district level governments.

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According to the 2015 population and housing census, Savannakhet, Laos's most populous province, had just under 1 million people, 15 percent of the country's population<sup>24</sup>. The East West Economic Corridor (EWEC), where the two towns in Savannakhet are situated, has been developed targeting poverty alleviation, and over the past 15 years the region and the country as a whole has seen decline in poverty. However, the high rates of urbanisation apparent in the province also have the potential to exacerbate disparities between the genders.

Deleted: the estimated population of Savannakhet, the largest province in Lao PDR by population, is approximately one million people or

Key socio-economic characteristics within Savannakhet follow trends of the country as a whole. Recent data has shown that women in most areas of Lao PDR face a lack of awareness about maternal health and malnutrition, and education inequality. Low-quality education and consistent dropout rates among girls have ranked Lao PDR as one of the lowest performers in the East Asia Pacific region in girls' education<sup>25</sup>. In Savannakhet Province, only 24.7 per cent of young people aged 14-17 are enrolled in school, though the girl to boy ratio is even. In Sayphouthong District, the rates of enrolment are similar to the provincial level – 28.4 per cent enrolment with an even girl to boy ratio. However, in Phine District, only 9 per cent of 14-17 year olds are going to high school, with a 0.84:1 girl to boy ratio. In some cases, girls drop out of school in order to marry; 16 per cent of girls in Sayphouthong and 26 per cent in Phine District are married, and in many other cases it is because families do not think it is safe for girls to travel long distances from rural locations to high schools, which are almost always located in district towns.

<sup>19</sup> Drivers of Poverty Reduction in Lao PDR, World Bank, 2015. Online at <http://documents.worldbank.org/curated/en/590861467722637341/pdf/101567-REPLACEMENT-PUBLIC-Lao-PDR-Poverty-Policy-Notes-Drivers-of-Poverty-Reduction-in-Lao-PDR.pdf>

<sup>20</sup> Ibid

<sup>21</sup> Key Indicators for Asia and the Pacific, 2015. Asian Development Bank. Online at <https://www.adb.org/sites/default/files/publication/175162/ki2015.pdf>

<sup>22</sup> MDG progress in Lao PDR Online at [http://www.la.one.un.org/images/publications/MDGR\\_2013.pdf](http://www.la.one.un.org/images/publications/MDGR_2013.pdf)

<sup>23</sup> MDG progress in Lao PDR Online at [http://www.la.one.un.org/images/publications/MDGR\\_2013.pdf](http://www.la.one.un.org/images/publications/MDGR_2013.pdf)

<sup>24</sup> UNFPA, 2015. "Lao Population and Housing Census 2015". Retrieved from [https://lao.unfpa.org/sites/default/files/pub-pdf/PHC-ENG-FNAL-WEB\\_0.pdf](https://lao.unfpa.org/sites/default/files/pub-pdf/PHC-ENG-FNAL-WEB_0.pdf)

<sup>25</sup> Japan International Cooperation Agency (JICA). 2013. "Profile on Environmental and Social Considerations in Lao P.D.R". Retrieved from [http://open\\_jicareport.jica.go.jp/pdf/12144762.pdf](http://open_jicareport.jica.go.jp/pdf/12144762.pdf)

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From the data collected by the Lao Social Indicator Survey II 2017-18, only 6.7 per cent of women are considered literate and have attempted some form of higher education (beyond the basic 9-year education). The equivalent figure for men is 6.2 per cent. About 56 per cent of women in Savannakhet province self-report as literate, compared to 71 per cent of men. These figures are also consistent with the Lao Population and Housing Census (2015)<sup>26</sup>. In addition to this, violence against women is widespread further aggravating the already significant vulnerability gap.<sup>27</sup>

Lao women play critical roles in agriculture and other economic activities, and are primarily responsible for maintaining their families' food security and health. Women do much of the farm work (planting, weeding and harvesting crops), tend livestock, and also spend long hours performing off-farm and household chores such as collecting water, firewood, preparing meals and caring for children. Traditionally, men plough, make bunds and prepare seedbeds however as many men migrate to seek jobs in the urban areas, women's work burden is increasing.<sup>28</sup>

During the stakeholder consultations, involving Lao Women's Union representatives in Savannakhet province, it was identified that mostly women and girls are responsible for the task of collecting water in the target settlements of the project (as in many other places), which poses a serious burden, especially if they have to walk considerable distances while combining other chores such as caring for young children. Women lose out on other income opportunities while there are instances of girls dropping out of schools to attend to such domestic errands.

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Unfortunately women may face added reliance on male family members as challenges of not having steady employment and income are relevant issues for women in target settlements in Savannakhet. This is because of having heavy reliance on agriculture, losing productive time collecting water and lacking education. This problem is also worsening with natural disasters threatening the livelihoods of many women.

The Government recognises that it will not be able to realise the goals of reducing poverty and improving national education, health and population indicators without the active participation of all women, particularly poor and ethnic minority women. There have been significant achievements, such as completing the development of the 8th Five-Year National Strategic Plan on the Advancement of Women (2011–2015) and integrating this strategy into sector and local strategies. Various campaigns and awareness-raising activities have been implemented to advocate and raise awareness of government officials and people in general on understanding of gender, promoting advancement of women, the Convention on Eliminating All Forms of Discrimination Against Women (CEDAW), acting against all forms of violence against women, and increasing gender equality, enabling the country to graduate from least-developed country (LDC) status gradually<sup>29</sup>.

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<sup>26</sup> UNFPA. 2017. "Lao Social Indicator Survey II (2017-2018)". Retrieved from <https://lao.unfpa.org/en/publications/lao-social-indicator-survey-ii-2017-18-0>

<sup>27</sup> Japan International Cooperation Agency (JICA). 2013. "Profile on Environmental and Social Considerations in Lao P.D.R.". Retrieved from [http://open\\_jicareport.jica.go.jp/pdf/12144762.pdf](http://open_jicareport.jica.go.jp/pdf/12144762.pdf)

<sup>28</sup> Khamphoui, Phanlany. 2012. "SCOPING STUDY ON WOMEN'S LEADERSHIP IN THE AGRICULTURE SECTOR IN LAO PDR: Capacity Building for Women's Leadership in Farmer Producer Organizations in Asia and the Pacific Region Project". Women Organising for Change in Agriculture and NRM (WOCAN).

<sup>29</sup> Ministry of Planning and Investment. 2016. "8 th FIVE-YEAR NATIONAL SOCIOECONOMIC DEVELOPMENT PLAN (2016–2020)". Retrieved from [http://www.la.one.un.org/images/publications/8th\\_NSEDP\\_2016-2020.pdf](http://www.la.one.un.org/images/publications/8th_NSEDP_2016-2020.pdf)

The World Bank Group. 2017. "Country Gender Action Plan for the Lao People's Democratic Republic (2017-2021)". Retrieved from <http://documents.worldbank.org/curated/en/824181495177203647/pdf/115142-WP-LaoPDRGAPFINAL-PUBLIC.pdf>



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Recognising that collecting water represents a greater burden for women, this project provides inherent adaptation benefits for them. The proposal contains various provisions that will specifically benefit women, detailed throughout the proposal.

Please see [Annex 2](#) for further background information pertaining to the [comprehensive](#) gender assessment undertaken in the formulation of this proposal.

### Development Context

#### **The government has plans and strategies to bring development but does not have the financial resources or human capacity to implement its plans.**

Lao PDR's development has been consistent over the years as measured by the Human Development Index, for which it scored 0.340 in 1980, rising to 0.586 in 2015. In 2015 it was ranked 138 of the 188 ranked countries, placing it in the lowest quartile of medium developed countries. The government has had a policy of promoting foreign direct investment into natural resources such as land, mining and hydropower and these have driven rapid economic growth.<sup>30</sup>

To date, social progress has not kept up with the rapid economic growth experienced in Lao PDR. Despite the economy's growth, Lao PDR is still classed as an agrarian society, with over 80% of the rural population still subsistence farmers. Lao PDR has had varying success with achieving MDG targets. For MDG 1, the national poverty rate was halved from 46% in 1992/93 to 23% by 2012/13. However, inequalities have increased, particularly between the main cities and rural areas, and there is an uneven distribution of health services and financing. In 2015 there was still widespread food insecurity, with 20% of the population consuming less than the minimum dietary energy requirements. Some key recent human development indicators are shown in Table 2.

**Table 2: Key Human development indicators for Lao PDR**

Life expectancy at birth (years)	66.6
Stunting (moderate or severe) (% under age 5)	43.8
Adult literacy rate (% ages 15 and older)	79.9
Mean years of schooling (years)	5.2
Primary school dropout rate (% of primary school cohort)	22.4
Maternal mortality ratio (deaths per 100,000 live births)	197
Vulnerable employment (% of total employment)	83.9

In 2010 the government identified six focus areas to accelerate the

achievement of MDG targets. One of the six areas concerned the expansion of safe water supply and improved sanitation for all rural areas and small towns. The government is aiming for an equitable provision of services to all geographic areas and social groups. This is part of a strategy to achieve SDGs and those MDGs for which the targets were not achieved. Proposed activities include coping with climate/weather changes and reducing the damages caused by natural hazards that could occur, transforming villages into developed units, designing good village planning, constructing necessary basic infrastructure and providing clean water and latrines<sup>31</sup>. A major need for physical infrastructure is found in the fast growing emerging and

<sup>30</sup> [http://www.fao.org/Lao\\_PDR/fao-in-Lao\\_PDR/Lao\\_PDR-at-a-glance/en/](http://www.fao.org/Lao_PDR/fao-in-Lao_PDR/Lao_PDR-at-a-glance/en/)

<sup>31</sup> See outcome 2 of The 8th Five Year National Socio-economic Plan. Online at [http://www.la.one.un.org/images/publications/8th\\_NSEDP\\_2016-2020.pdf](http://www.la.one.un.org/images/publications/8th_NSEDP_2016-2020.pdf)

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small towns. Growth in these towns is due to rural –urban migration and is aided by government policy and projects such as the Greater Mekong Region (GMS) economic corridors, designed to attract investment to the major transport routes across the region, with spinoffs of economic growth through green growth and climate resilience<sup>32</sup>. In the past, the focus of the government’s investment has been Vientiane capital and the four secondary towns, followed by provincial capitals and district capitals. However, in 2016 there were approximately 130 small and emerging towns in Lao PDR, as well as 1,070 officially designated “village clusters”, many of which are developing into urban areas<sup>33</sup>. There is a window of opportunity to build resilience into these smaller towns now, as they are experiencing rapid development. Planned development can ensure that climate change resilience is built into the design of the towns, rather than having them develop in an ad hoc manner, thereby damaging ecosystems and exacerbating the effects of climate change and extreme weather events.

### Environmental context

#### **Land degradation and damage to ecosystems exacerbate the impacts of extreme weather events such as floods and storms and reduce climate change resilience.**

The development – environment nexus has been one of tension in Lao PDR, where unregulated development has damaged previously well-functioning ecosystems. The state of the forests is a concern. Although there are different statistics for the area of forest, based on varying conditions of forest cover, it is clear that forest cover has declined gradually in recent years, but it declined sharply in previous decades: ~~one estimate suggests a decline~~ from 70% to 43% of the country over the last 50 years<sup>34</sup>. There has also been a deterioration in the quality of forests, with dense forests declining from 29% in 1992 to 8.2% in 2002 and a corresponding increase in open forests from 16% to 24.5%. Forest loss in Lao PDR has numerous drivers, many of which are related to development activities including agricultural expansion, small-scale cutting for fuel and construction materials, forestry plantations, mining, hydropower and infrastructure and urban development<sup>35</sup>. Lao PDR is being supported by external organisations to improve its forests through REDD+.

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As it has become more industrialised, Lao PDR’s greenhouse gas emissions have increased and, combined with the decline in forest cover, Lao PDR became a net emitter of CO<sub>2</sub> for the first time in 2000.’ With its economic focus on extractive activities, deforestation is an ongoing challenge in Lao PDR. It is increasing the risk of flooding, a risk which will be exacerbated by climate change as wet seasons become wetter and more intense and dry seasons become drier.

Another environmental issue of concern is water quality. While in the past the water quality of Lao PDR’s numerous rivers has been good, it is increasingly deteriorating in the context of rapid demographic growth, socio-economic development and urbanisation<sup>36</sup>. Poor sanitation and a

<sup>32</sup> Lao People’s Democratic Republic: Second Greater Mekong Subregion Corridor Towns Development Project. 2015. ADB.

<sup>33</sup> The process of developing the water supply and sanitation strategy for emerging towns in Lao PDR. Water Governance Facility report, 2016. Online through [http://watergovernance.org/resources/wgf-report-7-process-developing-water-supply-sanitation-strategy-emerging-towns-Lao PDR/](http://watergovernance.org/resources/wgf-report-7-process-developing-water-supply-sanitation-strategy-emerging-towns-Lao-PDR/)

<sup>34</sup> Profile on Environmental and Social Considerations in Lao P.D.R., JICA, 2013. Online at [http://open\\_jicareport.jica.go.jp/pdf/12144762.pdf](http://open_jicareport.jica.go.jp/pdf/12144762.pdf)

<sup>35</sup> [https://theredddesk.org/countries/Lao PDR/statistics](https://theredddesk.org/countries/Lao-PDR/statistics)

<sup>36</sup> Profile on Environmental and Social Considerations in Lao P.D.R., JICA, 2013. Online at [http://open\\_jicareport.jica.go.jp/pdf/12144762.pdf](http://open_jicareport.jica.go.jp/pdf/12144762.pdf)

lack of sewerage facilities are key causes of the deterioration in quality. There is therefore, an urgent need to continue to provide infrastructure for both the supply of safe water and for sanitation, to protect the water sources and to improve public health.

Environmental concerns are a key focus in the 8<sup>th</sup> National Socioeconomic Development Plan, with one of three outcomes being that “Natural resources and the environment are effectively protected and utilized according to green-growth and sustainable principles; there is readiness to cope with natural disasters and the effects of climate change and for reconstruction following natural disasters<sup>37</sup>.” Under this outcome, the three outputs are (1) Environmental Protection and Sustainable Natural Resources Management; (2) Preparedness for Natural Disasters and Risk Mitigation; and (3) Reduced Instability of Agricultural Production. The government has prioritised activities to be carried out in order to achieve these outputs. However, it lacks the financial resources for implementation and is dependent on overseas assistance for many projects. In addition, the technical and administrative capacity is very limited, particularly at district and local levels. Thus, while the government is supportive of a way forward which is environmentally sustainable, it requires assistance to achieve this goal.

### Climate change projections and expected impacts

#### Climate change trends and projections

Lao PDR's climate has two distinct seasons: a dry season from mid-October to April and a rainy season characterised by the south-west monsoon which brings high rainfall, high humidity, and high temperature between May and mid-October<sup>38</sup>. The country can be divided into three climatic zones:

1. The northern zone is a mountainous area with average temperatures below the other regions in Lao PDR. Average rainfall is from 1,500 – 2000 mm.
2. The central zone has higher average temperatures and the average annual rainfall is from 2,500 – 3,500mm, the highest of the three zones. The rainy season in the central region occurs from June - August while the driest months are from January – March. There is a risk of drought during these dry months.
3. The southern region consists of lowland plains which have an average annual rainfall of 1,500 – 2,000mm. Both floods and droughts occur in the lowland plains, including in the Mekong River Basin. In the southern region the wettest months are September and October.

As part of the project formulation historical climate trends including temperature and rainfall were analysed. UN-Habitat worked with MoNRE to get 30-year weather station data from Savannakhet (the closest weather station with available historical data) and analysed the evidence.

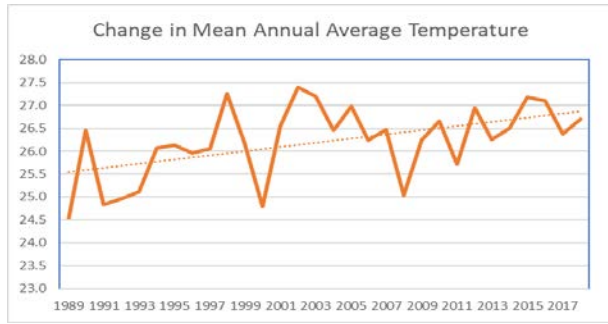
Extreme temperature increase has been observed in Savannakhet. The mean annual average temperature has increased by almost 1.4°C in the last 30 years. The monthly average maximum temperatures are very high, with the highest recorded temperature in April, the hottest month of 42°C. 9 years out of the dataset, including three of the last four, show an average maximum temperature of at least 40°C. The mean annual minimum temperature shows the greatest rise.

<sup>37</sup> 8<sup>th</sup> NSEDP, p.89.

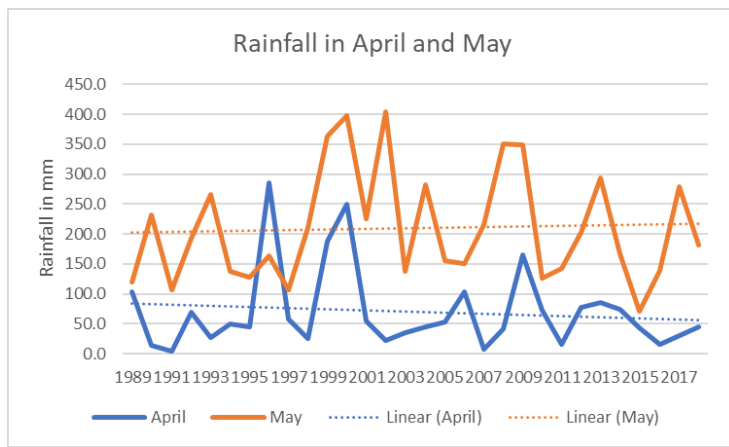
<sup>38</sup> Vulnerability, Risk Reduction, and Adaptation to Climate Change, Lao PDR, World Bank, 2011.

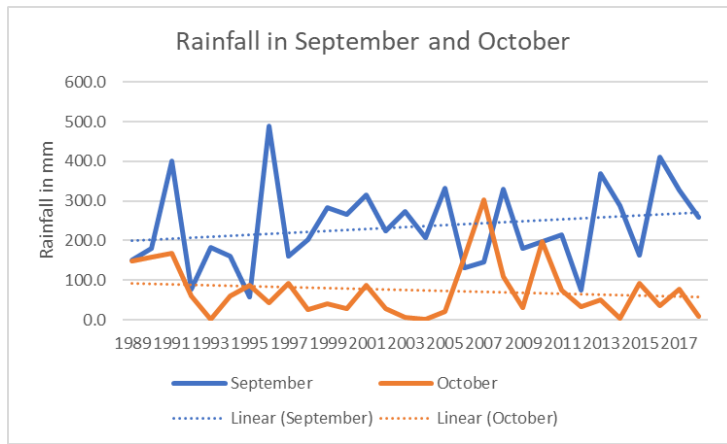
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however. Mean annual minimum temperatures are now 1.6°C higher, on average, compared to 1989, a very rapid change.



Annual average rainfall is 1531 millimetres per year, and has shown a very small increase over the dataset, with the annual average now being around 4% higher than in 1989. 85% of rain falls during the 5 months from May to September (inclusive). However, there is evidence that variability is increasing. The driest and wettest years in the dataset, which recorded 1030 millimetres and 2059 millimetres of rain, occurred in 2015 and 2017 respectively. Rainfall in April, the last month of the dry season, almost halved over the period of the dataset, while rainfall in May increased by almost 10%, supporting a broader regional trend of the rainy season starting later and becoming more concentrated. Similarly, rainfall in September increased, but declined dramatically in October, the last month of the rainy season. This means that, while there was overall a small increase in rainfall in Savannakhet, there is evidence that this is more concentrated over a shorter rainy season, meaning people who rely on open water sources or ground water are likely to face increased water shortages in the dry season, exacerbated by higher temperatures that increase evaporation. Finally, in further support of a shortening of the rainy season, the number of rainy days has declined sharply. Savannakhet now gets 101 rainy days per year, 20 fewer than it would have expected at the start of the dataset in 1989.





~~Deleted:~~ There is little historical data on climatic conditions in Lao PDR and it is only in very recent times that climate data has been analysed at a country or more local level. Data is more available at a regional level. Analyses which are now being conducted support anecdotal evidence and observations of temperature increase and changes in rainfall.¶

~~Deleted:~~ Lao PDR's climate has two distinct seasons: a dry season from mid-October to April and a rainy season characterised by the south-west monsoon which brings high rainfall, high humidity, and high temperature between May and mid-October<sup>39</sup>. The country can be divided into three climatic zones:¶

¶ The northern zone is a mountainous area with average temperatures below the other regions in Lao PDR. Average rainfall is from 1,500 – 2,000 mm.¶

The central zone has higher average temperatures and the average annual rainfall is from 2,500 – 3,500mm, the highest of the three zones. The rainy season in the central region occurs from June - August while the driest months are from January – March. There is a risk of drought during these dry months.¶

The southern region consists of lowland plains which have an average annual rainfall of 1,500 – 2,000mm. Both floods and droughts occur in the lowland plains, including in the Mekong River Basin. In the southern region the wettest months are September and October. ¶

¶ Temperatures during the March-May period can rise above 40°C, while in mountainous areas and during the dry season's cooler months of December and January, temperatures can drop below 15°C. Analysis suggests that over the last 40 years, the annual mean temperature has risen by up to 0.05°C per year, with the greatest increases being in the southern region<sup>40</sup>. According to the IPCC's Fifth Assessment Report, annual mean temperatures will carry on rising by 0.1-0.3°C per decade, and the number of days with temperatures above 33°C will increase. Correspondingly, the number of days with temperatures below 15°C will drop by two to three per year. ¶

¶ At a country level, the average annual rainfall ranges between 1,300-3,000mm with more than 70% of the annual rainfall occurring during the wet season. However, the yearly rainfall varies markedly due to large-scale climate drivers such as the El Nino-Southern Oscillation (ENSO)<sup>41</sup>. Variability between wetter and drier years is predicted to increase<sup>42</sup>. The mean annual rainfall is also projected to increase, with increases of 10-30%, especially in the eastern and southern part of Lao PDR. The increase is not projected to be uniform throughout the seasons. Instead, the most significant increases are expected in the wet season<sup>43</sup>.

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### Expected impacts

In recent years floods and droughts have caused substantial loss of life, economic loss and damage to infrastructure in Lao PDR. In 2008, more than 200,000 people and 75,000 hectares of agricultural land was affected by floods. In 2010, severe drought during the normal rainy months between May and October severely affected the year's harvest and created extreme food shortages in southern Lao PDR, affecting around 85,000 people. This drought followed Typhoon Ketsana, which damaged agricultural land, housing and infrastructure especially in the southern provinces and was responsible for 28 deaths and an economic loss of US\$58 million<sup>44</sup>. Floods in 2011 caused a loss of US\$200 million. In 2013 a series of flood events caused by different weather systems occurred in different locations from July through till October. Twelve of the seventeen provinces were affected with an estimated 395,000 people affected and the reported loss of over 20 lives<sup>45</sup>.

It is not only the projected increase in rainfall that is of concern in Lao PDR, but the projected increase in intensity of rainfall whereby more rain is expected to fall over a shorter time period, leading to an increased risk of flooding. The Fifth IPCC Assessment Report identifies future risks for Asia as "increased flood damage to infrastructure, livelihoods and settlements, heat-related human mortality, and increased drought-related water and food shortage".

The increased intensity in rainfall is also resulting in long, dry spells and this is predicted to result in increased droughts. As shown above, there is evidence of a shortening of the rainy season with more intense rainfall and and increasingly intense dry season in Savannakhet. Drought-prone areas have already suffered severe impacts such as the unavailability of water and loss of crops leading to widespread food insecurity. External assistance has been required to distribute emergency food aid during severe droughts.

<sup>44</sup> [http://www.un-spider.org/sites/default/files/41.%20UN-SPIDER\\_Lao PDR%20rev1-ilovepdf-compressed.pdf](http://www.un-spider.org/sites/default/files/41.%20UN-SPIDER_Lao%20PDR%20rev1-ilovepdf-compressed.pdf)

<sup>45</sup> [https://www.reuters.com/article/us-Lao PDR-floods/floods-in-Lao PDR-kill-20-damage-rice-crops-idUSBRE97R0BB20130828](https://www.reuters.com/article/us-Lao-PDR-floods/floods-in-Lao-PDR-kill-20-damage-rice-crops-idUSBRE97R0BB20130828)

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The most severe secondary hazard associated with extreme weather events is epidemics. In a study of natural disasters from 1970 to 2009, it was shown that the type of disaster causing the greatest loss of life was epidemics<sup>46</sup>. It has been shown that the transmission of communicable diseases, particularly faecal-oral diseases, increases in flooded conditions<sup>47</sup>. The decline in sanitary conditions and lack of access to safe drinking water, which commonly occur in a flood event, contribute significantly to the spread of disease. In Lao PDR, the link between floods and disease is commonly observed, and there is also a marked rise in skin infections and diarrhoea<sup>48</sup>. Health concerns are a major issue associated with the projected increase in flooding.

A further key impact from climate change related flooding concerns land use. Although the Government aims to “ensure sustainable development with harmonization among the economic development and socio-cultural development and environmental protection<sup>49</sup>”, there has already been major alteration to eco-systems which have aggravated the impacts of extreme weather. With rapid population growth and urbanisation, there is pressure on the land which is near urban settlements, many of which are close to rivers, deforested areas and degraded catchment areas. Without a strengthening of land use planning, it is likely that there will be both increased flooding because of eco-system changes, and more severe human and economic impacts from the flooding.

Projected increases in flooding and droughts are expected to impact livelihoods, health, physical infrastructure and the economy in general. It is imperative that Lao PDR builds resilience to natural disasters so that it can protect its people and environment and continue on its development trajectory.

### Focus of the Proposal

As described below, the main objective of the proposed project is to build resilience to climate change in communities along the east-west economic corridor in the central region of Lao PDR. This will be achieved by the provision of climate resilient infrastructure and the mainstreaming of climate action into urban planning. To achieve this objective, the project focuses its actions on highly vulnerable settlements along the east-west economic corridor in the province of Savannakhet. Two towns, Sayphouthong, in the district of the same name and Sethamouak (in Phine District), with respective populations of 48,188 and 8,956 will be targeted by the project. All residents of the towns are expected to benefit from the project, so in total the project will have 57,144 direct beneficiaries from its infrastructure component, 29,669 of whom are women.

**Table 3: Population details of target towns**

District	Population of District (2017)	Population of target settlement	No. of Women in the target	Population growth rate	Projected population of	Ethnic minorities (%)
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<sup>46</sup> Synthesis Report on Ten ASEAN Countries Disaster Risks Assessment, December 2010, ASEAN Disaster Risk Management Initiative. Online at [http://www.unisdr.org/files/18872\\_asean.pdf](http://www.unisdr.org/files/18872_asean.pdf)

<sup>47</sup> Mike Ahern, R. Sari Kovats, Paul Wilkinson, Roger Few, Franziska Matthies; Global Health Impacts of Floods: Epidemiologic Evidence, *Epidemiologic Reviews*, Volume 27, Issue 1, 1 July 2005, Pages 36–46, <https://doi.org/10.1093/epirev/mxi004>

<sup>48</sup> For example, see [http://www.wpro.who.int/Lao\\_PDR/mediacentre/releases/2015/20150816/en/](http://www.wpro.who.int/Lao_PDR/mediacentre/releases/2015/20150816/en/)

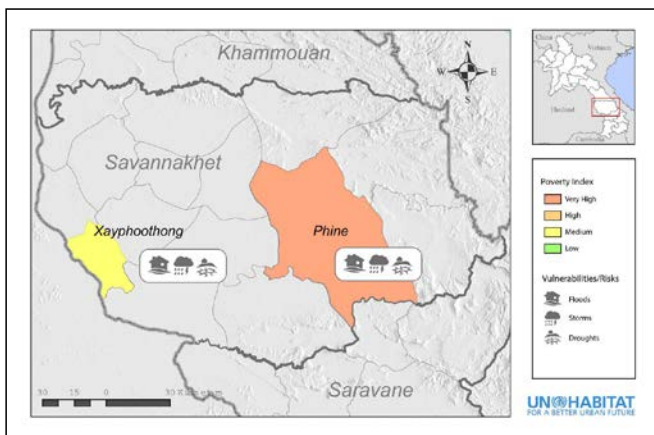
<sup>49</sup> A Key Government Direction for the 8th NSEDP, see 8th Five-Year National Socioeconomic Development Plan (2016–2020)

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		(2017)	settlements	(% per annum)	settlement in 2025	
<b>Phine (Sethamouak Town)</b>	64,184	8,956	4,868	2.5	11,358	62%
<b>Sayphouthong</b>	48,188	48,188	25,699	1.65	61,596	48%
<b>TOTAL</b>	<b>109,907</b>	<b>57,144</b>	<b>30,567</b>		<b>72,954</b>	

The target settlements have been selected due to their low level of resilience based on high levels of poverty, high exposure to severe climatic events and low institutional capacity and preparation.

As shown in Table 4, below, both towns have recently been exposed to storms, floods and droughts. The poverty headcount remains high in both districts, at 17.1 per cent below the poverty line in Sayphouthong and over 42.4 per cent in Phine District (including Sethamouak Town). A high percentage of the population – 48 per cent in Sayphouthong and 62 per cent in Phine District – are ethnic minorities. See Table 1, above, for a breakdown of the ethnic minority groups in Laos, and Table 3 for a breakdown of the population in the target towns. Other indicators on social development are also very weak in the two target districts. Net high school enrolment, for example, was 6.2 per cent in Phine District and 17.6 per cent in Sayphouthong District in 2015, according to the census<sup>50</sup>. Figure 1 shows the poverty rate and climate hazards of the two target districts and their locations within Lao PDR.



**Figure 2 - Location of the Two Target Districts in Lao PDR**

Table 4 shows recent extreme weather events in the target districts, where flooding is the most common event. Floods commonly destroy houses and infrastructure such as roads, bridges, water and sanitation facilities, and public buildings including health centres and schools. Common health problems

resulting from the consumption of contaminated water include diarrhoea, Dengue Fever and skin conditions. There is a greater risk of epidemics following floods or in times of drought when access to usual water supplies is denied through flooding, damaged infrastructure or through water sources drying up. With few resources for rebuilding and rehabilitation, the damage and destruction of infrastructure can severely affect livelihoods and health for extended periods of

<sup>50</sup> MPI (2016) Where are the Poor, Lao PDR 2015 Census-Based Poverty Map: Province and District level Results, p.105

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time. A slower building hazard is the droughts which are increasingly occurring in some districts. These lead to crop failure, food insecurity and a lack of safe water sources, compelling people to source water from contaminated sources.

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Table 5 summarises the hazards and underlying vulnerabilities in the target towns. These underlying vulnerabilities exacerbate the impacts of climate change hazards. As mentioned above, poverty is high in both districts, especially in Phine District. High school enrolment rates are among the lowest in the country, which is a proxy indicator of limited adaptive capacity and suggests people depend on climate sensitive livelihoods. More critically, however, both districts lack a water supply or sanitation system. This means people are highly sensitive to changes in water availability and water quality, driven by climate change; they suffer insufficient water access during the dry season, and especially in drought periods, and from poor quality water during the rainy season, as rivers and wells can become contaminated. Inadequate sanitation is also a year-round problem, heightened during severe weather events, which in turn causes significant public health problems.

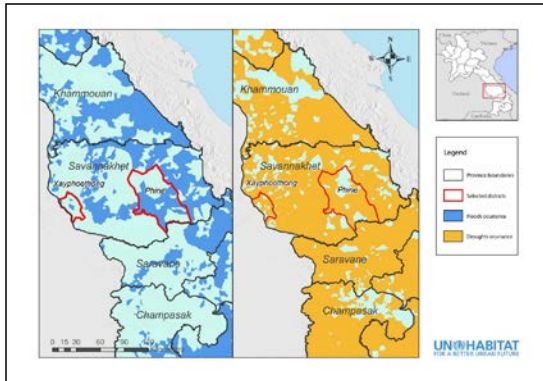
**Table 4: Recorded extreme weather events in targeted districts**

District	Flood	Storm	Drought	Landslide
Phine	Years: 2005/2009/2011/2012/2017	Hima/Ketsana/Nokten/Doksuri	Years: 2013/2014/2015	
Sayphouthong	Years: 2005/2009/2011/2012/2017	Hima/Ketsana/Nokten/Doksuri	2014	

**Table 5: Vulnerability in target towns**

Province	District of target settlement	Hazards	Underlying vulnerability
Savannakhet	Phine District	Floods, storms, droughts	Very high poverty levels (42.4%), low literacy and very low high school attendance rates (47.6% and 6.2%, respectively), lack of water supply system, drainage and wastewater disposal, low (43%) sanitation coverage, low institutional capacity of local authorities regarding disaster resilience.
	Xayphoothong	Floods, storms	High poverty levels (17.6%), very low high school enrolment rates (17.6%) unexploded ordinance, displacement due to mining, dependence on agriculture, no safe water supply system, no drainage, wastewater or solid waste disposal system, 51% sanitation coverage, low understanding of disaster risk reduction.





**Figure 3 - Flood and Drought Locations**

The consultations carried out in the development of the concept note and the full proposal revealed increasing issues with sourcing safe water. This is due to a range of factors including climate change and hazards, poverty and the increasing population in urbanising areas. It has been shown in other areas that the provision of uninterrupted, clean water brings health benefits and both direct and indirect economic benefits through enabling the operation of businesses such as restaurants and guesthouses, as well

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as improving productivity through improved health and fewer sick days.

Of concern in the target areas is the low level of understanding by authorities of climate change, related weather events and disaster risk reduction. It is also imperative that local authorities understand and implement best practices in terms of urban planning. The time for this to happen is now, since urbanisation is occurring and there is a need to act quickly before unplanned development destroys protective ecosystems and exacerbates the effect of extreme weather events. It is also considerably more difficult and expensive to 'retrofit' existing, poorly planned urban areas with climate-resilient infrastructure than it is to build it as these settlements grow. Capacity building in local authorities and water utilities is therefore of prime importance.

## 2. Project Objectives

### Main objective

The proposed project's main objective is to build climate resilience in small towns along the east-west economic corridor in the central region of Lao PDR. This will be achieved through the provision of climate resilient **water** infrastructure and the mainstreaming of climate change into urban planning. The targeted towns align with the government strategy to promote economic growth and build infrastructure in emerging and small towns.

To achieve the objective, a rapid vulnerability assessment has been carried out in each of the target settlements. This has formed the basis of an action plan. The vulnerability assessment will also feed into master plans which will be developed for each of the two towns. The master plans will demonstrate how to mainstream climate action into urban planning.

The planning and design of resilient systems will be carried out in a participatory manner, with input from all sectors of the community from government officials to marginalised groups such as women and minority ethnic groups. The process will include capacity building for authorities in working in a participatory and inclusive manner. A key component of the project is the construction of climate and disaster

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resilient infrastructure systems. An additional focus is climate action mainstreamed urban planning.

Specific objectives (also 'project components' in the following table):

**Component 1:**

Town level master plans developed which integrate climate change adaptation into socially inclusive infrastructure development, spatial planning and land-use, with capacity built at District, Provincial and National level to plan for climate resilient infrastructure development and to maintain and manage infrastructure.

*This aligns with the following AF outcomes:*

*Outcome 1: Reduced exposure to climate-related hazards and threats*

*Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses*

*Outcome 3: Strengthen awareness and ownership of adaptation and climate risk reduction processes at local level.*

**Component 2:**

Socially inclusive infrastructure built in target towns that protects people from climate change related impacts and provides continuous services despite current and anticipated future changes in the climate

*This aligns with the following AF outcomes:*

*Outcome 4: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability*

*Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas*

**Component 3:**

Knowledge and awareness enhanced from national to local economic corridor wide levels, ensuring sustainability and influencing policy changes at the national level. This knowledge and awareness targets both local people and national level policy makers

*This aligns with the following AF outcomes:*

*Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level*

*Outcome 7: Improved policies and regulations that promote and enforce resilience measures*

### 3. Project Components and Financing

Project Components	Expected Concrete Outputs	Expected Concrete Outcomes	Amount (US\$)
<p><b>Component 1</b></p> <p>Develop town level master plans which integrate climate change adaptation into socially inclusive infrastructure, spatial planning and land-use management in and beyond the project area.</p> <p>Capacity built at District, Provincial and National level to plan for climate-resilient infrastructure development and to maintain and manage infrastructure</p>	<p><b>Output 1.1.1.</b></p> <p>Training provided to district, provincial and national government staff on resilient infrastructure design. Female government staff must be represented</p>	<p><b>Outcome 1.1.</b></p> <p>40 government staff, at least 15 of whom female, have increased capacity to design climate resilient urban infrastructure in small towns</p>	<p><b>350,000</b></p>
	<p><b>Output 1.2.1.</b></p> <p>Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented</p>	<p><b>Outcome 1.2.</b></p> <p>60 government staff, at least 20 of whom female have capacity to develop climate resilient town master plans and two master plans approved, that support the development of resilient infrastructure, serving 57,144 people.</p>	
	<p><b>Output 1.3.1.</b></p> <p>Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the project area. The master plans will include specific provisions for the development and climate change resilience of women.</p>		
<p><b>Component 2</b></p> <p>Socially inclusive infrastructure built in target towns that protects people from climate change related impacts and</p>	<p><b>Output 2.1.1.</b></p> <p>New resilient infrastructure constructed in response to climate change impacts, including variability</p>	<p><b>Outcome 2.1</b></p> <p>57,144, people, 53.5% of whom are women, who currently have inadequate water and/or protective infrastructure, have access to year-round, clean water and protective infrastructure despite current climate hazards and future</p>	<p><b>4,000,000</b></p>

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provides continuous services despite current and anticipated future changes in the climate		changes in climate	
<b>Component 3</b>  Knowledge and awareness enhanced from national to local levels along the economic corridor, ensuring sustainability and potentially leading to policy changes at the national level	<b>Output 3.1.1.</b>  Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.  <b>Output 3.2.1.</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure, including the provision of infrastructure in a way that benefits women	<b>Outcome 3.1.</b>  Project implementation is fully transparent. All stakeholders, including women are informed of products and results and have access to these for replication.	<b>237,557</b>
6. Project Execution cost			<b>US\$481,567</b>
7. Total Project Cost			<b>US\$5,069,124</b>
8. Project Cycle Management Fee charged by the Implementing Entity (if applicable)			<b>US\$430,876</b>
Amount of Financing Requested			<b>US\$ 5,500,000</b>

**4. Projected Calendar:**

<b>Milestones</b>	<b>Expected Dates</b>
Start of Project/Programme Implementation	06-2019
Project/Programme Closing	06-2023
Terminal Evaluation	12-2023

## PART II: PROJECT / PROGRAMME JUSTIFICATION

### A. Project components

The proposed project originated as a request from the government of Lao PDR, articulated through MoNRE, for further support based on the ongoing implementation of the Enhancing the Climate and Disaster Resilience of Rural and Emerging Human Settlements in Southern Lao PDR project, funded by the Adaptation Fund and implemented by UN-Habitat. In particular, the government of Lao PDR and UN-Habitat propose to build on the innovations of the first project to bring additional resilience benefits to other settlements in climate-vulnerable areas.

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The project takes a long-term view on developing climate resilient infrastructure that will build climate and disaster resilience in two towns in southern-central Lao PDR. To this end, soft measures including capacity development, urban planning and knowledge management are integrated with hard measures wherein physical infrastructure will be constructed in line with the specific needs identified in the vulnerability assessment of each town (see Annex 1).

As shown in Part 1, the target towns have high levels of vulnerability due to their exposure to floods, droughts, and storms and resultant water and vector borne disease. This, combined with high levels of poverty, rapid urbanisation, almost no access to basic services, particularly continuous, clean water supply, limited knowledge of how climate change interplays with these issues, high numbers of indigenous people, and gender inequality. These factors combine to give a low adaptive capacity. The construction of infrastructure which is resilient to floods, droughts, landslides and storms will enable the target communities to have continued access to basic services, thereby mitigating the negative impacts which have been described in the section on expected impacts.

Consultations and vulnerability assessments were conducted in the preparation of the concept note and full proposal. Based on the findings from these assessments a menu of physical infrastructure interventions was presented. Authorities and communities were unanimous in their prioritising of water treatment plants in the two towns, an action which aligns strongly with government policy. It is proposed, therefore, to construct a water treatment plant in each of the two towns to serve the surrounding communities.

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At present, people in the two towns source their water primarily from open river sources or self-dug wells and boreholes. As a result, they are not guaranteed water year-round, and the quality of water they use is often poor because of turbidity and other forms of contamination. Women, who are often responsible for collecting and managing water, can be required to travel further to collect water during the dry season, where open water sources are presently used. Water treatment is therefore an adaptation action because it will increase the ability of people to access clean water year-round, and the treatment plants will be designed to offer continued functionality despite storms, floods and droughts. When water is supplied directly to homes, it specifically benefits women who are often required to collect water from distant water sources.

In alignment with the political structure in Lao PDR, capacity building will take place from the national level to the community level. At the national level, there is a need to increase capacity in planning for and implementing climate change adaptation actions in sectors outside the Ministry of Natural Resources and Environment (MoNRE) and integrate climate change planning into sectoral policies and plans. This then needs to be carried to provincial, district and

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community levels. It is important that all levels of government are in alignment with goals relating to climate change adaptation and disaster risk reduction so that adaptation actions are understood and funded. Capacity building will be carried out by national and provincial authorities at a district level and they will also oversee workshops at a community level. The two targeted sectors will be public works and urban planning.

UN-Habitat is currently implementing capacity building at the provincial and district level under its first Adaptation Fund proposal in Laos and will use the experience and lessons learned to strengthen capacity building proposed under this project. This will include further refining the Planning for Climate Change methodology, which is being used in Laos currently and has previously been used in the Philippines, Cambodia, Myanmar and elsewhere.

Inclusivity is a key factor in the project. 27,649 of the project's 57,144 beneficiaries – almost 50% - are indigenous people, and 53.5% of beneficiaries are women. Amongst some ethnic groups, women are particularly marginalised and so it is important that representation of groups is inclusive of women and other marginalised groups such as the elderly, youth or the disabled. Quasi-governmental institutions such as the Lao National Front for Construction, the Lao Women's Union and the Lao Youth Union all have representatives at the village level and these representatives will be actively engaged in the project.

The project will draw from the People's Process approach, which sees people as active participants and the key resource rather than as objects of development. UN-Habitat has extensive experience of working in a participatory manner at the community level. Social mobilisation is a key step whereby communities organise to make decisions regarding their resilience, with technical and financial support from the project. This will occur in the context of the government's Samsang decentralisation policy, which sees provincial administration as a strategic unit, district administration as an integrated implementation unit and the village as a development activity unit. Samsang is in the process of being rolled out throughout the country, with support needed in its interpretation and implementation. It provides an avenue for local government institutions to take a lead in working with communities and other stakeholders in decision-making. UN-Habitat's current AF funded project is providing experience of implementing under Samsang and there is an opportunity now to build on the learning provided through the current project.

### **Innovation**

The following aspects of the project show innovation.

1. Climate action will be mainstreamed into town level master plans. Urban planning in Lao PDR has a history of fragmentation and overlapping mandates amongst different authorities. Currently, there is a focus on economic development in urban planning, and there is scope to mainstream climate change action as well. Integrating climate action into town level master plans will ensure that adaptation is anchored in local policy and is prioritised in ongoing development actions. These town level master plans will make specific provisions for the development and climate resilience of women, a first in Lao PDR.
2. Capacity building will be carried out in an area wider than the two towns targeted for infrastructure development and will be on towns along the economic corridor. Until the present time, the focus along the economic corridors has been on large-scale infrastructure development but a critical issue for sustainability is access to basic services, recognising that climate change will severely impact these services. Capacity building in urban planning throughout the economic corridor will enhance resilience and

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will complement Greater Mekong Sub-region infrastructure development measures so that Laos can derive more sustainable development benefits from the economic corridor.

3. a). Technically, the project will make use of pumps which have a dual power system, utilising solar power as their primary energy source with a backup of electricity from the grid (the initial assessment that grid electricity coverage is 95%, including in the areas the pumps would be located). The solar system will contribute to economic and environmental sustainability while the electric component will ensure that there is an alternative source of power, ensuring continued functionality.  
b). Sustainability will also be promoted through water source protection. This will include encouraging the local government to plan for the future construction of riverside embankments, while all infrastructure built by the project (which will be close to the river) will be protected from flooding. UN-Habitat has an extensive knowledge of water supply projects in Laos. Through its previous work in compiling a database of projects, there is no evidence of a project which has constructed an embankment to protect the water source. The embankments will lead to selected river front development initiatives as per discussion with local authorities and communities. These may include such land uses as public spaces or small businesses.
4. It is proposed to gather together all relevant stakeholders at the local level to contribute to the master planning process. In Laos, agencies normally operate independently of one another and so the involvement of all concerned agencies is a new idea. The Department of Public Works and Transport will lead the master planning exercise under their mandate for urban planning. These local government stakeholders will include female representatives. This is an innovation because it is unusual in Laos for such initiatives to make specific provisions to include women.

The project comprises three components:

### **Component 1. Developing plans and capacity building**

Capacity built at District, Provincial and National level to plan for climate-resilient, socially inclusive infrastructure development and to maintain and manage infrastructure.

Develop two town level master plans which integrate climate change adaptation into infrastructure, spatial planning and land-use management in and beyond the project area.

The following activities will be included in Component 1:

- Developing two town level master plans integrating climate resilience building into land-use, water management and infrastructure. These masterplans will include specific provisions for the development and climate change adaptation needs of women.
- Developing a project tool specifically for use in urbanising areas (with guidelines for assessment and planning, resilient infrastructure, technical standards, environmental and social safeguards and community participatory planning tools.) This will be partly based on the first Adaptation Fund project in Laos, but with greater focus on rapidly growing urban areas.
- Training at the Provincial and district level on building climate resilience by developing action plans and utilising Vulnerability Assessments, using tailored guidelines.

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- Developing guidelines for land-use planning and planning, constructing, operating and maintaining climate and disaster resilient infrastructure systems which are appropriate for growing towns.
- Providing a national stakeholder workshop on resilience building in urbanising areas.
- Providing a national training of trainers' workshop. At least a third of the trainers to be trained should be women.
- Providing district level workshops for roll out of the project, to prepare district level stakeholders for the implementation of the project (including hard activities under Component 2 and the Environmental and Social Management Plan.)
- Community-level workshops to raise awareness and mobilise support and ownership of the vulnerability assessment and planning process, including decision making and prioritising interventions. There will also be at least 1 provincial/district level training.

While the increase in extreme weather such as floods and tropical storms is visible to people already, long term changes in rainfall and increases in temperature are not so obvious in all districts.

The basic vulnerability assessment data gathered so far in the development of this proposal (and which will be elaborated further when the full proposal is developed) will inform the town-level master plans and will be used as a basis for training government officials at the sub-national level. This will contribute to building their capacity to incorporate current and future climate information into sub-national infrastructure and urban planning.

Capacity building will ensure that all stakeholders gain an understanding of the short term and long-term needs associated with climate change threats and that they are able to plan for the severest potential scenarios and prioritise adaptive actions including land-use planning, and the provision of basic services infrastructure. Community members will be mobilised to work alongside the local authorities in building resilience, thereby strengthening the partnership between local authorities and their communities.

In line with Adaptation Fund Outcome 3 and ongoing priorities under Lao PDR planning (See Section D), Component 1 will increase understanding and ownership of the climate change adaptation process in local government (district and town level) and communities, with a view to strengthening capacity in infrastructure planning, construction and maintenance as well as land use.

Building capacity in climate-resilient infrastructure development and maintenance will involve a range of stakeholders, from local government authorities, especially the Department of Public Works and Transport, water utilities, and the Department of Planning and Investment to community members. The capacity building work will respect and strengthen the existing government agencies and structure. However, these agencies will work increasingly together under the project. The proposed hard infrastructure investments in Component 2 will also feature in the master plans, and the capacity building activities will ensure that the provincial and district government officials have the capacity to perform ongoing maintenance, as well as planning for additional actions to be implemented in the future to adapt to climate change.

Sustainability is critical to the infrastructure design. Water utilities will be particularly involved in the operation of the water treatment plants and piped water supply, which require a different approach from rural water supply infrastructure. To enhance the financial sustainability of the infrastructure, and to increase ownership, a pro-poor tariff will be levied on users. This tariff will be set in consultation with government partners and communities, including women and



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indigenous people, but in UN-Habitat's experience such a tariff could be set as low as 2,500 kip per cubic metre. The project will develop comprehensive implementation guidelines that will be aimed specifically at emerging and small towns to take account of the particular issues which they encounter. They will cover not only the technical aspects of planning, constructing and maintaining infrastructure but also management and financial skills.

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In all training and capacity building activities, women will be included as outlined in the Project Components and Finance table in Section 1 of this proposal. Future development and climate change adaptation that includes women and as well as marginalised people such as the numerous indigenous groups that live in the project's target area is critical. Women and indigenous groups have particular and unique vulnerabilities that require care and sensitivity in the way they are addressed.

### Component 2: Physical infrastructure

Socially inclusive infrastructure built in towns that protects people from climate change related impacts and provides continuous services despite current and anticipated future changes in the climate.

In line with AF outcomes 4, 5 and 6 and Lao PDR priorities (see policy section), this component will focus on providing access for 57,144 people to climate and disaster resilient water treatment plants and piped water supply services, in addition to protecting and/or enhancing local natural assets through effective land-use planning. Considerable consultation has taken place in the preparation of the concept note and full proposal; prioritisations have been made in each of the target towns. Component 2 will include:

- Ensuring the environmental and social management plan is in full compliance with the Environmental and Social and Gender Policy of the Adaptation Fund, by conducting awareness campaigns (sensitive to the needs and local language of indigenous people, and recognising that literacy rates are low for men and women in the target area, requiring a reduced dependence on communication materials in writing and increased use of oral communication), establishing the grievance and disclosure mechanism, and capacity building for project staff and those involved in maintenance and construction of infrastructure to be built under the project.
- Develop and construct a climate resilient water supply system that serves all 48,188 residents of Sayphouthong and 8,956 residents of Sethamouak Towns. 53.5% of beneficiaries across the two towns are women. This includes the following actions:
  - Build a water treatment plant in each town, capable of treating up to 3,600 cubic metres of water per day and associated river bank protection/stabilisation.
  - As part of the design, include pre-sedimentation, flocculation, sedimentation, rapid gravity filtration, a backwash tank and chlorination facilities, 200 m<sup>3</sup> clear water reservoir, detention ponds, plant office, workshop, store and a small water testing laboratory.
  - Construct the distribution network with up to 60 kilometres of pipelines
  - Construct a pumping station.
- Develop management systems for the new infrastructure:
  - Set up a district coordination unit to oversee and implement the construction of the project

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- o Establish a Nam Papa State Enterprise (NPSE)<sup>51</sup> in Sayphouthong and Sethamouak Towns (one in each town) to manage the completed infrastructure in each district. NPSE will oversee tariff setting, engineering and operation and maintenance (see [Part II Section E](#), National Technical Standards for an explanation of how this complies with the governance structure of water supply in Laos)
- o Establish and build the capacity of village resilient water and sanitation groups to implement and monitor the project, each group should include equal representation from women. These groups will monitor use, conduct very basic repairs (such as preventing leaks) and report problems to NPSE.
- o Undertake Environmental and Social Safeguarding measures, including holding specific consultations with women and indigenous people, including, where necessary, consultations in indigenous languages

Consultations conducted in the preparation of the concept note and full proposal revealed that water supply at the household level is a top priority for the target communities. There is no water treatment plant in either Sayphouthong or Phine Districts. A water treatment plant is the foundational step on which water supply and sanitation rely. It is therefore proposed to construct two water treatment plants, one in Sayphouthong and the second in Phine District, benefitting the residents of Sethamouak Town. In times of flooding and droughts, the continued functionality of water supply infrastructure plays a large role in public health as well as livelihood maintenance and so it makes a key contribution to climate change resilience. During droughts there is insufficient water to flush latrines, meaning they don't function properly and become unhygienic, while there is also inadequate water supply for people to meet their daily water needs.

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The technical design of infrastructure will comply with all relevant national technical standards, as outlined in [Section II, Part E](#) and the Environmental and Social Policy of the Adaptation Fund, as discussed further in [Part II Section K](#) of this full proposal. A comprehensive risk analysis has been conducted and is presented in Annex 5 and summarised in Part II, Section K. Previous experience has built institutional knowledge within UN-Habitat regarding cost-effective infrastructure which is resilient to the weather and climate hazards experienced in Lao PDR. As much as possible, community members will be upskilled so that there is the expertise within the community to construct and maintain infrastructure. While construction work is typically a male dominated sector, local women will be given the opportunity to participate in the construction work.

A feasibility study for the proposed infrastructure in Sayphouthong Town has been included in this full proposal, and is presented in [Annex 3](#). A similar feasibility study for the smaller system (because it serves fewer people) in Sethamouak Town is presented in [Annex 4](#). A picture that gives the overview of the systems is included at the end of this section. In Sayphouthong Town, several additional climate change adaptation and environmental and social safeguard features have been incorporated into the infrastructure design. Water will be supplied from the Mekong River, which flows year-round, so water supply is guaranteed. The construction of the infrastructure in Sayphouthong will also include riverbank protection. This has three primary functions; as a safeguard measure to ensure that the infrastructure does not destabilise the riverbank, an adaptation measure to ensure that flood waters from the Mekong River do not damage the infrastructure, and a public space function so that people can benefit from urban

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<sup>51</sup> NPSEs are autonomous water utilities. See Section E, below, for a description of the role of NPSEs under Laos's legal and governance framework.

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green/public space. The latter is especially important, considering the increasing propensity of the Mekong to floods during the rainy season (2018 has seen extensive flooding in areas close to the Mekong. Prior to this, floods also occurred in 2013 and 2011). The storage reservoir will also be elevated. This prevents flood waters from breaching the reservoir and affecting water quality. It also prevents illegal usage of water. The pumps used in the infrastructure will have a dual power source; primarily relying on solar power and only using electricity when solar power is not available.

Similarly, in Sethamouak Town the design includes a number of climate change adaptation and environmental and social safeguard features including a dual pumping system (solar as one option). The choice of water treatment technology for Sethamouak is dictated primarily by the raw water quality, operator's capacity and financial resources to ensure sustainability. Wet season turbidity of Sethamouak River is high, and is subjected to rapid fluctuations. Slow sand filtration system is considered for Sethamouak. Bank protection at in-take point to avoid possible damages. The risk of the check dam structure is offset by its low height, below the water level for 8-9 months per year, and by its openable weir, which allows water to flow through the system in the dry season, preventing upstream floods and any downstream loss of biodiversity, or water supply, while the bank protection will strengthen the embankments.

For both projects, these features can be seen in the figures, below.

### **Component 3: Advocacy, and Knowledge Management**

Knowledge and awareness enhanced from national to local levels, ensuring sustainability and leading to policy changes at the national level

Knowledge management will ensure that the project implementation is fully transparent, and all stakeholders are informed of outputs and results and have access to these for replication. This component will include:

- Capturing and disseminating lessons learned and best practices both within the target area and further afield, to national level. This activity targets national level policy makers and other stakeholders by providing them with evidence of 'what works', thus influencing future policy direction and guidance materials for replication.
- Advocacy carried out at the national level in partnership with other stakeholders working on local level climate change adaptation. This also targets national policy makers in the climate sphere, with a view to influencing the future direction of climate policy, as Laos continues its participation in the UNFCCC process.
- Building capacity in government authorities and other relevant stakeholders such as water utilities for monitoring, evaluation and learning, with oversight and final evaluations completed by UN-Habitat. This primarily targets government stakeholders at the subnational level. Female government staff will be included as targets for advocacy and sharing knowledge in this activity.
- Establish a database/management platform in conjunction with MoNRE to improve information on climate-related projects throughout Lao PDR. This database will include information about projects that have specific adaptation components, outputs or activities for women.

The capacity of government at all levels will be increased through training workshops and learning by doing. The project will add to the institutional knowledge of government authorities

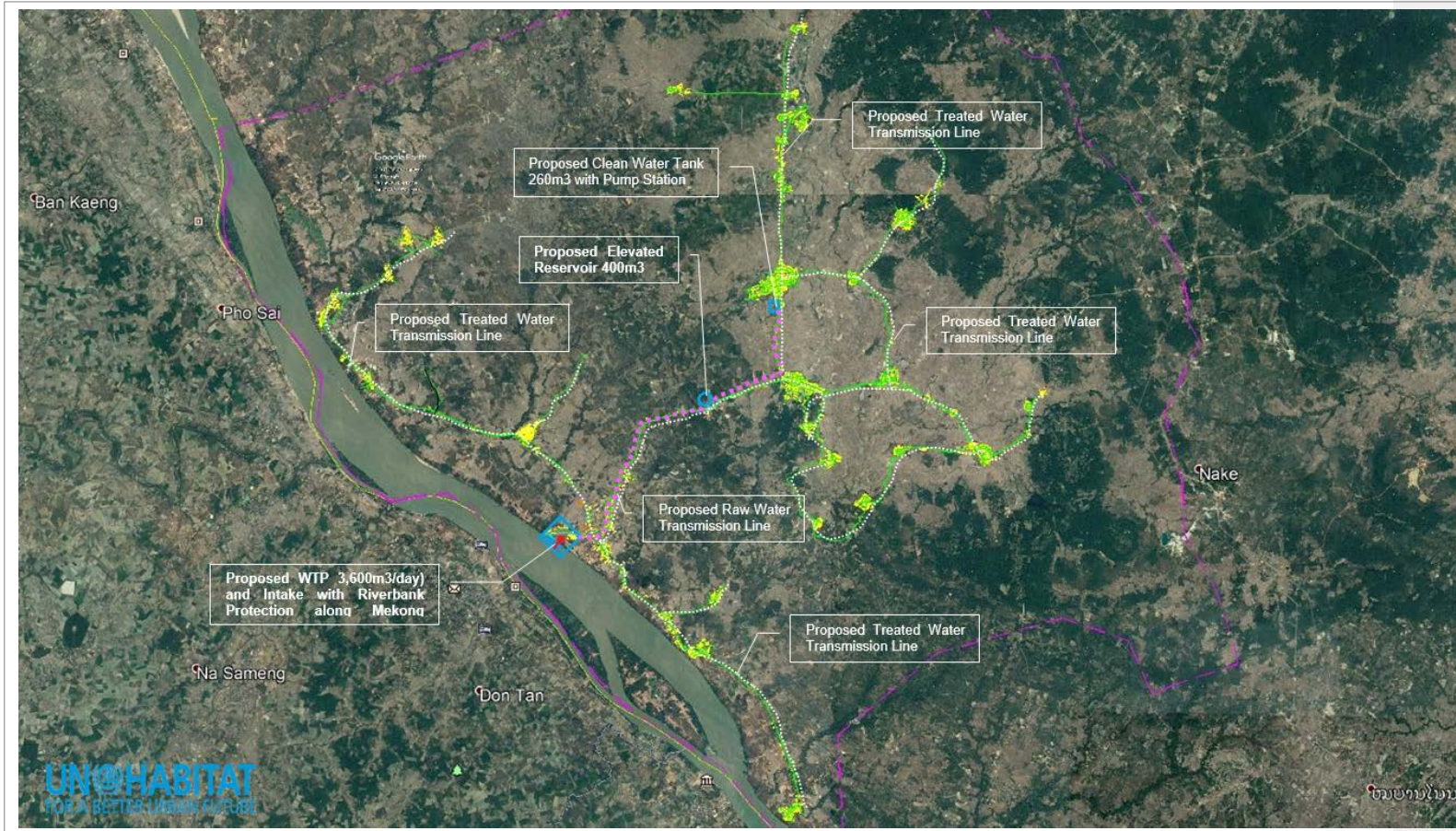
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and other relevant stakeholders concerning climate resilience at the level of small and emerging towns. Stakeholders will also gain knowledge and experience in monitoring and evaluation. This is an area in which the government has acknowledged weaknesses at all levels of government with regard to sector-level monitoring and evaluation of the National Socioeconomic Development Plan<sup>52</sup>. There is an increasing realisation of the importance of monitoring.

To further ensure that climate action knowledge is not lost, a national level platform will be developed as a repository for learning on both climate change adaptation and mitigation. The lessons from this project will be uploaded to the platform and will be accessible to all relevant stakeholders.

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<sup>52</sup> 8<sup>th</sup> National Socioeconomic Development Plan



**Proposed climate resilient water supply system with capacity of 3,600m<sup>3</sup>/day in Sayphouthong Town. Further technical details in Annex 3**



Proposed climate resilient water supply system with capacity of 1,200m3/day in Sethamouak Town. **Further technical details in Annex 4**

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## **B. Economic, social and environmental benefits**

The project will have a series of related economic, social and environmental benefits. Since the target towns are developing rapidly as part of the ongoing East-west Economic Corridor development, interventions are critical now to ensure that climate change resilience is integrated into the towns' development. This will lead to multiple long-term benefits through the avoidance or lessening of impacts of climate change and extreme weather events. Capacity building in local authorities along the economic corridor will mean that the benefits are experienced in a wider area than the two towns in which the physical infrastructure will be constructed.

The key issue to be addressed by the project is the inaccessibility of clean water, especially during the dry season (due to a lack of water availability) and the rainy season (due to water quality). Neither of the target settlements has a piped water supply system and extreme weather events such as floods, landslides and droughts often render alternative water sources useless. Water infrastructure is a critical area in building resilience, both in terms of health and livelihoods. Past experience in Lao PDR has shown that a reliable safe water supply not only makes people more resilient to climate change, it also enables people to start-up businesses such as guesthouses, restaurants, ice-making factories, gas stations, laundries, car washes, concrete factories and a PVC pipe factory<sup>53</sup>, providing economic and social benefits to them. This in turn encourages more migrants to the area and a flow on effect in terms of economic activity.

The system constructed by the project will provide continuity of water supply, will result in economic and social benefits for everyone across the two towns. However, women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, which for some means walking long distances, are the primary users of water in the home, and the primary givers when people become sick with water-borne diseases.

The tools used and processes followed in implementing the project are designed to ensure that project benefits are shared by all members of communities. For example, the project will ensure that all groups are represented in consultations and decision making. This includes women and people from minority ethnic groups, many of whom do not traditionally have a major role in decision making. The inclusive nature of the consultations will ensure that the design of infrastructure meets the requirements of all groups. All financial aspects will be designed according to pro-poor principles to ensure that no people miss out on benefits through unaffordability.

The project will follow environmental safeguards in the design of water supply systems to ensure the sustainability of the source as well as the system. In addition, sanitation, wastewater and solid waste disposal systems will have an advantageous effect on local environments.

Table 6, below, provides more detail on the demographic breakdown of the settlements within the two towns.

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<sup>53</sup> Interviews carried out for the evaluation or sustainability check of UN-Habitat's MEK-WATSAN project revealed that the establishment of new businesses such as these was a common phenomenon.

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**Table 6 - Population Breakdown within the Target Settlements**

<b>Sayphouthong Village cluster</b>	<b>2017 Pop'n.</b>	<b>Women</b>	<b>Men</b>	<b>No. HH</b>	<b>Persons/ HH</b>	<b>M/F Ratio</b>
Thadan	5,044	2,627	2,417	1,029	4.9	0.92
Thapo	5,573	2,980	2,593	1,102	5.2	0.87
Phoumachady	4,766	2,549	2,217	934	5.3	0.87
Mouangkay	6,796	3,634	3,162	1,296	5.3	0.87
Namphou	8,137	4,351	3,786	1,440	3.7	0.87
Nakham	7,259	3,882	3,377	1,114	4.2	0.87
Nabo	5,474	2,927	2,547	989	3.8	0.87
Vuenkheoun	5,139	2,748	2,391	1,004	3.4	0.87
<b>TOTAL</b>	<b>48,188</b>	<b>25,699</b>	<b>22,489</b>	<b>8,908</b>	<b>4.5</b>	<b>0.88</b>

**Table 7 - Population Breakdown within the Target Settlements**

<b>Sethamuok Village cluster</b>	<b>2018 Pop'n.</b>	<b>Women</b>	<b>Men</b>	<b>No. HH</b>	<b>Persons/ HH</b>	<b>M/F Ratio</b>
Oudomxay	1,201	656	545	260	4.6	0.83
Xesavang	1,447	766	681	236	6.1	0.89
Xanamixay	882	493	389	118	7.5	0.79
Xaisomboun	1,444	783	663	227	6.4	0.85
Sibounheuang	2,028	1,102	926	338	6.0	0.84
Palek	490	265	225	94	5.2	0.85
Nonxay	1,464	800	664	260	5.6	0.83
<b>TOTAL</b>	<b>8,956</b>	<b>4,868</b>	<b>4,088</b>	<b>1,533</b>	<b>5.9</b>	<b>0.84</b>



**Table 8: Town level economic, social and environmental benefits of AF interventions compared to baseline.**

Type of benefits	Baseline	With/after the project
Economic benefits	<p>Regular floods, droughts and landslides result in livelihood and economic and household losses.</p> <p>Regular droughts and floods challenge access to safe water and cause disease outbreaks. In the dry season, women often need to walk to rivers or other distant sources to collect water. During floods, open defecation practices lead to disease outbreaks, which decreases productivity. Mosquitoes also breed in and around stagnant, standing water, further damaging public health.</p> <p>Limited education and (especially in Phine District) low literacy levels means people have few specialist skills beyond subsistence agriculture and basic manual labour</p>	<p>New infrastructure in the form of water supply and treatment systems will improve public health, continuity of water supply, and therefore provide increased economic opportunities in the form of services (such as guesthouses and restaurants), agriculture, and small-scale industry, which in-turn will reduce poverty.</p> <p>Increased productivity and production and reduced health care costs benefits through improved access to safe water sources, increased hygiene and reduction of waterborne diseases.</p> <p>Increased resilience of natural livelihood capital, such as land and water, will improve the coping mechanisms of the most vulnerable people in the target area and reduce human and material losses during extreme weather events.</p> <p>Cotnined functionality of water supply and sanitation infrastructure, despite regular hazards like droughts, floods and storms, and their increasing frequency and intensity as a result of climate change means that people’s incomes are less likely to be disrupted, and that household savings won’t need to be invested in small scale repairs to water and santitation facilities (beyond small regular contributions to the improved infrastructure).</p>
Social benefits	<p>Lacking knowledge about climate related risks (e.g. floods, landslides, health) and resilient construction methods result in limited autonomous adaptation measures.</p> <p>Women, elderly, disabled people and ethnic groups are especially vulnerable to climate change because of dependence on climate related services (e.g. water and food), diseases, limited access to health care and information and remoteness</p> <p>Natural resources are not used and managed in a sustainable way.</p>	<p>Health benefits through improved access to safe water sources, resilient sanitation facilitations, reduction of waterborne diseases and improved hygiene standards.</p> <p>Adaptation benefits of the new infrastructure are shared equitably among women, youth, the elderly, the disabled and indigenous people. Women particularly benefit because as they are primarily responsible for providing care, which will be facilitated by having year-round access to clean water, and they will have to spend less time and money sourcing water.</p> <p>People in the two target towns are more aware of the risks of climate change impacts and the benefits of resilient infrastructure and have increased capacity to take autonomous adaptation actions.</p> <p>A planning approach sensitive to marginalized and vulnerable groups, indigenous peoples and gender will ensure sustainable access to resilient infrastructure that is ultimately replicated beyond the target area of the proposed project.</p>
Environmental		The development of environmentally sensitive and

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benefits		<p>resilient land use, water resources, infrastructure and community plans will increase the sustainable use of natural resources and improve ecosystem resilience.</p> <p>The capacity development and planning process described earlier will ensure that the infrastructure provided by the project will be resilient to climate change. The ESMP will further ensure the application of resilient technologies.</p>
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**C. Cost effectiveness**

This project will continue in the tradition of cost-effective project implementation that UN-Habitat has built in Lao PDR. Lessons learned from previous project implementation – especially the ongoing Enhancing the Climate and Disaster and Climate Resilience of the most Vulnerable Settlements project, funded by the Adaptation Fund will be incorporated into the project along with principles from UN-Habitat’s tools such as the People’s Process and Planning for Climate Change.

**Synergy with partners and communities**

A key feature of UN-Habitat’s working modality is the partnership with government agencies and sector stakeholders such as the Department of Public Works, Transport, and Water Supply and water utilities (known in Laos as ‘Nampapas’). For this proposed project, all the land for the water intakes, elevated water towers, pump houses and substations will be government land contributed to the project.

UN-Habitat will ensure that the project employs local engineers who are working with the government institutions such as provincial Departments of Public Works, Transport, and Water Supply. Working with local engineers significantly reduces the cost of projects since there is a need for far fewer international/national consultants. Partnering with local agencies produces effective working relationships that have outlasted specific projects and has enabled a synergy in terms of planning and investment. Thus, there has been significant cash support from sector budgets through the alignment of plans and budgets. In addition, working with local agencies and building their capacity leads to a longer-term cost effectiveness in management and the operation and maintenance of infrastructure systems.

**Community contribution**

As well as working with partner agencies, UN-Habitat works closely with communities, including through the People’s Process. Past experience has shown that the community can contribute in certain ways to construction, management and maintenance of infrastructure. This includes activities such as laying of pipes for household connections, which will save costs and enhance ownership. Their involvement not only contributes to the sustainability of the project because they are so involved during the construction period, but it also reduces project costs. This is due to community contributions, often in the form of labour. Community members contribute to tasks such as digging trenches, laying pipes and general labour with all protective gear and training provided by the project. While there are many people willing to contribute unskilled labour, certain community members are trained and contracted to provide more skilled services. This will be the case for Component 2 of the project, involving the construction and maintenance of infrastructure.

**Technical Know-how**

UN-Habitat has the technical know-how to be able to guide the process with in-house expertise, which it will use to pass on to and guide the executing partner. This means there is not a dependence on expensive international consultants to carry out technical aspects of the project. Of particular relevance to this proposed project is the Laos office's experience in designing climate and disaster resilient physical infrastructure which is suited to Lao conditions. All designs will thus be done in-house, by a joint team comprising UN-Habitat and its executing partner. This also ensures that the executing partner retains, improves capacity, and is more effective in capacity building than hiring external consultants, whose knowledge is often not passed on or retained in-country in the longer term.

#### **Selection of cost-effective investments**

While the two primary infrastructure investments proposed by this project have a high initial financial cost, they are cost effective because they will benefit a large number of people. The total number of beneficiaries of the investments is 57,144 people, of whom 53.5% are women. That means that the cost per beneficiary of the investments is US\$72. Furthermore, the maintenance costs are relatively low at US\$5,000 per year per town. While the proposal does not complete a full cost benefit analysis at this stage, the expected benefits, in terms of public health and sustainable economic growth are likely to make the investment cost effective. Furthermore, the timing is cost effective, as the two towns are growing rapidly, and investment now will be significantly lower cost than future attempts to retrospectively design and build infrastructure.

#### **Cost-effective implementation**

The People's Process implementation method has been shown to be highly cost-effective, reducing costs through community contributions and through the procurement of local materials wherever possible. UN-Habitat's past water supply systems in Lao PDR have been implemented at a cost which is 40-50% cheaper than the typical cost of a system implemented by an International Financial Institution. An example of cost-effectiveness in Lao PDR is UN-Habitat's MEK-WATSAN programme, which was demonstrated by an external evaluator to have been implemented very cost-effectively. The ongoing Enhancing the climate and disaster resilience of the most vulnerable emerging human settlements project in Laos, funded by the Adaptation Fund, is also using a 'People's Process' model to enhance cost effective delivery across 189 villages in three nearby provinces, and the implementation of the proposed project can learn from this and enhance its cost-effective approach.

#### **Cost-effectiveness due to technical considerations**

There is a price to be paid for resilience and resilient forms of infrastructure come at a higher price than non-resilient forms. However, resilient infrastructure is predicted to be in use for at least twice the length of time as non-resilient infrastructure, since it will remain useable after storms, floods and droughts.

#### **Contribution to productivity**

The lack of basic services infrastructure has a cost to the Lao economy. A 2009 study found the annual cost of poor sanitation and hygiene alone to be equivalent to 5.6% of GDP<sup>54</sup>. Even without damage and loss from storms, floods, landslides and droughts, there is an economic cost from the lack of water and sanitation facilities in the form of healthcare costs to treat conditions such as diarrhoea, dengue, skin infections and other water-borne

<sup>54</sup> Economic Impacts of Sanitation in Lao PDR, Research Report May 2009, Water and Sanitation Program, World Bank.

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diseases. There is also a cost due to lesser productivity because of more time spent collecting water, and more sick days taken. When the loss is multiplied in times of extreme weather events, and non-resilient infrastructure is damaged or destroyed, there is a high cost to pay. By providing resilient water and sanitation infrastructure, as proposed in the preliminary consultations, the project will eliminate these costs, thereby lifting productivity. The boost to productivity by expected new businesses opened because of the project will further boost the economy.

**Table 9: Cost effectiveness analysis of adaptation options proposed through Rapid Vulnerability Assessments**

Proposed Action	Cost effectiveness criteria		Alternative action	Cost effectiveness criteria	
Developing two town level master plans integrating climate resilience building into land-use, water management and infrastructure.	Future cost of climate change	✓	Land-use Planning without Integrating Disaster Risk Management	Future cost of climate change	✗
	Project efficiency	✓		Project efficiency	✗
	Community involvement	✓		Community involvement	✗
	Cost/Feasibility	✓		Cost/feasibility	✗
	Environmental and social safeguarding risks	✓		Environmental and social safeguarding risks	More risk
Training at the Provincial and district level on building climate resilience by conducting and utilising Vulnerability Assessments and action plans, using tailored guidelines	Future cost of climate change	✓	Conducting training or planning without considering future climate change and climate vulnerability	Future cost of climate change	✗
	Project efficiency	✓		Project efficiency	✓
	Community involvement	✓		Community involvement	✗
	Cost/feasibility	✓		Cost/feasibility	✗
	Environmental and Social Safeguard Risks	✓		Environmental and social safeguard risks	✓
Develop and construct a water climate resilient water supply system that serves all 48,188 residents of Sayphouthong and 8,956 residents of Sethamouak Towns	Future cost of climate change	✓	Extending existing systems by digging more boreholes and wells	Future Cost of Climate Change	✗
	Project efficiency	✓		Project efficiency	✗
	Community involvement	✓		Community involvement	✓
	Cost/feasibility	✓		Cost/feasibility	✓
	Environmental and social safeguarding risks	Less risk		Environmental and social safeguarding risks	More risk

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	Environmental and social safeguarding risks	Less risk			
Water source management Integrating with water conservation demand management (WCDM)	Future cost of climate change	✓	Alternative livelihoods	Future cost of climate change	✗
	Project efficiency	✓		Project efficiency	✗
	Community involvement	✓		Community involvement	✓
	Cost/feasibility	✓		Cost/feasibility	✗
	Environmental and social safeguarding risks	Less risk		Environmental and social safeguarding risks	Less risk
Establishing Nam Papa State Enterprises in Sayphouthong and Sethamouak Towns to operate and maintain the infrastructure and providing training on the basic maintenance, in accordance with the Environmental, Social and Gender Management Plan	Future cost of climate change	✓	Relying on existing government structures to manage the infrastructure in the absence of an Environmental, Social and Gender Plan	Future cost of climate change	✗
	Project efficiency	✓		Project efficiency	✗
	Community involvement	✓		Community involvement	✗
	Cost/feasibility	✓		Cost/feasibility	✗
	Environmental and social safeguarding risks	Less risk		Environmental and social safeguarding risks	More risk

#### D. Consistency with national or sub-national sustainable development strategies

National and sub-national sustainable development strategies have been considered in the formulation of this project.

The pivotal development plan in Lao PDR is the 8<sup>th</sup> National Socio-economic Development Plan which covers the period 2016 – 2020. A long-term goal which is included in the 8<sup>th</sup> NSEDP is the graduation from Least Developed Country status by 2020. The plan has an emphasis on continued economic growth with harmonisation between economic development, socio-cultural development and environmental protection.

Lao PDR's First National Communication was completed in 2000. This was followed by the National Adaptation Plan of Action (NAPA) in 2009, the Second National Communication in 2013, the National Climate Change Action Plan 2013-2020 in 2013 and the Intended Nationally Determined Contribution (INDC) in 2015 (since ratified). In 2010, the National Strategy on Climate Change (NSCC) was approved. The strategy identified seven priority

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areas for adaptation and mitigation of which the two most relevant to this project are urban development and public health. The priority areas in the INDC were reduced to five in number, these being agriculture, forestry & land use, water resources, transport & urban development and public health. The focus in the transport and urban development sector was to be increasing the resilience of urban development and infrastructure to climate change. The NDC identifies two focus areas for the public health sector, the first of which is increasing the resilience of public health infrastructure and water supply systems to climate change. The foci of both these sectors are directly relevant to the proposed project with its plan to provide resilient infrastructure, including water supply infrastructure. Table 10 shows national climate change and disaster management priorities, with those most relevant to this project in red.

The proposal does not assess alignment with Lao PDR's forthcoming National Adaptation Plan. At present, consultations are underway around the formulation of NAP. UN-Habitat is in regular dialogue with both the Ministry of Natural Resources and the Environment and the UN Environment, which is supporting the development of NAP in Laos. At this stage it is too early to conclude what the priority actions will be. However, as NAP is developed the project will proactively seek to align with its focus and priorities, if it begins while NAP is being formulated, influence its direction to include rapidly developing urban areas and resilient infrastructure.

The project is in alignment with provincial and district 5-year socio-economic development plans. These are due to be updated in 2019. This means that the proposed project will be able to provide input on climate change priorities in the updated plans.

For further information on how the proposed project interventions align with water supply policies and tariff regulations, please see below in Part II, Section E.

**Table 10: National socio-economic, climate change and disaster management priorities.**

Measure	8 <sup>th</sup> Five Year National Socio-economic Plan	National Strategy on Climate Change	Climate change action plan 2013-2020	National Adaptation Programme of Nationally Determined Contribution	National Disaster Management Plan
Developing two town level master plans integrating climate resilience building into land-use, water management and infrastructure.	X	X	X	X	X
Training at the Provincial and district level on building climate resilience by conducting and utilising Vulnerability Assessments and action plans, using tailored guidelines	X		X	X	X
Develop and construct a water climate resilient water supply system that serves all 48,188 residents of Sayphouthong and 8,956 residents of Sethamouak Towns	X	X	X	X	X
Establishing Nam Papa State Enterprises in Sayphouthong and Sethamouak Towns to operate and maintain the infrastructure and providing training on the basic maintenance, in accordance with the Environmental, Social and Gender Management Plan	X	X		X	

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**E. Compliance with relevant national technical standards while maintaining compliance with the Environmental and Social Policy of the ESP**

Compliance will be ensured with all national technical standards as well as UN-Habitat and Adaptation Fund Environmental and Social, and Gender Policy requirements.

**Table 11: Compliance with relevant national technical standards and tools**

Expected Output or intervention	Relevant rules, regulations, standards and procedures	Compliance, procedure and authorities involved	Screening against AF ESP Principles
<b>Output 1.1.1.</b> Training provided to district, provincial and national government staff on resilient infrastructure design	Lao PDR Urban Planning Law. No.: 03-99/NA, dated 1999  Planning for climate change guidelines Government's '3-build' or 'Samsang' process of decentralisation	The project will train government officials on climate change mainstreamed urban planning in compliance with the Urban Planning Law, which is overseen by the Ministry of Public Works and Transport, the proposed executing partner of this project.	All principles will be considered when providing training. In conducting consultations under Output 1.3.1, principles 2, 3, 4, 5, 7, 8, 9 and 14 will be of particular importance, as these are the most likely to be affected by investment projects.
<b>Output 1.2.1.</b> Training provided to district, provincial and national government staff on climate action mainstreamed urban planning.	8th National 5-year socio-economic development plan.  Provincial and district socio-economic development plans (which are in line with the 8th National 5-year socio-economic development plan;	In this component, the project will work closely with, and train representatives from, the Provincial Department of the Land Management Authority, under the Ministry of Natural Resources and Environment, as this is the government body responsible for land use planning.	All trainees will complete a component of training on the Environmental, Social and Gender Plan of the project.
<b>Output 1.3.1.</b> Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the project area	Lao PDR Water and Resource Law. No.: 02-99/NA, dated 1996. The Water and Water Resources Law was updated and approved by the National Assembly in 2017.	The proposed planning will also align to the the government's 'Samsang' (or '3-build') process, particularly district and provincial development plans, in conjunction with the Department of Planning and investment.	
<b>Output 2.1.1.</b> New resilient assets constructed in response to climate change impacts, including variability	Lao PDR Hygiene Law. No.: 08/NA, dated 2004  Lao PDR Water Supply Law. Law No.: 04/NA, dated 2009 (See further explanation of this in the text below the table)  National Standard on Quality management for drinking water and household water supply. Decision No. 1371/MoH, dated 2005  Lao PDR Construction Law. No.: 159/LPDR, dated 2009	In addition, the project will also use Participatory Land Use Planning (PLUP) principles, as well as context specific means to consult with people in the target areas, considering the high number of indigenous people.  The project will supply water in compliance with the water supply law, the Hygiene Law, the National Standard on Quality management for drinking water and household water supply and MDG/SDG technical standards for water supply. Water supply is overseen by the executing partner of the project – the Water Supply Department of the Ministry of Public Works and Transport.  The project will also ensure that its implementation is in-line with the Construction Law, Building Codes and	Output 2 will trigger safeguarding actions under the following principles: Principle 2, 3, 5, 6, 7, 9, 10, 12, 13, 14 and 15. Further information is provided in the Environmental, Social, Gender and Youth Plan.

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<p><b>Output 3.1.1.</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure</p>	<p>The Lao National Unexploded Ordnance Programme, which follows IMAS – International Mine Action Standards, under the National Regulatory Authority (NRA) for the UXO/Mine Action and UXO Lao, which adopted SOPs – Standard Operating Procedures</p> <p>Lao PDR Initial Environmental Examination (IEE) and Environmental and Social Impact Assessment (ESIA): Article 21 of the Law on Environmental Protection (Amended) No. 29/NA, dated 18 December 2012; and the Government Decree on the Establishment and Function of the Ministry of Natural Resources and Environment No. 435/PM, dated 28 November 2011.</p> <p>Government Decree on Environmental Impact Assessment No. 112/PM, dated 16 February 2010.</p> <p>The Instruction on Initial Environmental Examination (IEE) of the Investment Projects and Activities No.8029/MONRE dated 17 December 2013, and Instruction on Environment and Social Impact Assessment of the Investment Projects and Activities No.8030/MONRE dated 17 December 2013.</p> <p>There are no laws governing these activities, <i>per se</i>. However, these activities will be in-line with updated climate change policy as it is developed. This could be NDC monitoring, the National Adaptation Plan (under formulation) or a potential third national communication</p>	<p>Building Control, the oversight for which is provided by Ministry of Public Works and Transport.</p> <p>Because the project also works in an area with risk from Unexploded Ordnance, UN-Habitat will work with UXO Lao and the National Regulatory Authority for UXO, to ascertain whether there is a risk from UXOs in the target villages. If necessary, UN-Habitat will survey the target areas and clear the risk areas.</p> <p>The project has been submitted to MoNRE for further consideration of the measures required. Under the IEE, investment Projects and Activities that are anticipated to cause insignificant or minimal environmental and social impacts are required to conduct an Initial Environmental Examination (category: Group 1 as per the ESIA). An Environmental and Social Impact assessment is only required for projects that are anticipated to cause significant or major environmental and social Impacts (category: Group 2 as per the ESIA)</p>	<p>No environmental and social principles are expected to be triggered as a result of this action.</p>
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It should also be noted that the proposed system in Sayphouthong Town is of sufficient size that it is required to undergo an Initial Environmental Examination, according to the law, and as described above in Table 11. This examination was conducted in Lao Language (as required by the law and can be made available upon request). In summary, the IEE finds that the project's environmental impacts are insignificant, and meet the Adaptation Fund Environmental and Social Policy category **B: Medium risk.**) Therefore, the investment is deemed eligible for inclusion in the Project. No further environmental assessment is required beyond the detailed review of the ESMP during implementation of the infrastructure works.

The IEE for Sethamouak shows that the implementation of the Sethamouak subproject water treatment plant of capacity 1,200 m<sup>3</sup>/day with surface water source (river Sethamouak) will not cause any adverse permanent impacts on the environment during construction and operation in the short/medium/and long term. The minor impacts that are associated with construction and operation of the subproject's water supply system and sanitation facilities can be mitigated without difficulty through proper engineering design and incorporation or application of recommended mitigation measures and procedures at all stages in accordance with the Environmental Safeguards Management Plan (ESMP). There are no risks for human health expected during the construction and operational phases. The Sethamouak subproject's environmental impacts are insignificant, and meet the AF category B2 – Medium risk classification.

Water supply in Laos is governed by the Water Supply Law, 2009, and the Enterprise Law 2005. The former formalises several existing directives, described below, while the latter enshrines into law the system of Nam Papa State Enterprises that oversee water supply in urban areas, and that operate as autonomous provincial-level state owned companies. In effect, Nam Papas (NPSEs) are water utilities, responsible for water supply in urban areas. However, not all urban areas in Laos, including the two towns targeted by this proposal, have NPSEs yet. Establishing an NPSE is essential in effectively supplying and managing water in accordance with the law.

Among the previous directives formalised by the Water Supply Law 2009 is Prime Minister Decision No.37/PM on Management and Development of Water Supply and Wastewater Sector (1999), that targets providing 24-hour access to safe water for the 80% of urban population by 2020. This directive was complemented by a Sector Investment Plan (SIP), which was updated in 2004 to reflect the Government's increasing emphasis on equitable development by improving the small towns, particularly those in the poorest districts. The SIP 2004 covers the period 2005-2020 and supports the Government's policies of equitable development for all regions of the country, and poverty reduction through economic growth.

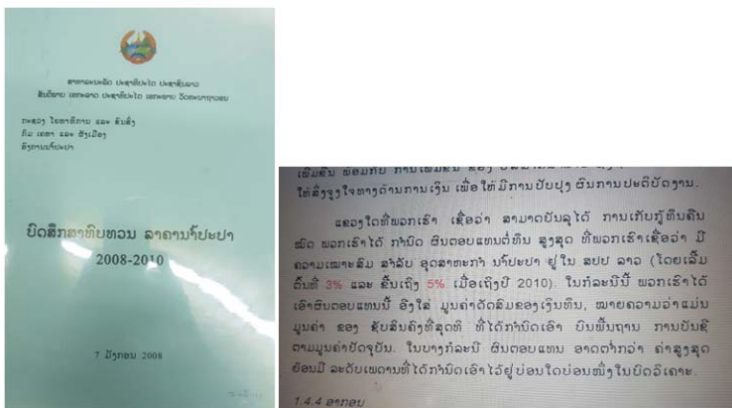
In 2017 the Department of Water Supply was established to set and re-confirm targets and directions for water supply and sanitation as follows; (i) 80% coverage of the urban population with piped water supply by 2020, climbing to 90% by 2030; (ii) promotion of public-private partnerships; (iii) improvement in the management of water supply enterprises so that they can become sustainable businesses with the capacity to sanitation services as well; (iv) effective technical and financial regulation of the water supply sector; and (v) improving the water quality and coverage of the rural population by 2020.

Water tariffs are governed by Ministerial Decision No. 5336/MPWT on Water Supply Tariff Policy, 2004. Under this decision, the Water Supply Regulatory Committee (WSRC) has a mandate to endorse the Tariff Determination Guidelines and Tariff Review prepared by Water Supply Regulatory Office (WASRO) under the Ministry of Public Works. However, any

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recommended tariff must be approved by local government administration. In compliance with Prime Ministerial Decision No 37/PM, water tariffs should be set to generate sufficient revenue to meet the cost recovery for all water supply, but this tariff should be within the constraints of affordability and willingness to pay of consumers. To this end, tariffs should be set at no greater than 3% of average household income. UN-Habitat’s research shows that water supply through Nam Papa (under the above rules) is a much lower cost option for households. When water supply is not available, households often buy bottled water which can be between 5-20 times more expensive than formal water supply (and quality is still not guaranteed). This means that formal, piped water, which be provided by the project, will be a **lower cost** option for the beneficiary families, as well as guaranteeing year-round supply, irrespective of weather conditions and extreme events.

Please note that while the water law says that the water tariff should be set at 3% of average household income, updated guidance from the Department of Housing and Urban Planning, Ministry of Public Works, says that where necessary, to offset maintenance costs and depreciation, tariffs can be set at up to 5 per cent of household income<sup>55</sup> No English language reference is available, but a photograph of the Lao Language document is shown below.



However, the Ministerial Decision also states that no system shall have a tariff less than that required meeting all recurrent costs including operating and maintenance costs. Where necessary, tariffs should be set to generate surplus revenue in order to meet a proportion of depreciation or debt service and block tariffs are an option. In this regard, NPSEs supply water on a full cost recovery basis. A revenue generation model has been developed, which shows that the proposed district NPSEs can make a gross profit by supplying water to the households and charging the pro-poor tariff to households in need. This is presented in Part II, Section J.

**F. Duplication with other funding sources**

The target towns for this project were selected in consultation with stakeholders. Key criteria included a high level of vulnerability and lack of infrastructure and basic services. The target sites don't have any similar activities being carried out by other development partners. UN-Habitat is in regular contact with the relatively small development partner community in Laos

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<sup>55</sup> DHUP Policy Guidance, 2010

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and will continue to liaise with other development partners to ensure that, if other activities are to take place in the target area, information-sharing and coordination can take place.

UN-Habitat will work with national and local government institutions who will provide in-kind contributions to the project. Alignment will be ensured between the project and other ongoing infrastructure developments in the target towns.

In terms of climate change, there are several other current projects in the country focussing on green and resilient cities, either at national level or in areas other than those targeted for this project. Lao PDR has received funding from the Green Climate Fund to strengthen the capacity of the National Designated Authority (MoNRE) and to develop a country programme. Ongoing consultations with MoNRE will ensure alignment of this project with the country programme. In another initiative, an Urban Low Emissions Development Strategy (Urban LEDS) will be developed in Lao PDR. This will deliver emissions reductions and adaptation co-benefits and is a programme of UN-Habitat and ICLEI Local Governments for Sustainability. In Oudomxay Province, the World Bank is supporting urban flood risk management, as well as more reliable hydro-meteorological services across the country. The Global Green Growth Institute (GGGI) is implementing a green city pilot study in Vientiane in collaboration with its Green Growth Planning & Implementation division. The project focuses on solid waste management in Vientiane. UN Environment has proposed a project on Ecosystems and Urban Adaptation in Vientiane and the secondary cities of Savannakhet and Luang Prabang to the Green Climate Fund. UN-Habitat is in communication with MoNRE to ensure harmonisation with all other projects.

**Table 12: Relevant major projects focused on governance and capacity building**

Implementing Agency	Project, Funding Amount and Donor (if known)	Timeline	Additional Information
ADB	Water Supply and Sanitation Sector <sup>56</sup>	2013 - 2022	
	Strengthening resilience to CC in health sector <sup>57</sup>	2015 - 2018	Complete project
World Bank	Mainstreaming disaster and climate risk management in investment decisions <sup>58</sup>	2011 - 2016	Complete project
	Building Resilience to Natural Hazards <sup>59</sup>	2013 - 2016	Complete project
UNDP	Effective Governance for Small Scale Rural Infrastructure and Disaster Preparedness in a Changing Climate, \$5.5m, GEF-LDCF	2013-2017	Complete project, worked in nearby Saravan and Sekong projects
	Building the Capacity of the Lao PDR Government to Advance the National Adaptation Planning Process, \$3.5m, GEF-LDCF	Expected to begin in 2018	Capacity building project – no hard component

<sup>56</sup> Link to project document: <http://www.adb.org/projects/45301-002/main>

<sup>57</sup> Link to project document: <http://www.adb.org/projects/47143-001/main>

<sup>58</sup> Link to project document: <http://www.worldbank.org/projects/P129182/lao-pdr-mainstreaming-disaster-climate-risk-management-investment-decisions?lang=en>

<sup>59</sup> Link to project document: <http://www.worldbank.org/projects/P144268?lang=en>

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UN-Habitat	Water Governance Mekong Region Water and Sanitation Initiative (MEK-WATSAN) Water for Asian Cities (WAC)	2014 – 2017 2009 – 2017  2009 – 2017	Complete projects
UN-Habitat	Climate and Disaster Resilience in emerging human settlements project	2017 - 2021	Ongoing project funded by the Adaptation Fund in Attapeu, Sekong and Saravan Provinces
ICLEI	Urban LEDS II €6m (across 8 countries, of which Laos is 1)	2017-2021	Works in Savannakhet and Pakse cities, but not the target districts
UN-Environment	Building climate resilience of urban systems through Ecosystem-based Adaptation (EbA) in the Asia-Pacific region \$6 million (\$1.5 million in Laos), GEF	2018 – 2022	Working in Oudomxay and Phongsaly Provinces, in the north of Laos
UN-Environment	Urban Ecosystems-based Adaptation, Green Climate Fund	Unknown	This project is thought to be forthcoming. It does not work in the targeted towns of this proposal

### G. Learning and Knowledge Management

The capture of knowledge and dissemination of lessons learned is seen as a key component of the project in order to provide maximum value for the investment of time, funding and labour. This section outlines the proposed approach to disseminating knowledge and the key target groups.

UN-Habitat has built up substantial knowledge based on its long history of working in Laos, and especially on the Enhancing the climate and disaster resilience of the most vulnerable emerging human settlements project, funded by the Adaptation Fund. Based on this experience, UN-Habitat will be able to work with executing partners to build knowledge through adapting existing tools and methodologies, where possible. UN-Habitat's use of the People's Process means of implementation also build communities' knowledge of how to operate and maintain aspects of their infrastructure and develops new skills in terms of construction.

The project will build on the institutional linkages and knowledge management practices of the first Adaptation Fund project in Lao PDR, implemented by UN-Habitat. This will include, for example, utilising and refining the village-level vulnerability assessment infographics<sup>60</sup> developed to easily convey complex information at the town or settlement level and adapting and replicating guidelines produced for quick and effective use. The project will combine with the first Adaptation Fund project in Lao PDR to prepare a broader body of knowledge on climate change adaptation in rapidly growing towns, smaller towns and remote settlements.

At the national level, lessons learned will be made available in the form of tools and guidelines to provide support to other provinces in the building of resilient infrastructure in small and emerging towns. The tools and guidelines will initially be disseminated to relevant stakeholders such as line ministries at provincial and district levels, and ministries at national level, at workshops held as part of the project. The project resources will be available after the close of the project and it is expected that they will be shared at other fora involving relevant stakeholders.

<sup>60</sup> <http://www.lao-canvas.com/UNHInfographics/HTML/index.php>

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There is a national database of water treatment plant designs suitable for towns of varying sizes and with different types of water source. This database was developed to support water utilities in selecting appropriate designs for particular towns, thereby reducing costs by lessening the need to employ external consultants. The project will contribute to the database by depositing the designs for the water treatment plants constructed for the project. This means that any water utility in Lao PDR can access the designs for use in their area.

UN-Habitat will take advantage of opportunities provided to share lessons learned from the project at the international level so that climate change adaptation may be supported in other vulnerable locations. A relevant platform is the Knowledge Centre on Cities and Climate Change which focuses on Climate Change and Human Settlements. This is an effective way of making lessons learned available to all. The UN-Habitat website will also share knowledge and lessons learned. UN-Habitat will use any other opportunity which presents itself to disseminate knowledge from the project, including sharing through networks and presenting at relevant workshops or conferences. In order to make knowledge accessible, the languages of resource materials in Lao PDR will be Lao. At the international level, the language used will be English. When working with indigenous communities, consultations will be held in the local, indigenous language, and in the Lao Language. It should be noted that many indigenous languages in Laos don't have a written tradition, so discussions must be held with these communities, with written documentation in Lao.

Working with indigenous communities whose native language does not have a written tradition and who do not speak the Lao language (or only have a basic grasp of Lao) presents challenges, and specific procedures are required to ensure fairness, due process and equal access and representation with these communities. Almost 50 per cent of the proposed beneficiaries of this project belong to indigenous groups, and we cannot assume that all the beneficiaries can speak, read and write the Lao Language.

The first step in consultation with indigenous people who don't speak Lao is the Village Chief. In Laos, the village is the most local level of administration (even urban areas are organised into villages, as shown above in Tables 6&7), and village chiefs in predominantly indigenous areas are usually fluent in both Lao and the indigenous language. In this case Village Chiefs can translate discussions to indigenous communities and also seek their opinions and inputs. Secondly, as beneficiaries in the proposed project are 'active' rather than 'passive' (in that they will participate in construction and basic maintenance), specific indigenous beneficiaries who are bilingual (in Lao and the ethnic language) will be identified to act as leaders who can both benefit from training and written material in the Lao Language and who can then disseminate this information orally to beneficiaries who speak only the indigenous language. If it is the case that they are unwilling or unable to act as translators, the project will hire translators to work with the communities. More broadly, the project will not depend solely on written communication with communities so as to not exclude indigenous groups who don't speak the Lao language and women, whose literacy rates are substantially lower than men.

It is important that the project works directly with the indigenous beneficiaries, in parallel with the village chiefs. While the Village Chiefs are the formal mechanism to represent all community members, there is a small risk that power structures may exist in the village that prevent people from airing grievances through the village chief. Therefore, identifying indigenous beneficiaries who will work directly with the project provides a complementary mechanism to ensure that the benefits of the project reach those at risk of marginalisation and that the risk of exclusion is greatly reduced. This approach will be used throughout the project, ensuring that the voices of

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indigenous people and other potentially marginalised groups are heard at every stage of the project's implementation.

UN-Habitat has experience of a similar process in the ongoing Enhancing the climate and disaster resilience of the most vulnerable rural and emerging urban human settlements in Lao PDR project, also funded by the Adaptation Fund. In that project, there are 20 ethnic groups, most of which have their own language. In some areas of that project, literacy rates in the Lao language are as low as 50 per cent. That project is more logistically complex than this proposed project, because it covers 189 villages over a much larger and more remote area. That project used a more basic version of the consultation model described above; questions were posed to village chiefs and then a bi-lingual discussion was conducted where village chiefs translated questions into the indigenous language and feedback was sought in whichever language the villagers chose to speak in. This process led to the generation of 189 village level vulnerability assessments, which can be viewed in their provisional form, in English, [here](#).

In the proposed project, this approach will be augmented by working directly with the villagers. By having this parallel structure (working with village chiefs and directly with villagers), the project both respects the formal governance system in Lao PDR (where the village chief represents the people), while mitigating any risks that the Village Chief may exclude indigenous or marginalised people, or people with opposing views.

Expected Outputs	Learning Objectives (LO) and Indicators (I)	Knowledge Products
1.1.1 Training provided to district, provincial and national government staff on resilient infrastructure design. Female government staff must be represented	LO - 40 government staff (including 15 women) have the requisite knowledge to design climate resilient infrastructure  I – 40 government (including 15 women) staff have been trained	1 training manual/toolkit based on UN-Habitat's previous experience in Lao, refinement and enhancement of existing guidelines from the government of Lao PDR on designing climate resilient infrastructure
1.2.1 Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented	LO – 60 government staff, at least 20 of whom female, can develop urban plans that mainstream climate change considerations and other critical considerations such as the adaptation needs of women and indigenous people  I – 60 staff (including 20 women) have been trained	1 training manual/toolkit based on UN-Habitat's previous experience in Lao, refinement and enhancement of existing guidelines from the government of Lao PDR and on how to identify specific local adaptation needs, as well as the needs of women, indigenous people and any other potentially marginalised groups
1.3.1 Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the	LO – Government staff have finalised two master plans and have the required knowledge to undertake further planning processes in other areas	Concepts notes/'plans to plan' developed, outlining future masterplanning processes.

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<p>infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the project area. The master plans will include specific provisions for the development and climate change resilience of women.</p>	<p>I – Number of concepts/proposals prepared by government staff for replication elsewhere</p>	
<p>2.1.1 New resilient infrastructure constructed in response to climate change impacts, including variability</p>	<p>LO – Local engineers have greater capacity to plan and construct climate resilient infrastructure</p> <p>LO – Communities, including women and indigenous people, have increase knowledge and awareness on the management, monitoring and maintenance of climate resilient infrastructure</p> <p>I – Number of engineers with increased knowledge and capacity.</p> <p>I – Number of community members, disaggregated by sex, with increased capacity to monitor and perform basic maintenance.</p>	<p>Technical guides and brochures detailing design.</p> <p>Updates to the MPWT database of technical designs of water treatment facilities</p> <p>Information produced for communities, including material to support oral communication, on the operation, management and maintenance of infrastructure.</p>
<p>3.1.1 Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.</p>	<p>LO – National and local government stakeholders and communities have greater knowledge of climate change and successful adaptation practices</p> <p>I – Number of materials produced</p> <p>I – Estimated number of local community members reached, disaggregated by sex and indigenous group</p>	<p>Knowledge products on climate change adaptation, including brochures, news paper articles, features in broadcast media and ‘stories’ or other materials for use with indigenous and illiterate people</p>
<p>3.2.1 Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting</p>	<p>LO – National government stakeholders involved in formulation and revision of national climate policies receive</p>	<p>Briefings and technical papers designed for national policy makers</p>

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<p>– influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure, including the provision of infrastructure in a way that benefits women</p>	<p>key messages from the project and have a greater understanding of the complex issues surrounding urban adaptation, as well as adaptation priorities in the project such as women and indigenous people.</p> <p>I – Number of specific materials produced</p> <p>I – Future iterations of climate policy, including revision and update of the NDC</p>	
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**H. The Consultative Process**

The consultations undertaken in the formulation of the concept note and full proposal for this project were built on the experience and relationships that UN-Habitat has built over 12 years implementing community-based interventions in Lao PDR. The interventions have focused on a range of issues including climate change, disaster response, renewable energy, land management and the decentralisation of basic services. UN-Habitat has also been involved in a supportive role with integrative urban planning and institution building for local authorities.

Through its ongoing work, UN-Habitat has developed effective working relationships with several ministries, including Public Works and Transport; Health, Planning and Investment, and Agriculture and Forestry; and Natural Resources and Environment, as well as with their respective departments in the provinces and districts in which UN-Habitat has implemented projects. UN-Habitat has built an extensive institutional knowledge of ongoing developments in basic services provision, climate change, disaster risk reduction and urban issue, and this institutional knowledge has informed this project. Similarly, informal conversations over an extended time period have contributed to the project plan.

In addition to government authorities, UN-Habitat has also worked closely with other multilateral and development partners, including sister UN organisations and non-governmental organisations. There have been several partnerships focusing on climate change issues and improving the resilience of communities through design and structural improvements to water and sanitation infrastructure, schools, health facilities and houses.

The specific consultations that took place in the formulation of the concept note and full proposal for this project were as follows:

- **7<sup>th</sup> to 10<sup>th</sup> of September 2017**, meetings at the national level with ministry officials focused primarily on alignment with national priorities, coordination with other development partner to avoid duplication initiatives, the implementation modality and the target provinces, districts and communes;
- **9<sup>th</sup> to 14<sup>th</sup> of December 2017**, the mission visited all eight potential towns and met with the local authority in each town to carry out a rapid vulnerability assessment to determine the two priority towns;
- **15<sup>th</sup> to 19<sup>th</sup> of July 2018**, further in consultation with the local authority, and stakeholders in both proposed towns (Sayphouthong and Sethamuak) to develop



**Feasibility Studies** (presented in [Annexes 3 & 4](#)) and the environmental and social safeguards screening and management plan and met with the following people/organisations in each town:

- District Governor or Deputy District Governor in both districts
- District chief cabinet in both districts
- District Public Works and Transport office in both districts
- District Natural Resource and Environment office in both districts
- District Planning and Investment office in both districts
- District Public Health office in both districts
- District Education office in both districts
- Village chiefs
- Lao Women's Union at the Provincial level
- Lao Youth Union at the Provincial level
- Community members from throughout the target area
- **24<sup>th</sup> to 26<sup>th</sup> of November 2018**, further in-depth discussions with the local authority, and stakeholders in both towns to develop the full proposal through a robust stakeholder engagement process.

An overview of the consultations conducted is shown in Table 13.

Initial consultations with MoNRE confirmed the scope of the proposed project. In particular, discussion centred on national priorities, and the need for harmonisation by complementing rather than duplicating other initiatives. To this end, the two target locations were selected. Discussion also covered vulnerabilities in the target districts and the relevance of lessons being learned in UN-Habitat's current project on enhancing climate resilience.

Discussions with MPWT focussed on implementation arrangements. Agreements were reached with the Department of Water Supply, since water supply is a key priority to the government in climate and disaster resilience. The importance of integrating climate change adaptation into district action plans was discussed and a consensus was reached on including this in the project. It was decided to use government processes for coordinating with the state-owned enterprise water utilities, including funding local initiatives.

At the local level, consultations were held with government officials from relevant departments. Target sites were further clarified, and discussions were held on the hazards and resulting vulnerability in the target areas. Discussion with community members sought to ascertain community concerns and priorities. It was felt that a greater input is required from the community and this will be a priority during the Component 1 implementation of the project.

However, it should be noted that the all consultations, and especially those around generating the information in the rapid vulnerability assessments of the two towns (presented in [Annex 1](#)) placed emphasis on understanding the needs of marginalised and potentially vulnerable groups, such as women and indigenous people, and to design infrastructure that, from the outset, could be designed and eventually constructed with as few environmental and social risks as possible. The findings of the consultations will be re-visited as further consultations are undertaken in the development of the full proposal, especially regarding minimising environmental and social risks.

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**Table 13: Stakeholder consultations**

Stakeholder, including roles & functions	Consultation objective	Outcome	Remark
Ministry of Natural Resources and Environment (MoNRE)  Department of Disaster Management and Climate Change	<ul style="list-style-type: none"> <li>Re-confirm focal point willingness</li> <li>Establish preferred target areas</li> <li>Ensure coordination with other, ongoing adaptation activities and policy alignment</li> </ul>	<ul style="list-style-type: none"> <li>MoNRE has agreed to support the project formulation</li> <li>The target areas named in the proposal were agreed</li> <li>Information was exchanged on existing and planned initiatives in the target area</li> </ul>	MoNRE as the designated authority will approve the project
Ministry of Public Works and Transport (MPWT)  Department of Water Supply (DWS)  Nam Papa State-owned Enterprise (NPSEs)	<ul style="list-style-type: none"> <li>Establish DWS interest in being an executing entity</li> <li>Agree in principle the modality for channelling funds to the local level</li> <li>Gain understanding on integrating climate change adaptation into commune and district level plans</li> <li>Understanding existing technical standard, rules, and regulations</li> </ul>	<ul style="list-style-type: none"> <li>DWS agrees to be an executing entity</li> <li>Funding for local investments would be channelled through the NPSEs mechanism</li> <li>The project contains provisions to mainstream climate change into district action plan</li> <li>The project follows DWS's Technical Guidelines</li> </ul>	DWS will also provide written agreement to be an executing entity
Local districts officials in 8 small towns in Bolikhamsay/Khammouane/Savan nakhet/ Champassack Provinces	<ul style="list-style-type: none"> <li>Agree on target sites, including narrowing the focus down from 8 towns to the 2 selected towns presented in this proposal.</li> <li>Understand climate change vulnerability and highlight possible adaptation investments</li> </ul>	<ul style="list-style-type: none"> <li>Target sites agreed</li> <li>A clear picture of vulnerability and proposed actions established</li> <li>Particularly vulnerable groups and specific local vulnerabilities discussed.</li> </ul>	Rapid vulnerability assessment (RVA) conducted with the proposal of the intervention of the project (see in <a href="#">Annex 1</a> )
Communities consultations	<ul style="list-style-type: none"> <li>Understand the local climate change impacts/ effects per community and (the lack of) community coping mechanisms/barriers to building resilience</li> <li>Understand specific resilience building needs and interest as well as concerns</li> </ul>	<ul style="list-style-type: none"> <li>Greater understanding of community perspectives regarding water shortages</li> </ul>	Rapid vulnerability assessment (RVA) conducted with the proposal of the intervention of the project (see in <a href="#">Annex 1</a> )

[Annex 1](#) contains the rapid vulnerability assessments which were produced as a result of the formulation mission. In each target town, the following data was collected:

- ❖ Contextual data
  - Current and projected populations
  - Number of households

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- Poverty rates
  - Sources of income
  - Ethnicity distribution
  - Medical facilities
  - Educational institutions
  - Water sources
  - Sanitation coverage
  - Water and vector-borne diseases
- ❖ Climate change and disaster risks
- Temperature change
  - Rainfall change
  - Floods
  - Storms
  - Droughts
  - Landslides
- ❖ Environmental risks
- Deforestation
  - Hydropower activity
  - Mining
  - UXOs

On the basis of the data, stakeholders then prioritised the town's needs and interventions were proposed to meet the needs. These interventions were later costed for budgeting purposes.

The rapid vulnerability assessments confirm and support the secondary information presented in Part I of this proposal. In Sethamouak Town (Phine District), the vulnerability assessment confirms a high level of vulnerability. Floods affected the town in 2005, 2009, 2011, 2012 and 2017, while droughts occurred in each of 2013, 2014, and 2015. It was hit by Tropical Storms Hima, Ketsana, Nokten and Doksuru in 2005, 2009, 2013 and 2017, respectively.

Adding to this high exposure, people primarily on self-dug wells or the river for their water source (depending on their exact location), while only 43% of households have a latrine. Water and vector borne diseases were highlighted by stakeholders as being problematic. Agriculture, livestock and casual labour provide the main sources of income.

Consistent, year-round climate resilient water supply was the most commonly requested action, according to the vulnerability assessment. This is because there are no water treatment facilities in the Sethamouak Township. Wealthier households buy bottled water at US\$15/m<sup>3</sup> about 100 times higher than the average tariff for formalized system. Secondary requests from people included improved sanitation and access to healthcare facilities. The activities designed however, to be implemented in Sethamouak Town will also improve the sanitation outcomes of the population.

In Sayphouthong District, where 100% of the 48,188 inhabitants live in the urban area, exposure to hazards is very high. Residents report annual flooding, and more than one flood per year in many cases. Meanwhile, drought occurs approximately once every three years. Moreover, residents perceived that rainfall has significantly decreased in recent years, which, in line with projections for Laos that suggest a longer, drier dry season, will heighten the risk of severe droughts occurring more frequently in the future. In both districts, the feasibility study indicated

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that women are likely to experience a greater benefit, as they will have to spend less time and energy to source water, and the burden of care would be reduced because of fewer incidences to water-borne disease.

Sensitivity is also high. There is no water treatment, or formalised water supply system in Sayphouthong. Wealthier households also buy bottled water at US\$15/m<sup>3</sup>. The rest of the population relies on various means of sourcing water from the river, or from self-dug wells, in areas further away. Meanwhile, according to the rapid vulnerability assessment, about 65 per cent of households use some form of 'improved sanitation'.

Health and education outcomes are poor, though not as critical as in Sethamouak Town. Dengue Fever and water borne diseases remain common, especially in the rainy season, while participation in the formal education system is still low, with 17.6% of children attending high school. Poverty is high, at 27 per cent.

As in Sethamouak, the stakeholders consulted prioritised a regular, year-round supply of clean water that is resilient to climate hazards and future changes in climate as the first level priority. As second level priorities, the stakeholders proposed 700-800 metres of riverbank protection and improved, year-round sanitation.

### **I. Justification for funding requested**

The proposed project contributes significantly to meeting the needs for building resilience in very vulnerable communities in Lao PDR, as prioritised in the national and provincial development and climate change policies, strategies and plans. The project aligns with six of the Adaptation Fund's outcomes as stated in the Adaptation Fund results framework. The project's hard component will result in 57,144 people, 53.5% of whom are women being provided with physical infrastructure that is resilient to floods, storms, droughts and their knock-on effects, such as disease outbreaks. The infrastructure will be designed to accommodate rapid future population growth, which the towns are likely to continue experiencing, so that the number of beneficiaries will increase in the coming years. The soft components complement the hard component through building the capacity of at least 100 government officials, of whom 35 will be women, from the district, provincial and national level, as well as raising the awareness of thousands, and ensuring the continued functionality of the infrastructure in the future.

It is significant that the target towns are evolving into urban landscapes. This presents new challenges to many of the local officials who do not have a knowledge of urbanisation issues. Different ministries have responsibility for land management depending on the classification of the land. As urban areas grow, the need for capacity in land use planning in urban areas is crucial. It is also critical that action is taken now to climate-proof infrastructure. The alternative is that, through lack of knowledge and resources, unplanned infrastructural development will occur which will not be resilient to climate related hazards.

The project is designed to instil ownership in the beneficiary communities so that they play an active role in ensuring the sustainability of the infrastructure and the planning processes which the project will set up. The table below provides a justification for funding requested, focusing on the full cost of adaptation reasoning, by showing the impact of AF funding compared to no funding (baseline) related to expected project outcomes.

**Table 14: Impact of Adaptation Fund funding compared to no funding**

Activity	Vulnerability Baseline	Adaptation Benefit Resulting from the Project	Alternative Scenario
<p>Developing two town level master plans integrating climate resilience building into land-use, water management and infrastructure.</p>	<p>There are currently no coherent master plans and no plans that mainstream climate change. The lack of planning for climate change increases the long-run vulnerability of people living in the two target towns.</p>	<p>National and sub-national government has the capacity and master plans are in place that will guide infrastructure planning and investment in a way that makes it and people who benefit from it more resilient to climate change. Plans will also support the towns to cope with the rapid population increases they are expected to see in the coming years. This will also reduce vulnerability as rapid population growth without supporting infrastructure will make a greater number of people more vulnerable. Plans will consider the unique and specific needs of women and indigenous people.</p>	<p>National and local government develops plans, but they do not consider climate change and they do not take into account expected rapid changes in population. The vulnerability 'gap' between men and women could widen</p>
<p>Training at the Provincial and district level on building climate resilience by conducting and utilising Vulnerability Assessments and action plans, using tailored guidelines</p>	<p>National and sub-national governments and other organisations in Laos have very limited capacity to assess future vulnerability to climate change or make decisions based on climate change information</p>	<p>By having the necessary skills to gather and analyse climate data and related socio-economic and infrastructure information, national and sub-national government officials are better able to plan infrastructure and services that are resilient to climate</p>	<p>Local officials continue to plan in a way that does not consider climate change, future population growth, women or indigenous people.</p>

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		change in a way that is inclusive of the specific needs of women and indigenous people.	
Planning, construction and maintenance of resilient water treatment plants and piped water supply systems	<p>People do not have access to year-round, clean water supply. In the dry season, people suffer from water shortages of water, while in the rainy season water is often turbid or unfit for drinking with other contaminants. In some cases women have to walk great distances to get water. Climate change is enhancing the risks in the future as the dry season is projected to become longer and dryer, while the rainy season is projected to become shorter and more severe.</p> <p>Some of the poorest and most vulnerable people in Lao PDR will continue to suffer (health issues/mortality; costs caused by health issues and loss of assets) due to climate change impacts, also negatively affecting national development goals.</p>	57,144 people, of whom 53.5% are women have year-round clean water supply with continued functionality irrespective of extreme events, future climate change and continued population growth.	Water supply facilities are eventually constructed that do not consider climate change or future population growth. These facilities then do not function properly, or not provide service to the entire population through times of drought, floods and storms, and their sustainability is not guaranteed.
Water source management Integrating with water conservation demand management (WCDM)	People in the two target towns have limited capacity to manage water, resulting in water shortages during the dry season. As mentioned above,	People have greater adaptive capacity to cope with lower levels of water availability which could occur in the future if, as projected, Laos's dry season becomes	Water facilities are constructed but people are not made aware of how to manage water, and pressure on water sources grows as the dry season becomes

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	women have to walk great distances during the dry season to get water.	longer and dryer. Women particularly benefit by not having to walk to collect water	dryer.
Establishing Nam Papa State Enterprises in Sayphothong and Sethamouak Towns to operate and maintain the infrastructure and providing training on the basic maintenance, in accordance with the Environmental, Social and Gender Management Plan	There are currently no water management structures in place and no means to ensure that women, indigenous people or any potentially marginalised groups have equitable access to water	The project will ensure equity for all in continued supply of clean water	Water facilities are constructed but are not accompanied by management systems that consider the needs of women, indigenous people or other potentially marginalised groups, potentially leading to inequity in access to water

**J. Sustainability of the project**

The project has been designed to be embedded into the fabric of governance and operations in the towns in which it is implemented. Sustainability is seen as a crucial factor and, as such, is built into the project design in terms of technical, financial, institutional, social and environmental sustainability.

**Institutional sustainability**

The philosophy throughout all phases of the project will be one of partnership with government mandated agencies, from the national to the community level. This will involve capacity building with the aim of increasing the relevant entities' capacity to independently operate and sustain services. Capacity includes planning, management, financial literacy and customer service as well as technical knowledge. A key organisation will be the Lao Women's Union, whose goals align with those of the project and who are expected to play a key role in mobilising women to participate in the project. The aim of the capacity building is not to just implement this project but to provide the skills so that agencies can continue to plan for climate change and build resilience in their communities. The project design also enables for scaling up and replication in other vulnerable provinces.

**Social sustainability**

The People's Process methodology has been shown to bring together different groups at the local level, building trust and relationships between government authorities, water utilities, women's and youth organisations and community members. As a community, ownership in the project is engendered and this unity of purpose plays a large role in social sustainability. The inclusive nature of the project, whereby all groups, including marginalised groups such as some ethnic minority groups, participate, contributes further to social sustainability.

**Environmental sustainability**

The development of plans and maps will provide local governments with data and direction on how to go about planning resilience building measures that will protect the environment. Training in land-use planning will also play a key part in ensuring that there is not further

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degradation of local environments. The project's safeguarding procedures will emphasise the protection of water resources and other natural assets.

**Financial sustainability**

Financial sustainability is most relevant to the ongoing operation of the hard component of the project. In particular, the operation of water supply systems will incur the greatest expense. In terms of finance, the sustainability of the water utilities will be considered as well as affordability of the services provided for beneficiaries. Experience has shown that beneficiaries are able to afford to pay for services when a well-designed, pro-poor tariff system is in place. The financial benefits of having access to safe, piped water contribute to a household's ability to pay. The design of an appropriate tariff will be carried out as part of the project, with community participation.

In UN-Habitat's experience, pro-poor tariffs can be levied as low as 2,500 Lao Kip (about US\$0.30) per cubic metre. This means that poor households are not excluded from service as 'willingness to pay' data will be generated, ensuring that a balance is found between setting a tariff that is affordable to all households, and full cost-recovery of the infrastructure. Initial willingness to pay data has been generated in the preparation of this project proposal and can be found in Annex 3 and 4. This indicates that many families could feasibly pay up to 20,000 kip per month (about US\$2.40).

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Overall, both the water infrastructure and the water supply will be managed by Nam Papa State Enterprise (NPSE). There is currently an NPSE in Savannakhet Province, but not in either Sayphouthong District or Phine District (including in Sethamouak Town). As such, new branches of NPSE will be established by the project to manage the infrastructure, water supply, and to oversee tariffs.

UN-Habitat and NPSE Savannakhet have jointly developed a revenue forecast model to demonstrate the financial sustainability of the proposed project. This model is based on the demand forecasts (using projected 2020 population figures) as presented in Annex 3 (for Sayphouthong) and Annex 4 (for Sethamouak). It then assumes an average cubic metre fee of 3,000kip (which allows for a mix of the pro-poor, regular and commercial tariff, but with a greater number of pro-poor tariffs. It bases the expense estimates on three other district level Nam Papas, all in Savannakhet Province (Phine District (for the 7 villages with water supply outside Sethamouak), Atsaphangthong District and Vilabouli District. The revenue model also factors in depreciation, but does not inflate the tariff in the future (i.e. assumes that the tariff remains the same. Under this revenue model (presented below) both proposed systems (and the Nam Papas that would operate them) would make a small, pre-tax gross profit that would generate funds to reinvest. The calculation takes into consideration all costs, including, but not limited to, depreciation, maintenance, external contractors and staffing costs.

<b>Cost/Revenue Item</b>	<b>Sayphouthong</b>	<b>Sethamouak</b>
Staff salaries	180,000,000	100,000,000
Service costs	60,000,000	40,000,000
Electricity	60,000,000	30,000,000
Running repairs	5,000,000	3,000,000
Other operational costs	680,000,000	297,500,000
Transportation, water testing and other regular procurement costs	14,500,000	6,750,000



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<u>Allowances for staff (such as pensions, healthcare and allowances for dependent family members)</u>	<u>12,000,000</u>	<u>6,600,000</u>
<u>Major repairs and depreciation</u>	<u>853,000,000</u>	<u>274,000,000</u>
<b><u>Total Expenses</u></b>	<b><u>1,864,500,000</u></b>	<b><u>757,850,000</u></b>
Daily water demand (CM <sup>3</sup> )	2,120	716
Average fee per CM <sup>3</sup>	3,000	3,000
Annual revenue	2,321,400,000	784,020,000
Other ancillary revenue	15,000,000	5,500,000
<b><u>Gross Profit (Revenue – total expenses)</u></b>	<b><u>471,900,000</u></b>	<b><u>26,170,000</u></b>

All figures in the above table are shown in Lao Kip. Approximately, US\$1 = 8,500 Lao Kip, meaning Sayphouthong would show an annual gross profit of about US\$55,500 and Sethamuak US\$3,078, based on these estimates.

**Technical sustainability**

The project will utilise UN-Habitat’s technical know-how in designing climate-resilient infrastructure for Lao conditions to ensure that infrastructure withstands floods, storms, landslides and droughts. Capacity building will take place in local communities and government institutions to provide them with the knowledge and skills for planning, construction and maintenance, thereby ensuring technical sustainability. The rapid growth of the project towns has been considered and infrastructure will be designed accordingly to serve increasing numbers of people. Water user groups will be established to deal with maintenance and call the water utility if there is an operational issue. The water user groups will comprise at least 40% women to ensure that women have a voice.

**K. Environmental and social impacts and risks**

The proposed project seeks full alignment with the Adaptation Fund’s Environmental and Social Policy (ESP) and has been screened according to UN-Habitat’s Environmental and Social Policy. This section briefly describes the initial analysis of environmental and social impacts of the project based on the Environmental, Social and Gender Plan.

Components 1 and 3 of the project, around capacity building and planning, and knowledge management, respectively, consist of soft activities, and have therefore been classified as Category C’ activities which will not cause direct, indirect, transboundary or cumulative impacts to environment or society, as defined by the Adaptation Fund Environmental and Social Policy.

The activities under Component 2 of the project are hard activities which, without adequate safeguarding, have the potential to impact negatively on the environment or on society. The construction of water treatment and supply systems in both towns, both carry some risks. Although these systems are each to serve a town, they are nevertheless not likely to cause “significant adverse environmental or social impacts that are for example diverse, widespread, and irreversible<sup>61</sup>”. In addition, the water supply systems will be managed by local people, insofar as possible, by forming resilient WATSAN groups at the community level who report quality issues, maintenance problems and can even conduct very basic repairs. Communities

<sup>61</sup> AF ESP Policy, p.3, this defines projects which should be categorised as Category A.

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are therefore incentivised to take greater interest in protecting their local environment and society. The capacity building will highlight environmental and social safeguards. In our assessment therefore, the project is extremely unlikely to cause transboundary or cumulative impacts. The potential for direct impact is small and localised. Due to the reasons outlined above regarding Component 2, the project should be considered a Category B project for environmental and safeguards purposes.

The checklist shown below has been prepared based on preliminary consultations. In accordance with the Adaptation Fund Environmental and Social Policy, and UN-Habitat's Environmental and Social Standards, an environmental and social management plan will be prepared as part of the full proposal. Table 16 identifies risks and potential mitigation measures associated with AF Social and Environmental Principles.

**Table 15: Checklist of environmental and social principles**

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	X	
Access and Equity		X
Marginalized and Vulnerable Groups		X
Human Rights	X	
Gender Equality and Women's Empowerment		X
Core Labour Rights		X
Indigenous Peoples		X
Involuntary Resettlement	X	
Protection of Natural Habitats		X
Conservation of Biological Diversity	X	
Climate Change		X
Pollution Prevention and Resource Efficiency		X
Public Health		X
Physical and Cultural Heritage	X	
Lands and Soil Conservation	X	

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**Table 16: ESP risks and possible mitigation measures**

Adaptation Fund Environmental and Social Principle	Possible Risks AND Significance	(Further) assessment procedure and preventive and mitigation measures
Compliance with the Law	The project has assessed that there is no realistic risk under any of the project's proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section E of this proposal.	The main water supply facilities such as the <del>check dam, intake, water treatment plant, and reservoir</del> will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way.

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		<p>Engagement with Department of Land Management under the Provincial Department of Natural Resources and the Environment, Urban Planning and Construction under PWT at the provincial level</p> <p>Integrating legal compliance into all training and awareness. Continued monitoring throughout the project</p>
Access and Equity	<p>That certain groups are denied access to infrastructure, or that preferential access is given to others.</p> <p>This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people (see below)</p>	<p>Community management with rules ensuring that equal access is guaranteed. These rules will make clear the equitable access for women and indigenous people to water connections. Further discussion of indigenous people is below, in Marginalised and Vulnerable Groups. <a href="#">The project will seek to prioritise connections to female headed households first, in accordance with the Gender Action Plan in Annex 2</a></p>
Marginalised and Vulnerable Groups	<p>According to the feasibility study and IEE in the preparation of the proposal, 62 per cent of the residents of Sethamouak Town and 49 per cent of Sayphouthong District are indigenous people. In each case, they come from the Phoutong, Katang and Mangkone ethnic groups (all of which have languages from the Thai-Kadai ethnolinguistic family. In total, 27,649 (49.8 per cent) of the beneficiaries are indigenous people.</p> <p>In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 30,567 will be women, meaning that 53.5% of the project's beneficiaries are women.</p> <p>Approximately 30% of households are considered poor throughout the project area. Given the presence of marginalised and vulnerable groups, there is medium risk under the proposed activities under component 2 to them as a result of the project, however, they are the intended beneficiaries.</p> <p><a href="#">The illiteracy rate is high, especially in Sethamouak Town. Without mitigation measures there is a risk that people who are illiterate may be marginalised or disenfranchised if written information is the primary mode of communication between the project and beneficiary communities. Illiteracy is thought to be a more significant problem for women.</a></p> <p><a href="#">Without mitigation measures each of the above could marginalise people</a></p>	<p>Community management with rules ensuring that equal access is guaranteed, including for women and indigenous people. This means that all consultations and meetings should be made accessible in indigenous languages, where people cannot, or do not wish to communicate in the Lao Language. This includes providing all information orally to people, as literacy rates are low throughout the project area. The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor households have continued access to water supply, despite their low incomes.</p> <p>See <a href="#">Section G</a>, Learning and Knowledge Management for more information on how the project proposes to engage with indigenous people – especially those who do not speak the Lao Language (as a significant minority is unlikely to be literate in Lao).</p>
Human Rights	<p>Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example. However, the risk of this is very low, under</p>	<p>There are no anticipated human rights issues. The project seeks to enhance people's access to water supplies, year round. All investments are on public land.</p>

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	the proposed activities under component 2, as the project (and its supporting structures) are being created to provide continuity of clean water supply to people. <u>All construction works are taking pace on public land, and water supplies will be provided to all people in the target towns.</u>	See respective sections below for issues relating to gender equality and labour rights.
Gender Equality and Women's Empowerment	Women could be denied access to infrastructure or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2.  <u>Further assessment of the risks to women arising from the project, as well as underlying vulnerabilities existing in the target area, are analysed further in Annex 2.</u>	The project has set quotas for female participation and benefit in Components 1 and 2. Engagement will take place throughout the project with the Lao Women's Union and the Women's representative which exists in every village.
Core Labour Rights	The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.	All community contracts must be scrutinised to ensure they comply with both national law and international standards.  Where community members provide their labour to the project, they will be paid above minimum wage, the right to organise, and access to all required safety and protective equipment. Women will be provided with access to separate bathrooms and sanitation facilities.
Involuntary Resettlement	<u>Eviction arising from conflicts over land ownership is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project. There is currently no one living on or immediately adjacent to any of the project's construction sites, and the sites are not being used for livelihood activities like agriculture or informal markets. This includes the check dam structure and surrounding embankment on the Sethamouak River, as well as the structures in Sayphouthong</u>	See above for compliance with the law. All investments take place on state owned land. There are no people living, formally or informally, on the land being used for the proposed investments.
Indigenous People	See 'Marginalised and Vulnerable Groups, above'	See 'Marginalised and Vulnerable Groups, above'
Protection of Natural Habitats	<u>There is a low risk of damage to local ecosystems, including forests and rivers from infrastructure construction under Component 2.</u>	Incorporating protection of habitats and ecosystems into action planning. Designing infrastructure so that it complements nature

**Deleted:** Possible eviction arising from conflicts over land ownership. However, this is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project.

**Deleted:** Damage to local ecosystems, including forests, and rivers from infrastructure construction. This risk is low significance, under the proposed activities under component 2, but not impossible, considering that water the be supplied will be sourced from the river in both towns.

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	<p><u>There is no risk to the river ecology or downstream livelihoods for the investment at Sayphouthong because of the very small amount of water being extracted from the river at that point. At Sayphouthong the Mekong river never goes below 6.5m deep in the dry season (and can be over 13m in the rainy season) and is about 1.16km wide at that point, from bank to bank. Minimum river flow around Sayphouthong is about 2,000m<sup>3</sup> per second in the dry season (and as much as 7 times this in the rainy season), meaning the maximum daily usage of river water for the system is equal to less than 2 seconds of river flow – a miniscule amount that will not have effects on the downstream hydrology or ecology of the river.</u></p> <p><u>On the Sethamouak River, the embankment is about 65 metres in total, while the check dam structure is about 42 metres across the river. Without specific design provisions this could cause risk to downstream water flow, affecting downstream livelihoods and water access, fish and causing upstream flooding.</u></p>	<p><u>Specific design provisions have been made in both cases to minimise the risks. In the case of Sethamouak, the dam is only 1.5m high, meaning that in the rainy and early part of the dry season (up to 9 months in total), the water will flow over the dam, while the strengthened embankment will prevent any flooding and/or erosion in the area around the dam. The dam has been designed with a 1.5m wide weir so that water still flows unimpeded. The IEE finds that this will not affect the availability of water downstream or the ability of fish to swim up and down the river, as the water can pass through the weir for 16-18 hours per day in the dry season. Further information on the design of the weir is provided in Annex 4</u></p>
<p>Conservation of Biological Diversity</p>	<p>See Protection of Natural Habitats</p>	<p>See Protection of Natural Habitats</p>
<p><u>Climate Change</u></p>	<p><u>The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal.</u></p> <p><u>The construction activities are not anticipated to generate large scale emissions. Where possible, materials will be sourced locally (and where this is not possible, nationally) to avoid emissions arising from unnecessary transportation. The operation of the equipment does not involve fossil fuel burning or any other activity that generates emissions.</u></p> <p><u>Long-term changes in the climate, as discussed on Part I and Annex 1 of this proposal, pose a risk – particularly if the dry season continues to become longer and dryer and temperatures increase further. In Sayphouthong, future declines in rain or an increasingly prolonged dry seasons will not diminish the water level in the Mekong to such a level that the infrastructure doesn't function. The structure requires surface water and the Mekong – Asia's 4<sup>th</sup> largest river by water volume – doesn't dry out at Sayphouthong.</u></p>	<p><u>Climate Change policies and guidelines to be explained to understood by project personnel prior to implementation and monitored by implementing partners.</u></p> <p><u>The infrastructure at Sethamouak is designed to continue functioning at 30cm river depth. This is less than half the estimated known lowest point of the river during the dry season, meaning the infrastructure can continue functioning, even if the trend of a prolonged dry season continues – unlike ground water systems that are already becoming inviable in the area.</u></p>

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	<p><u>In Sethamouak the estimated lowest point of the river is between 60-90cm, so there is a risk from further decreases in the river flow. However, this structure also requires surface water</u></p> <p><u>See Pollution prevention and resource efficiency for provisions regarding waste</u></p>	
Pollution Prevention and Resource Efficiency	Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance	Incorporating waste management and disposal into design and operating procedures for the construction
Public Health	<p>Water infrastructure could be open to contamination, spreading water-borne diseases. <u>River water may not be clean because of upstream pollutants, beyond the control of project staff of NPSE Savannakhet</u></p> <p><u>Neither the infrastructure at Sayphouthong or Sethamouak will create open pools of water or generate any stagnant water. As such, there is no discernable risk of increased vector-borne disease.</u></p>	<p>Incorporating public health considerations (Especially relating to water contamination) into training under Component 2.</p> <p><u>Please see the technical designs for Sayphouthong (Annex 3) and Sethamouak (Annex 4) for further information on how the designs incorporate and minimise risks to public health from unclean water and upstream pollutants.</u></p>
<u>Physical and Cultural Heritage</u>	<p><u>No risks to physical and cultural heritage were identified. The proposed infrastructure is on public land, which is not currently used for residential, livelihood or cultural activities. The amount of water being extracted from the river is so small that there will be no downstream impacts that could affect sites of cultural interest, and the consultations did not reveal any sites of intangible cultural heritage.</u></p>	<p><u>The proposed infrastructure will include a public space on the reinforced embankment that people can use for recreation</u></p>
Lands and Soil Conservation	See Protection of Natural Habitats	See Protection of Natural Habitats. While the construction will disturb the soil in the location

## PART III: Implementation Arrangements

### A. Arrangements for project management

The following mechanisms for project execution, coordination and oversight have been agreed in close consultation with the Ministry of Natural Resources and the Environment (MoNRE), as the national designated authority to the Adaptation Fund, the Ministry of Public Works and Provincial Stakeholders in Savannakhet Province, including the Nam Papa State Enterprise (NPSE).

The Ministry of Public Works and Transport (MPWT) at the national level and the Provincial Department of Public Works and Transport at the Provincial Level will be responsible for executing Component 1. The NPSE for Savannakhet Province will be responsible for executing Component 2. MoNRE, at the national level and the Provincial Department of Natural Resources and Environment at the Provincial Level will be responsible for executing Component 3. MoNRE will also have a responsibility, as the focal point Ministry for the UNFCCC, for coordination across the government system. Meanwhile, MoNRE and MPWT will help to coordinate the overall project by co-chairing the Project Management Committee, as detailed below.

Meanwhile, in the Laos government system, under the 'samsang' or 3-build decentralisation process, provincial level units of government are responsible for managing implementation at the sub-national level. In accordance with Samsang, NPSE will execute the physical works under Component 2 of the project. NPSEs are autonomous enterprises, but are under the overall responsibility of MPWT. Therefore, MPWT will provide guidance and oversight to ensure that the project is implemented in accordance with Laos' laws, the Environmental and Social Management Plan of the Project and according to the specifications laid down in this project document.

UN-Habitat is the multilateral implementing entity of the project and will then provide project management support, oversight, management of fund flow and executing partners' delivery, and secretariat of the Project Management Committee. UN-Habitat will have three Agreements of Cooperation (AoCs); one each to execute Components 1, 2 and 3 respectively. The AoCs will create accountability with the executing entities, requiring them to deliver their activities in accordance with the project budget, workplan and in compliance with the Project's Environmental and Social Management Plan (see [Annex 5](#)).

#### Legal and Financial Arrangements

UN-Habitat and MoNRE will sign a joint Memorandum of Understanding as a legal commitment to implement the project.

As above, UN-Habitat will sign three Agreements of Cooperation for US\$350,000 with MPWT to execute Component 1 in its entirety, US\$4,000,000 with NPSE Savannakhet to execute Component 2 in its entirety and US\$237,557 with MoNRE to execute Component 3 in its entirety. AoCs are the legal basis to transfer funds from the multilateral implementing entity (UN-Habitat) to the executing entities. They also provide the contractual basis to ensure timely delivery, compliance with the designs specified in this project document and the Environmental and Social Management Plan.

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The respective Directors General of MPWT and MoNRE will work closely with their provincial counterparts and NPSE Savannakhet to oversee the contractual agreements and authorize payments under Components 1&3 respectively, while the Provincial Director of NPSE will authorize payments under Component 2, upon recommendation from the Project Manager. The UN-Habitat country office for Laos will provide an oversight function, as well as guidance upon request from the executing entities.

### **Project Governance**

At the national level, the Project will be supported by a **Project Management Committee** (PMC). The PMC will be formed to oversee and keep abreast of project progress and facilitate the implementation of the project, including overseeing and cooperating with the project team, the technical advisory group, the local steering committees and the project oversight group.

The PMC will be co-chaired by Directors General, MoNRE and MPWT, with the Director, NPSE Savannakhet as vice-chair. UN-Habitat will provide the secretariat function of the PMC. A representative of the UN-Habitat Regional Office for Asia and the Pacific will also be a member of the PMC. Other members of the PMC are as follows: a technical level representative of MoNRE and MPWT, a technical level representative of Ministry of Planning and Investment, provincial level representatives of these three ministries and Lao Women's Union – ensuring that a representative of women's interests will always participate in the highest management body of the project.

The PMC will: (1) approve annual work plans and review key project periodical reports; (2) will review and approve the contractual agreements, including workplans, with a particular emphasis on environmental and social safeguards, budgets and payment schedules; (3) review any deviations and consider amendments to workplans and contractual arrangements.

The PMC will meet at least once per year throughout the project implementation and whenever needed to fulfil the above functions. The PMC will also convene *ad hoc* meetings to address serious Environmental and Social safeguard risks, if these arise.

### **Project Oversight**

Project oversight lies with the PMC in-country and ultimately with UN-Habitat as the Multilateral Implementing Entity. This function is led by the responsible officer in UN-Habitat's Regional Office for Asia and the Pacific and supported by Project Management Officers (financial management and administration) and UN-Habitat's headquarters' Monitoring and Evaluation Unit, the Programme Division, including the Climate Change Planning Unit and the External Relations Division (particularly with regard to advocacy, outreach and communications), will ensure project management compliance in accordance with UN-Habitat standards and requirements, particularly with regard to financial management, timely delivery and the Environmental and Social Management Plan.

### **Project Execution**

The National level **Project Team** will be comprised of a Project Manager who will be recruited in compliance with UN rules and regulations and approved by the PMC, the component Team Leaders (who will be contracted by MoNRE/MPWT/NPSE Savannakhet – as the component



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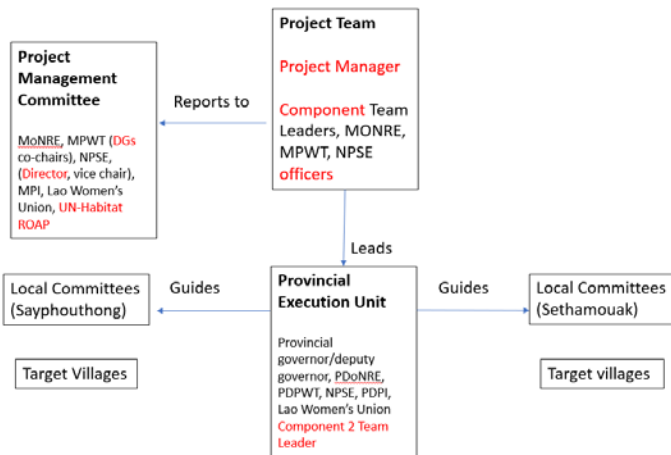
leaders), and technical level staff from MoNRE and MPWT. There will also be an engineer based in Savannakhet who will oversee works under Component 2. The project team will be responsible for managing project activities and ensuring compliance with all commitments contained in the project document, particularly the ESMP and compliance with the 15 principles of the Adaptation Fund Environmental and Social Policy and the Gender Policy of the Adaptation Fund, as well as providing day-to-day support to the executing entities. The project team will also take the lead in monitoring through periodic visits to the intervention sites in Sayphouthong and Sethamouak Districts and generating learning from the project. The Project Team will develop a Monitoring and Evaluation Plan during the project's inception phase, which will be distributed to target stakeholders and reported to the PMC.

There will then be a local **Project Execution Unit** to manage day-to-day execution of activities in the field sites. This unit will be especially active in implementing the activities under Component 2 of the Project. This unit will include a provincial level coordinator who will oversee the day-to-day running of activities underway in each district. The Project Execution Unit will count on support from technical level representatives of NPSE Savannakhet, The Provincial Departments of Public Works and Transport; Natural Resources and Environment, Planning and Investment and Lao Women's Union.

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At the community level, an equally gender balanced selection of village representatives will for, a **Local Oversight Committee**. This will also include village chiefs from the target villages and district level NPSE representatives.

**Organigram of the Project**



## B. Measures for financial and project risk management

The status of financial and project risks, including those measures required to avoid, minimize, or mitigate these risks, will be monitored throughout the project (as discussed in [Section D](#): arrangements for monitoring, reporting and evaluation).

**Table 17 - Financial and project management risks, significance of risks and measures to manage/mitigate risks.**

	Category and risk	Rating: Impact/ Probability 1: Low 5: High	Management/mitigation Measure
1.	Environmental/social: Current climate and seasonal variability and/or hazard events result in infrastructure construction delays or undermine confidence in adaptation measures by local communities	Impact: 3 Prob: 2	<ul style="list-style-type: none"> <li><input type="checkbox"/> Current climatic variability has been taken into account in the planning and design of project activities, particularly in the designs of the infrastructure to be built under Component 2: The detailed project designs provided in <a href="#">Annexes 3 &amp; 4</a> provide evidence of considering climate change, variability and possible future extremes</li> <li><input type="checkbox"/> Both investments under Component 2 have been extensively consulted with communities, local officials, government staff at the sub-national and national level. Indeed, NPSE Savannakhet especially has been closely involved</li> </ul>
2.	Institutional: Loss of government support (at all levels) for the project (activities and outputs) may result in lack of prioritization of AF project activities.	Impact: 4 Prob: 1	<ul style="list-style-type: none"> <li><input type="checkbox"/> Establishment of a project management committee and the overall participatory and inclusive project design will improve national, provincial and beneficiary level ownership throughout and thus enhance government support for project implementation.</li> <li><input type="checkbox"/> UN-Habitat will enter into legal agreements (MoUs and AoCs) with the MoNRE (MoU and AoC), MPWT (AoC) NPSE Savankhet (AoC) to ensure that the executing entities will deliver all project activities and outputs in a timely manner and in accordance with the project's ESMP.</li> <li><input type="checkbox"/> Government staff working on climate change, environment, disaster management, infrastructure and provision of water supply will be strongly integrated into the project's structure (<a href="#">See Part III, Section A</a>)</li> <li><input type="checkbox"/> The formulation of The Local Level Committee will ensure that there is strong institutional support for the project at the grassroots/implementation level, and will also ensure that local level stakeholders have a means to raise any grievances or problems.</li> </ul>
3.	Institutional: Capacity constraints of local institutions may limit the effective implementation of interventions	Impact: 2 Prob: 1	<ul style="list-style-type: none"> <li><input type="checkbox"/> The project has a strong capacity building and training component, particularly under Output 1.1.1 and 1.2.1, which will promote effectiveness and sustainability at the district, provincial and national levels. The project also has a policy component under Output 3.2.1 that will strengthen the national government.</li> </ul>

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4.	Institutional/social Lack of commitment/buy-in from local communities may result in delay at intervention sites.	Impact: 2 Prob: 1	<input type="checkbox"/> Community stakeholders have been consulted extensively during both the concept note and full project development phase to ensure their buy-in into this project  <input type="checkbox"/> A bottom-up approach integrating the community into the AF project's implementation phases – including community contracting in line with the <a href="#">People's Process</a> - will be followed.  <input type="checkbox"/> Where possible, the community will have an active role through the 'People's Process' that ensures ownership of the project particularly through community participation in project implementation and monitoring
5.	Institutional/social: Disagreement amongst stakeholders with regards to adaptation measures (infrastructure) and site selection.	Impact: 3 Prob: 2	<input type="checkbox"/> The adaptation measures proposed in Component 2 of the project and their selected locations have been decided using extensive and detailed criteria, and through several rounds of in-depth consultation with communities and local and national government stakeholders.  <input type="checkbox"/> There will be a participatory approach to the construction of the infrastructure to be built under Component 2, through the <a href="#">People's Process</a> , which employs the beneficiaries directly in the construction of their infrastructure
6.	Institutional: Communities may not adopt activities during or after the AF project, including infrastructure maintenance	Impact: 2 Prob: 2	<input type="checkbox"/> The interventions will be institutionalized MoNRE and MPWT, their line departments at provincial level, NPSE Savannakhet and the target communities in Sayphouthong and Sethamouak, to ensure sustainable delivery of (post-) project implementation, including formal agreements for infrastructure maintenance (at national level) and O&M structures at the sub-national level with NPSE Savannakhet. Given the commitment of the national government and the policy alignment of this project, and the direct reporting mechanisms of local government to national government, it can be assumed that such agreements will be honoured.  <input type="checkbox"/> Officials at the sub-national (provincial, district and village level) will support the participating communities beyond the project implementation ensuring community level governance support as well as support for maintenance.  <input type="checkbox"/> Capacity building and training of communities will be undertaken to improve their awareness and understanding of the benefits of the activities, including infrastructure maintenance (Component 1).  <input type="checkbox"/> Communities will be involved in project implementation/decision making throughout the project. In particular, they will take ownership of the construction of the infrastructure where unskilled labour is required.
7.	Financial: Complexity of	Impact: 3 Prob: 2	<input type="checkbox"/> Financial management arrangements have been defined during project preparation. The detailed budget is provided in <a href="#">Part III, Section G</a> , The payment schedule is

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	financial management and procurement. Certain administrative processes could delay the project execution or could lack integrity		<p>provided in <a href="#">Part III, Section H</a>, while the management arrangements are outlined in <a href="#">Part III, Section A</a>.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> UN-Habitat's control framework, under the financial rules and regulations of the UN secretariat, ensure documentation of clearly defined roles and responsibilities for management, internal auditors, the governing body, other personnel and demonstrates prove of payment / disbursement. These rules are Annexed to AoC agreements</li> <li><input type="checkbox"/> Procurement will be done by the executing entities as agreed through Agreements of Cooperation. The project manager and the project team have a certifying role (for key procurements / expenditures). All expenditures/costs/payments will be documented in USD. In Laos, procurement of high-value good often takes place in USD rather than Lao Kip (the local currency)</li> </ul>
8.	Institutional:  Delays in project implementation, and particularly in the development of infrastructure interventions	Impact: 1 Prob: 2	<ul style="list-style-type: none"> <li><input type="checkbox"/> The ownership by the Government has been high during the project preparation phase which will reduce this risk.</li> <li><input type="checkbox"/> The project includes extensive planning and capacity building under Component 1. While the investments under Component 2 have been fully identified, improved planning capacity will help to make the implementation smoother and reduce the risk of delays.</li> <li><input type="checkbox"/> Lessons learned from other relevant projects under multilateral climate finance institutions, UN agencies, and involving the three key government partners are described in <a href="#">Part II, Section F</a>.</li> </ul>
9.	Institutional:  A lack of coordination between and within national government Ministries and Departments.	Impact: 1, Prob:2	<ul style="list-style-type: none"> <li><input type="checkbox"/> The Project Management Committee under the joint leadership of MPWT and MoNRE is to ensure coordination. Should UN-Habitat observe coordination problems, the agency will try to resolve issues directly with concerned parties and or the PMC.</li> </ul>
10.	Legal  Delays or barriers in gaining approval for infrastructure and housing due to delays in the development process or due to land tenure issues.	Impact 4 Prob 1	<ul style="list-style-type: none"> <li><input type="checkbox"/> No legal issues are foreseen. See <a href="#">Part II, Section E</a> and the ESMP for further evidencing of the legal compliance of the project.</li> <li><input type="checkbox"/> The PMC and the LCC are tasked to ensure close collaboration with the provincial line departments of Public Works and Transport, Natural Resources and the Environment, NPSE Savannakhet and Planning and Investment.</li> </ul>

**C. Measures for the management of environmental and social risks and complince with the gender policy of the Adaptation Fund**

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[Part II, Section E](#) and [Section K](#) outline the screening and assessment process that has been done based on analysis of the law and consultations to identify the project's potential for risks. [Part II, Section H](#) describes the consultation process that has been undertaken to ensure *inter alia* inclusion of potentially marginalised groups, including women and indigenous people. These consultations and analysis are reflected throughout the project design.

Based on a screening against the principles environmental and social policy of the Adaptation Fund, the project has been categorised as a "B" category project in terms of the environmental and social risks it poses. [Further information on the risk screening is provided in Part II, Section K, and in Annex 5.](#)

An Environmental and Social Risk Management Plan (ESMP) has been developed (See [Annex 5](#) to ensure that risks are avoided and that, where this is not the case, they are identified and mitigated in a timely manner. The ESMP identifies all the potential risks and the preventative and mitigation measures that the project proposes to take to reduce potentially adverse environmental and social risks to acceptable levels. The plan also identifies roles and responsibilities for monitoring risks. The ESMP also covers risk management arrangements, risk reduction and the project's grievance mechanism.

#### **D. Arrangements for monitoring, reporting and evaluation in compliance with the environmental and social and gender policies of the Adaptation Fund**

The proposed project will comply with formal guidelines, protocols and tools issued by the Adaptation Fund and UN-Habitat and all legal requirements of the government of Laos. A Monitoring and Evaluation Framework, based on the targets and indicators outlined in the Project Results Framework will be developed before implementation commences (see below, [Part III, Section E](#)).

In addition, the status of identified environmental and social risks and the project's ESMP, including those measures required to avoid, minimize, or mitigate environmental and social risks, will be monitored throughout the project (at the activity level and through annual project performance, mid-term and terminal reports). The same applies to financial and project management risks and mitigation measures.

##### **Monitoring and Evaluation Framework**

UN-Habitat will ensure the timeliness and quality of project implementation. The oversight and general guidance of the project will be provided by the Project Management Committee. UN-Habitat will ensure that the project team and the key national executing partners are fully briefed on the M&E requirements.

The monitoring and evaluation framework prepared by the project will be a key tool to ensure that the project is being implemented in compliance with its ESMP (as detailed in [Annex 5](#)). The project's monitoring framework will also ensure that sex disaggregated data is collected throughout the implementation, and that indigenous people have been included in project's execution.

The audit of the project's financial management will follow UN finance regulations and rules and

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applicable audit policies.

The M&E plan will be implemented as outlined in the Table 18 below.

**Table 18 - Outline Monitoring and Evaluation Plan.**

Type of M&E Activities	Responsible Parties	Time Frame	Reporting
Inception Workshop and Report	National Project Manager Project Management Committee UN-Habitat ROAP	Workshop: within first two months of start Report: within first quarter	Inception Report
Periodic status/ progress reports	National Project Manager	Annual, mid term	Annual report, Mid-term review/report
Final Evaluation	National Project Manager UN-Habitat ROAP Project Management Committee External Consultants	Final: At least three months before the end of project implementation	Final Evaluation Report
Project Terminal Report	National Project Manager UN-Habitat ROAP Local consultant	At least three months before the end of the project	Terminal Report
Community consultations / workshops / training	National Project Manager	Within one week after each event	Documentation
Visits to field sites	UN-Habitat ROAP Project Management Committee Government representatives	At least every six months	Field Report

For the M&E budget and a breakdown of how implementing entity fees will be utilized in supervision of M&E tasks, please see the detailed budget in [Part III, Section G](#). For related data, targets and indicators, please see the project proposal results framework in [Part III, Section E](#).

**Participatory monitoring** mechanisms (involving different levels of government and communes) will be put in place for the collection and recording of data to support the M&E of indicators. The project proposal formulation has gathered demographic data, vulnerability assessment and climate data, as well as maps and infrastructure designs. All of this information will be made available to the PMC for use in the project, including its monitoring.

The target villages will be involved in further data collection. This will allow beneficiary communes to work directly with the project's M&E mechanism, to highlight issues in project delivery and to strengthen adaptation benefits, including in replication and sustaining the project's gains. All data collected will be disaggregated by sex and data gathering will be designed to include indigenous people at all stages. Project site visits will be jointly conducted based on an agreed schedule to assess project progress first hand.

The Project Manager will refine the M&E Plan during the project's inception phase which will be distributed and presented to all stakeholders during the initial workshop. The emphasis of the updated M&E plan will be on (participatory) outcome/result monitoring, project risks (financial & project management risks and environmental social safeguard risks), learning and sustainability of the project, and informing stakeholders of the need to always gather sex-disaggregated data

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and data that reflects the need to include indigenous people. Periodic monitoring will be conducted through visits to the intervention sites.

UN-Habitat will ensure that all executing partners are fully briefed on the M&E requirements to ensure that baseline and progress data is fully collected and that a connection between the Knowledge Management component and M&E is established. The Agreements of Cooperation will also reflect these.

**An Annual Project Performance Review (PPR)** will be prepared to monitor progress made since the project's start and in particular for the previous reporting period. The PPR includes, but is not limited to, reporting on the following:

- Progress on the project's objective and outcomes – each with indicators, baseline data and end of project targets (cumulative);
- Project outputs delivered per project outcome (annual);
- Lessons learned/good practice;
- Annual Work Plan and expenditure;
- Annual management;
- Environmental and social risks (i.e. status of implementation of ESMP, including those measures required to avoid, minimize, or mitigate environmental and social risks. The reports shall also include, if necessary, a description of any corrective actions that are deemed necessary;
- The engagement of women and indigenous people
- Project financial and management risks (same as per above).

A **Terminal Evaluation** will take place as the last activity before the operational closure of the project in accordance with Adaptation Fund guidance and following UN-Habitat practices based on the OECD DAC framework. The terminal evaluation will focus on the delivery of the project's results, as initially planned and then reflected in the M&E framework, including the implementation environmental and social mitigation measures. The terminal evaluation will assess the impact and sustainability of results, including their contribution to capacity development and the achievement of adaptation benefits.

The **reports** that will be prepared specifically in the context of the M&E plan are:

- (i) the M&E plan,**
- (ii) the project inception report,**
- (iii) the Annual, and terminal project performance reports and**
- (iv) the technical reports.**

The budget for monitoring is presented below:

Type of M&E activity	Responsible parties	Budget US\$	Time frame
Measurements of means of verification (baseline assessment and M&E plans)	Project Manager; Project team	10,000 (from project execution costs)	First quarter of year 1
Direct Project			Quarterly, half

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Monitoring and Quality Assurance including progress and financial reporting, project revisions, technical assistance, risk management <u>and monitoring</u> <u>Environmental and Social safeguard compliance</u>	<b>UN-Habitat Regional Office.</b> Project Manager; With inputs from Project team; Provincial and district-level government, community level monitoring	20,000 (from project cycle management fee)  40,000 (from project execution costs)	yearly and annually. Building on provincial and district level assessments and community level monitoring.
Independent terminal evaluations	<b>UN-Habitat Regional Office</b> UN-Habitat M&E Section and external consultants (from project execution and project cycle management)  Supported by Project Manager; Project team; Provincial and district-level government and community	25,000 from project execution costs and 20,000 from project cycle management fee	At end of project implementation
Project management committee meetings	UN-Habitat Regional Office  Project Manager; Project team; Project Management Committee	7,014 (from project cycle management fee)  6,000 from project cycle management fee	Inception meeting within first 2 months and bi-annual PMC meetings
Travel	UN-Habitat Regional Office  Project Manager	10,500 from project cycle management fee  20,000 from project execution costs	Quarterly, half-yearly and annually and as required
<b>Total</b>		<b>158514</b>	

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### E. Project proposal results framework

Table 19 - Project Results Framework

Expected Result	Indicators	Baseline data	Targets	Risks & assumptions	Data collection method	Fre-quency	Res-ponsibility
<b>Project objective:</b>							
<b>Project component 1:</b> Develop town level master plans which integrate climate change adaptation into socially inclusive infrastructure, spatial planning and land-use management in and beyond the project area.							
Capacity built at District, Provincial and National level to plan for climate-resilient infrastructure development and to maintain and manage infrastructure							
<b>Outcome 1.1</b> 40 government staff, at least 15 of whom female, have increased capacity to design climate resilient urban infrastructure in small towns	Level of capacity at the subnational level increased	Capacity to autonomously plan adaptation projects at the sub-national level is limited	5 New adaptation projects prepared by sub-national staff	R Limited time means government staff have to prioritise other day-to-day tasks  A There will be continued government support to develop new adaptation projects	Review of new projects developed	Baseline, mid-term and end	Executing entities (MPWT)
<b>Output 1.1.1</b> Training provided to district, provincial and national government staff on resilient infrastructure design. Female government staff must be represented	Number of government staff trained, disaggregated by sex	There is constrained capacity for government staff to plan for new resilient infrastructure	40 government staff trained, 15 of whom are female.	R Time constraints mean other government activities will take priority  A There will be continued government support to develop new adaptation projects	Training reports	On completion	Executing entities (MPWT)

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<p><b>Outcome 1.2</b> 60 government staff, at least 20 of whom are female, have capacity to develop climate resilient town master plans and two master plans approved, that support the development of resilient infrastructure, serving 57,144 people, 53.5% of whom are female.</p>	<p>Comprehensive adaptation action plans in place for Sayphouthong and Sethamouak Towns</p>	<p>No such plans developed or in place</p>	<p>Sayphouthong and Sethamouak Towns have comprehensive adaptation action plans in place that consider infrastructure, as well as economic, social and environmental adaptation actions beyond the life of this project.</p>	<p>R New infrastructure projects are planned centrally that don't consider climate change  A Plans will facilitate further climate finance and investment</p>	<p>Approved plans</p>	<p>Upon completion of plans</p>	<p>Executing Entities (MPWT) and UN-Habitat</p>
<p><b>Output 1.2.1</b> Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented</p>	<p>No. of staff trained disaggregated by sex</p>	<p>There is very limited capacity at all levels to plan for climate change adaptation actions</p>	<p>60 staff, 20 of whom female, trained</p>	<p>R Time constraints mean other government activities will take priority  A There will be continued government support to develop new adaptation projects</p>	<p>Training reports</p>	<p>Mid-term</p>	<p>Executing entities (MPWT)</p>
<p><b>Output 1.3.1</b> Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the project area</p>	<p>Developed adaptation plans</p>	<p>There are currently no adaptation plans and no training has been provided on developing such plans</p>	<p>60 staff trained, 20 of whom female. 2 masterplans developed. The master plans will include specific provisions for the development and climate change resilience of women.</p>	<p>R New infrastructure projects are planned centrally that don't consider climate change  A Plans will facilitate further climate finance and investment</p>	<p>Training and workshop reports relating to the development of the master plans</p>	<p>Mid-term</p>	<p>Executing Entities (MPWT)</p>
<p><b>Activities</b> 1.1.1 Define trainee group 1.1.2 Baseline knowledge/training needs assessment 1.1.3 Prepare the exact nature of the training materials based on the specific requirements of the trainee group 1.1.4 Provide the trainings and mentorship of the trainee group through a mixture of</p>				<p>Milestones Activities begin by month 6 All trainings complete by month 24 Plans developed by month 30 Complete by month 36</p>			

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<p>1.1.5 training workshops and 'on the job' type training Monitor the achievement of the output of the training</p> <p>1.2.1 Define trainee group (note that this is a different group from that trained under Output 1.1)</p> <p>1.2.2 Baseline knowledge/training needs assessment</p> <p>1.2.3 Prepare the exact nature of the training materials based on the specific requirements of the trainee group</p> <p>1.2.4 Provide the trainings and mentorship of the trainee group through a mixture of training workshops and 'on the job' type training</p> <p>1.2.5 Monitor the achievement of the output of the training</p> <p>1.3.1 Identify key vulnerabilities by re-confirming those presented in this proposal</p> <p>1.3.2 Define objectives for the planning process</p> <p>1.3.3 Define shortlist of proposed future adaptation actions through further multi-criteria analysis, cost-benefit analysis and applying environmental and social safeguards, considering the specific needs of women and indigenous people</p> <p>1.3.4 Write up draft plans for review and approval</p> <p>1.3.5 Approve draft plans</p>							
<p><b>Project Component 2:</b> Socially inclusive infrastructure built in target towns that protects people from climate change related impacts and provides continuous services despite current and anticipated future changes in the climate</p>							
<p><b>Outcome 2</b> 57,144 people, 53.5% of whom are female, who currently have inadequate water and/or protective infrastructure, have access to year-round, clean water and protective infrastructure despite current climate hazards and future changes in climate</p>	<p>The target population has access to clean, year-round water supply, which is able to withstand current and anticipated future climate extremes</p>	<p>Neither town has access to reliable water supply, nor capacity to adapt to future changes in climate conditions</p>	<p>57,144 people, 53.5% of whom are female, have access to affordable, clean and climate-resilient water supply</p>	<p>R People are unwilling to pay for water and/or unwilling to switch away from traditional practices of sourcing water</p> <p>A There will be continuous water supply from the river</p>	<p>Site visits, photographs, testimony from communities</p>	<p>Mid-term, end</p>	<p>UN-Habitat, NPSE Savankhet</p>
<p><b>Output 2.1.</b> New resilient infrastructure constructed in response to climate change impacts, including</p>	<p>Physical infrastructures and connections in place</p>	<p>There is no adaptive water supply infrastructure in place at present</p>	<p>2 water supply systems constructed that are able to continue functionality in present and</p>	<p>R Construction delays</p> <p>A Capacity building efforts proposed in this project will be sufficient</p>	<p>Plans, site visits, photos</p>	<p>Mid-term, end</p>	<p>UN-Habitat, NPSE Savannakhet</p>

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variability		in the two towns	anticipated future climate conditions	to ensure that the construction takes place on time, to budget			
<b>Activities</b> <ul style="list-style-type: none"> <li>• Re-confirm designs by engineer</li> <li>• Further public consultation, including consultations with women and indigenous people</li> <li>• Procure materials</li> <li>• Hire local communities through the People's Process</li> <li>• Begin construction</li> <li>• Establish NPSE offices and management structure in the two districts</li> <li>• Monitor (including under ESMP)</li> <li>• Complete</li> </ul>				<b>Milestones</b> <ul style="list-style-type: none"> <li>▪ Construction underway by Month 9</li> <li>▪ Complete by month 42</li> </ul>			
<b>Project component 3:</b> Knowledge and awareness enhanced from national to local levels along the economic corridor, ensuring sustainability and potentially leading to policy changes at the national level							
<b>Outcome 3</b> Project implementation is fully transparent. All stakeholders, including women, are informed of products and results and have access to these for replication.	Level of awareness at the local and national level of climate change adaptation actions and potential for replication	Awareness of the need to take adaptation actions and the potential for replication remains very low aside from specialists in climate change adaptation	At least 100, including at least 35 women, government staff are aware of the project's activities and have improved knowledge and capacity to replicate its benefits	R Competing priorities and the long-term nature of climate change mean that other short-term actions  A There will be incentives to develop adaptation projects in the future	Training reports	Mid-term, end	MoNRE, UN-Habitat

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<p><b>Output 3.1.</b> Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.</p>	<p>No. of knowledge products generated by the project (knowledge products could be newspaper articles, published case studies and tools or guidelines).</p>	<p>Information-sharing is typically limited, and there is no institutionalised mechanism to capture project results</p>	<p>At least 20 knowledge products generated by the project by its end (see indicators column)</p>	<p>R Limited capacity to consume such knowledge products in a country with numerous aid projects ongoing</p> <p>A Knowledge products are an essential catalyst of replication actions</p>	<p>Knowledge products</p>	<p>Mid-term, end</p>	<p>MoNRE</p>
<p><b>Output 3.2</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure, including the provision of infrastructure in a way that benefits women</p>	<p>NAP and post-Paris climate policies and reporting reflect urban adaptation and basic service provision priorities, and issues relating to women</p>	<p>National Climate change related policies show some consideration of urban infrastructure adaptation</p>	<p>NAP and all post-Paris climate policy thoroughly reflects urban and basic service adaptation priorities</p>	<p>R Competing priorities at the national level</p> <p>A There is continued political level support for the prioritisation of urban and basic service infrastructure adaptation at the national level</p>	<p>Policy documents, NAP</p>	<p>End</p>	<p>MoNRE</p>
<p>Activities</p> <p>3.1.1 Develop case studies, and other appropriate good practice documentation.</p> <p>3.1.2 Establish contact with national newspapers and write semi-regular articles about project successes</p> <p>3.1.3 Based on training, develop local language guidance and tools. Where guidance is produced for communities it should be usable as oral materials, for the benefit of indigenous and illiterate sections of the community.</p> <p>3.1.4 Develop video, fliers and other KM products, as appropriate and under the guidance of the PMC</p> <p>3.2.1 Engage in regular dialogue with NAP stakeholders and those engaged in Post-Paris work</p>				<p>Milestones</p> <ul style="list-style-type: none"> <li>Activities under 3.1 will be implanted regularly throughout the project</li> <li>Activities under output 3.2 will be implemented on-demand, in alignment with the NAP and climate policy process</li> </ul>			

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3.2.2. Conduct alignment workshops with NAP Stakeholders 3.2.3 Provide support to NAP team and other stakeholders involved in Post-Paris policy work to integrate urban and basic service adaptation considerations	
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Table 20 - Activities and Milestones

Output	Year 1		Year 2		Year 3			Year 4		
<b>Output 1.1.</b> Training provided to district, provincial and national government staff on resilient infrastructure design. Female government staff must be represented	X	X	X	X						
<b>Output 1.2.</b> Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented	X	X	X	X						
<b>Output 1.3.</b> Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the project area. The master plans will include specific provisions for the development and climate change resilience of women.		X		X		X				
<b>Output 2.1.</b> New resilient infrastructure constructed in response to climate change impacts, including variability		X	X	X	X	X	X	X	X	X
<b>Output 3.1</b> Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.		X		X	X	X	X	X	X	X
<b>Output 3.2</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure, including the provision of infrastructure in a way that benefits women		X		X	X	X	X	X	X	X

### F. Project alignment with the Adaptation Fund results framework

**Table 21 – Project Alignment with AF Priorities**

Project Outcome	Project Outcome Indicator	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
<p><b>Outcome 1.1</b> 40 government staff, of whom at least 15 are female, have increased capacity to design climate resilient urban infrastructure in small towns</p> <p><b>Outcome 1.2</b> 60 government staff, of whom at least 20 are female, have capacity to develop climate resilient town master plans and two master plans approved, that support the development of resilient infrastructure, serving 57,144 people.</p>	<p>Level of capacity at the subnational level increased</p> <p>Comprehensive adaptation action plans in place for Sayphouthong and Sethamouak Towns</p>	<p><b>Outcome 2:</b> Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses</p>	<p>2.1. No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks</p>	<p><b>\$125,000</b></p> <p><b>\$225,000</b></p>
<p><b>Outcome 2</b> 57,144 people, of whom 53.5% are female, who currently have inadequate water and/or protective infrastructure, have access to year-round, clean water and protective infrastructure despite current climate hazards and future changes in climate</p>	<p>The target population has access to clean, year-round water supply, which is able to withstand current and anticipated future climate extremes</p>	<p><b>Outcome 4:</b> Increased adaptive capacity within relevant development and natural resource sectors</p>	<p>4.2. Physical infrastructure improved to withstand climate change and variability-induced stress</p>	<p><b>\$4,000,000</b></p>



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<b>Outcome 3</b> Project implementation is fully transparent. All stakeholders, including women, are informed of products and results and have access to these for replication.	Level of awareness at the local and national level of climate change adaptation actions and potential for replication	<b>Outcome 1:</b> Reduced exposure at national level to climate-related hazards and threats and  <b>Outcome 7:</b> Improved policies and regulations that promote and enforce resilience measures	Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis  7. Climate change priorities are integrated into national development strategy	<b>\$237,557</b>
<b>Project Output</b>	<b>Project Output Indicator</b>	<b>Fund Output</b>	<b>Fund Output Indicator</b>	<b>Grant Amount (USD)</b>
<b>Output 1.1.</b> Training provided to district, provincial and national government staff on resilient infrastructure design. Female government staff must be represented	Number of government staff trained, disaggregated by sex	<b>Output 2.1:</b> Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events	2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events	<b>\$125,000</b>
<b>Output 1.2.</b> Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented	Number of staff trained, disaggregated by sex	<b>Output 2.1:</b> Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events	2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events	<b>\$125,000</b>
<b>Output 1.3.</b> Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the	Developed adaptation plans	<b>Output 2.2:</b> Targeted population groups covered by adequate risk reduction systems	2.2.1. Percentage of population covered by adequate risk-reduction systems	<b>\$100,000</b>

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project area. The master plans will include specific provisions for the development and climate change resilience of women.				
<b>Output 2.1.</b> New resilient infrastructure constructed in response to climate change impacts, including variability	Physical infrastructures and connections in place	<b>Output 4:</b> Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	<b>\$4,000,000</b>
<b>Output 3.1</b> Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.	No. of knowledge products generated by the project (knowledge products could be newspaper articles, published case studies and tools or guidelines).	<b>Output 1:</b> Risk and vulnerability assessments conducted and updated at a national level	1.1. No. and type of projects that conduct and update risk and vulnerability assessments	<b>\$170,000</b>
<b>Output 3.2</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure	NAP and post-Paris climate policies and reporting reflect urban adaptation and basic service provision priorities	<b>Output 7:</b> Improved integration of climate-resilience strategies into country development plans	7.2. No. or targeted development strategies with incorporated climate change priorities enforced	<b>\$67,557</b>

Adaptation Fund Core Indicators	Indicative Targets	Comments
1 Number of Beneficiaries	57,144 beneficiaries, 53.5% of whom are women	This only counts the direct beneficiaries of the infrastructure works in the two towns. It does not count government staff who will benefit from training or people who will benefit from improved infrastructure that will ultimately emerge from the training, master-planning or policy enhancement

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		components of the project.
2. Early Warning Systems	0	The project does not target early warning systems
3. Assets Produced, Developed, Improved, or Strengthened	2	The project strengthens two water supply systems in Sayphouthong and Sethamouak Towns
4. Increased income, or avoided decrease in income	All beneficiaries	All beneficiaries will have access to affordable, clean water. This means that, as water becomes more scarce and therefore more expensive as a result of climate change, the beneficiaries will have continued water supply as a result of the project.
5. Natural Assets Protected or Rehabilitated	2	The project will also strengthen and protect the riverbank and nearby riparian ecosystems

### G. Detailed Budget

**Table 21 – Detailed Budget**

Programme component	Outputs	Activities	Total Budget (Activity)	Total budget (Output)	Year 1	Year 2	Year 3	Year 4
Develop town level master plans which integrate climate change adaptation into socially inclusive infrastructure, spatial planning and land-use management in and beyond the project area. Capacity built at District, Provincial and National level to plan for climate-resilient infrastructure development and to maintain and manage infrastructure	<b>Output 1.1.1</b> Training provided to district, provincial and national government staff on resilient infrastructure design, Female government staff must be represented			\$125,000	\$50,000	\$75,000	0	0
		1.1 Define trainee group	\$5,000	<ul style="list-style-type: none"> <li>• Climate Change expert: \$24,000</li> <li>• Infrastructure expert: \$40,000</li> <li>• Capacity building expert: \$20,000</li> <li>• ESS: \$12,000</li> <li>• GIS: \$9,000</li> <li>• Travel: \$10,000</li> <li>• Workshops: \$10,000</li> </ul>	\$5,000			
		1.2 Baseline knowledge/training needs	\$20,000		\$20,000			
		1.3 Prepare the exact nature of the training materials based on the specific requirements of the trainee group	\$25,000		\$25,000			
		1.4 Provide the trainings and mentorship of the trainee group through a mixture of training workshops and 'on the job' type training	\$65,000			\$65,000		
		1.5 Monitor the achievement of the output of the training	\$10,000			\$10,000		
	<b>Output 1.2.1</b> Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented				\$125,000	\$50,000	\$75,000	0
	2.1 Define trainee group (note that this is a different group from that trained under Output 1.1)	\$5,000	<ul style="list-style-type: none"> <li>• Urban Planning expert: \$16,000</li> <li>• Infrastructure expert: \$44,000</li> <li>• Climate Change Expert: \$24,000</li> <li>• Capacity</li> </ul>	\$5,000				
	2.2 Baseline knowledge/training needs	\$20,000		\$20,000				
	2.3 Prepare the exact nature of the training materials based on the specific requirements of	\$25,000		\$25,000				

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		the trainee group		building Expert: \$20,000				
		2.4 Provide the trainings and mentorship of the trainee group through a mixture of training workshops and 'on the job' type training	\$65,000	•Travel: \$7,000 •Workshops: \$14,000		\$65,000		
		2.5 Monitor the achievement of the output of the training	\$10,000			\$10,000		
	<b>Output 1.3.1</b>			\$100,000	\$25,000	\$50,000	\$25,000	
		1.3.1 Identify key vulnerabilities by re-confirming those presented in this proposal	\$10,000	•Urban Planning expert: \$16,000	\$10,000			
		1.3.2 Define objectives for the planning process	\$5,000	•Infrastructure expert: 20,000	\$5,000			
		1.3.3 Define shortlist of proposed future adaptation actions through further multi-criteria analysis, cost-benefit analysis and applying environmental and social safeguards, considering the specific needs of women and indigenous people	\$45,000	•Climate Change Expert: \$24,000 •Travel: \$7,000 •Workshops: \$14,000 •Miscellaneous: \$19,000	\$10,000	\$35,000		
		1.3.4 Write up draft plans for review and approval	\$20,000			\$15,000	\$5,000	
		1.3.5 Approve draft plans	\$20,000					\$20,000
		<b>Project component total</b>			<b>\$350,000</b>	<b>\$125,000</b>	<b>\$200,000</b>	<b>\$25,000</b>
Socially inclusive infrastructure built in target towns that protects people from climate change related impacts and	<b>Output 2.1</b>							
		Re-confirm designs by engineer	\$25,000	•Infrastructure costs: \$3,900,000	\$25,000			
		Further public consultation	\$25,000		\$25,000			
		Construction of facility in Sayphouthong	\$3,200,000	Other allied costs: \$100,000	\$300,000	\$1,500,000	\$1,200,000	\$200,000
	Construction of facility in Sethamouak	\$700,000		\$50,000	\$250,000	\$400,000		

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		Establishment of NPSE Sayphouthong	\$30,000				\$30,000		
		Establishment of NPSE Phine District (Sethamouak)	\$20,000				\$20,000		
		<b>Project component total</b>		<b>\$4,000,000</b>	<b>\$400,000</b>	<b>\$1,750,000</b>	<b>\$1,650,000</b>	<b>\$200,000</b>	
Knowledge and awareness enhanced from national to local levels along the economic corridor, ensuring sustainability and potentially leading to policy changes at the national level	<b>Output 3.1</b> Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.			\$170,000	\$15,000	\$50,000	\$50,000	\$55,000	
		3.1.1. Develop case studies	\$50,000	<ul style="list-style-type: none"> <li>• KM expert: \$75,000</li> <li>• Printing: 25,000</li> <li>• Climate Change Expert: \$24,000</li> <li>• Infrastructure Expert: 24,000</li> <li>• Travel: \$20,000</li> <li>• Miscellaneous: \$2,000</li> </ul>			\$15,000	\$35,000	
		3.1.2 Establish contact with national newspapers and write semi-regular articles about project successes	\$50,000		\$5,000	\$25,000	\$10,000	\$10,000	
		3.2.3 Based on training, develop local language guidance and tools	\$70,000		\$10,000	\$25,000	\$25,000	\$10,000	
		<b>Output 3.2</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure, including the provision of infrastructure in a way that benefits women			\$67,557	\$10,000	\$10,000	\$30,000	\$17,557
		3.2.1 Engage in regular dialogue with NAP stakeholders and those engaged in Post-Paris work	\$10,000	<ul style="list-style-type: none"> <li>• CC expert: \$16,000</li> <li>• Infrastructure expert: 20,000</li> <li>• Travel: \$7,000</li> <li>• Workshops: \$14,000</li> <li>• Miscellaneous: \$10,557</li> </ul>	\$2,500	\$2,500	\$2,500	\$2,500	
		3.2.2. Conduct alignment workshops	\$40,000		\$7,500	\$5,000	\$17,500	\$10,000	
		3.2.3 Provide support to NAP team and other stakeholders involved in Post-Paris policy work to integrate urban and basic service adaptation considerations	\$17,557			\$2,500	\$10,000	\$5,057	
		<b>Project component total</b>		<b>\$237,557</b>	<b>\$25,000</b>	<b>\$60,000</b>	<b>\$80,000</b>	<b>\$72,557</b>	
		<b>Project Activities Total</b>		<b>\$4,587,557</b>	<b>\$550,000</b>	<b>\$2,010,000</b>	<b>\$1,755,000</b>	<b>\$272,557</b>	

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<b>Programme execution</b>	Project Manager		\$290,000	\$41,250	\$103,750	\$103,750	\$41,250
	Office staff and technical support		\$60,000	\$7,500	\$22,500	\$22,500	\$7,500
	Office facilities		\$66,567	\$16,642	\$16,642	\$16,642	\$16,641
	Travel related to execution		\$40,000	\$10,000	\$10,000	\$10,000	\$10,000
	End-Term Evaluation		\$25,000				\$25,000
<b>Programme execution total</b>			<b>\$481,567</b>	<b>\$75,392</b>	<b>\$152,892</b>	<b>\$152,892</b>	<b>\$100,391</b>
<b>Total Programme Cost</b>			<b>\$5,069,124</b>	<b>\$625,392</b>	<b>\$2,162,892</b>	<b>\$1,907,892</b>	<b>\$372,948</b>
<b>Programme cycle management</b>	PSC 7 Percent (on total operational budget including components below) approx. 7,1 percent		\$363,362	\$35,000	\$70,000	\$200,000	\$58,362
	Evaluation support cost (HQ)		\$10,000	\$1,500	\$2,800	\$3,900	\$1,800
	Project Support Costs (ROAP) - Project Management Committee Meetings	\$6,000		\$3,000	\$1,000	\$1,000	\$1,000
	- IE staff salary / supervision of reports etc.	\$41,014		\$3,000	\$8,000	\$26,000	\$4,014
	- Project supervision missions	\$10,500	\$57,514	\$1,500	\$3,000	\$3,000	\$3,000
<b>Programme cycle management total</b>			<b>\$430,876</b>	<b>\$44,000</b>	<b>\$84,800</b>	<b>\$233,900</b>	<b>\$68,176</b>
<b>Amount of Financing Requested</b>			<b>\$5,500,000</b>	<b>\$669,392</b>	<b>\$2,247,692</b>	<b>\$2,141,792</b>	<b>\$441,124</b>

## H. Disbursement Schedule

	Year 1	Year 2	Year 3	Year 4	Total
	1 <sup>st</sup> disbursement – upon agreement signature	2 <sup>nd</sup> disbursement – One Year after project start <ul style="list-style-type: none"> <li>▪ Upon First Annual Report</li> <li>▪ Upon financial report indicating disbursement of at least 70% of funds</li> </ul>	3 <sup>rd</sup> disbursement - Two years after project start <ul style="list-style-type: none"> <li>▪ Upon Second Annual Report</li> <li>▪ Upon financial report indicating disbursement of at least 70% of funds</li> </ul>	4 <sup>th</sup> disbursement – Third Year after Project Start <ul style="list-style-type: none"> <li>▪ Upon Third Annual Report</li> <li>▪ Upon financial report indicating disbursement of at least 70% of funds</li> </ul>	
<b>Milestone</b>	Milestones (by end of year) <ul style="list-style-type: none"> <li>- Inception workshop report</li> <li>- Initial training provided on resilient infrastructure design</li> <li>- Initial training provided on climate mainstreamed urban planning.</li> <li>- Designs re-confirmed by engineer and procurement underway</li> <li>- Advocacy materials (project brochure, social media) developed</li> </ul>	Milestones (by end of year) <ul style="list-style-type: none"> <li>- All training complete under Outputs 1.1 and 1.2</li> <li>- Masterplans developed in draft</li> <li>- Infrastructure construction advanced</li> <li>- PMC meeting</li> <li>- Advocacy materials developed and distributed</li> <li>- Climate policy alignment workshop conducted</li> </ul>	Milestones (by end of year) <ul style="list-style-type: none"> <li>- All masterplans complete, with new adaptation investments developed</li> <li>- Infrastructure constructed or in a highly advanced stage.</li> <li>- Advocacy materials all developed</li> <li>- PMC meeting</li> <li>- Climate policy alignment workshop conducted and alignment identified</li> </ul>	Milestones (by end of year) <ul style="list-style-type: none"> <li>- All infrastructure complete, functional and providing services</li> <li>- Final evaluation</li> <li>- Climate policy update completed</li> </ul>	

Schedule date	October 2019 Or Upon Signing	October 2020	October 2021	October 2022	TOTAL
A. Project Funds (US\$)	\$670,000	\$2,000,000	\$1,705,000	\$212,557	\$4,587,557
B. Programme Execution	\$80,392	\$162,892	\$152,892	\$85,391	\$481,567
C. Programme Cycle Mgt	\$54,000	\$94,800	\$233,900	\$48,176	\$430,876
<b>TOTAL</b>	<b>\$804,392</b>	<b>\$2,257,692</b>	<b>\$2,091,792</b>	<b>\$346,124</b>	<b>\$5,500,000</b>



**Part IV: Endorsement by government and certification by the Implementing Entity**

**A. Record of endorsement on behalf of the government<sup>62</sup>** Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:

Mr. Syamphone SENGCHANDALA Deputy Director General Department of Climate Change (DCC) Ministry of Natural Resources and Environment  Designated National Authority for the Adaptation Fund of Lao PDR	Date: 31 <sup>st</sup> December, 2018  (Note, this is the main endorsement letter)
Mr. Phomma Veovaranh, Director General, Water Supply Department, Ministry of Public Works & Transport	Date 26 <sup>th</sup> December 2018  (Note, this is a supporting letter)

Please see letters scanned on the following page

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1. <sup>6.</sup> Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.



Lao People's Democratic Republic  
Peace Independence Democracy Unity Prosperity

Ministry of Natural Resources and Environment (MONRE)  
Department of Climate Change (DCC)

No. 1028 / DCC  
Vientiane Capital, 31. December 2018

To: The Adaptation Fund Board  
c/o Adaptation Fund Board Secretariat  
Email: [Secretariat@Adaptation-Fund.org](mailto:Secretariat@Adaptation-Fund.org)  
Fax: 202 522 3240/5

**Subject: Endorsement for "Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR".**

Dear Sir or Madam

In my capacity as the National Designated Authority for the Adaptation Fund in Lao PDR, I confirm that the aforementioned project proposal is in accordance with the government of Lao PDR's national priorities in implementing climate change adaptation actions to reduce the impacts caused by the adverse effects of climate change. A final discussion took place in December 2018 between UN-Habitat, the Multilateral Implementing Entity and the proposed executing entities, including MoNRE, at which all stakeholders agreed to give support to the project.

Accordingly, I am delighted to endorse the aforementioned project and request the Adaptation Fund to give it due consideration. If approved, the project will be implemented by UN-Habitat, and executed by MoNRE, the Ministry of Public Works and Transport and the Nam Papa State Enterprise of Savannakhet Province. Several other government ministries and agencies will also be important stakeholders for the implementation of the project.



Sincerely,  
Mr. Syamphone Sengchandala  
Deputy Director General  
Department of Climate Change (MoNRE)  
Designed Authority for the Adaptation Fund of Lao PDR



Lao People's Democratic Republic  
Peace Independence Democracy Unity Prosperity

Ministry of Public Works and Transport  
Department of Water Supply

No.: 515 /DWS  
Date: 26 DEC 2018

To: Mr. Syamphone Sengchandala  
Deputy Director General  
Department of Climate Change (MoNRE)  
Designed Authority for the Adaptation Fund of Lao PDR

**Subject: Clearance Letter for the proposal on “Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR”.**

Dear Mr. Syamphone,

In my capacity as Director General of Department Water Supply at Ministry of Public Works and Transport (MPWT) that currently working as Executing Entity with UN-Habitat on implementation for the Adaptation project in Lao PDR on “Enhancing the climate and disaster resilience of the most vulnerable rural and emerging urban human settlements in Lao PDR” with referring to the MoU signed between UN-Habitat and MPWT dated 28<sup>th</sup> April 2017, please be informed that the ongoing project’s to enhance the climate and disaster resilience of the most vulnerable human settlements in Southern Laos by increasing sustainable access to basic infrastructure systems and services, emphasizing resilience to storms, floods, droughts, landslides and disease outbreaks by providing a comprehensive approach which strengthens national and local government capacities, policies and legal frameworks, enhances community capacities and facilitates processes that responds to current and future needs and provides a strong mix of soft and hard interventions it is anticipated that local resilience at the household, community and human settlements level is sustainably strengthened.

Whilst the planned interventions are strongly rooted in national and local priorities, in particular Sustainable Development Goal 11 (and several of its targets), Make cities and human settlements inclusive, safe, resilient and sustainable as well as Goal 6 (and its targets), Ensure availability and sustainable management of water and sanitation for all will be addressed by the project.

This initiatives are already piloting and demonstrating innovative approaches, developing institutional capacities of the national government and local authorities to increase the resilience of human settlements and infrastructure systems; enabling communities to improve their well-being/health conditions by developing local capacities and resilience strategies for their settlements and infrastructure systems; enhancing climate and disaster resilient infrastructure systems in human settlement; and as a module to scaling up to the another regional parts of Lao PDR.

I confirm that the above national project/programme proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Lao PDR.

As you are aware that Department of Water Supply, MPWT, and UN-Habitat with your support and endorsement, had submitted a 2<sup>nd</sup> concept note to the Adaptation Fund, entitled "*Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR*". We are delighted that this concept note has been approved by the Adaptation Fund Board at its meeting in October 2018.

UN-Habitat has now developed the full proposal in consultation with my department and the provincial/district authorities. The scope of work and activities in the proposal are in line with our Ministry's strategy and overall strategy of the NSEDP.

Accordingly, I am pleased to confirm to you, Mr. Syamphone Sengchandala, the National Focal Point for Adaptation Fund of Lao PDR, that we agree with the contents of the document and we would like you to kindly endorse the above project/programme proposal so as to receive support from the Adaptation Fund.

Grateful if you could kindly issue an endorsement letter please.

Sincerely,



Mr. Phomma Veoravanh  
Director General of Department Water Supply  
Ministry of Public Works and Transports

### Implementing Entity Certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans, including Laos's National Socio-economic Development Plan, and its Second National Communication under the UNFCCC, and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the implementing entity will be fully (legally and financially) responsible for the implementation of the project/programme.

*For Rungthong OIC.*

Raf Tuts, Director, Programme Division, UN-Habitat

**Date: January 3<sup>rd</sup>, 2019**

Tel and email: +254-20-762-3736,  
raf.tuts@un.org

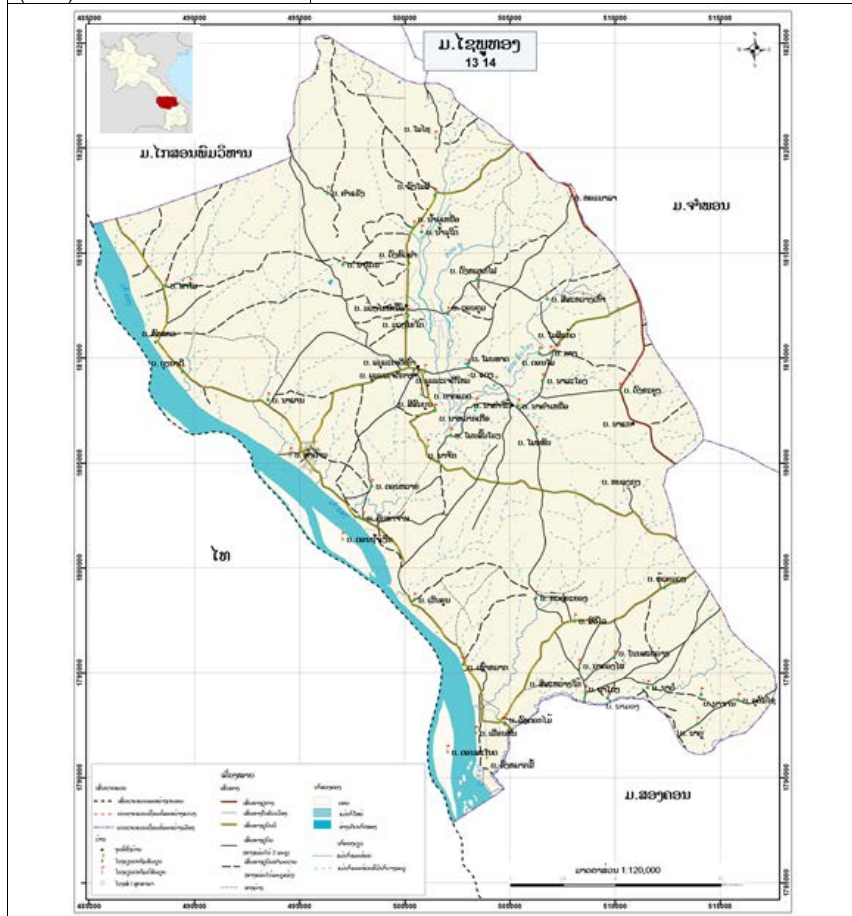
Project Contact Person: Bernhard Barth, Human Settlements Officer, Regional Office for Asia and the Pacific,

Tel+ 81-92-724-7121

Email: [bernhard.barth@un.org](mailto:bernhard.barth@un.org)

**Annex 1 – Rapid Vulnerability Assessments (RVA) from Sayphouthong and Sethamouak Towns**

RAPID VULNERABILITY ASSESSMENT (RVA)		
1314	SAYPHOUTHONG	SAVANNAKHET PROVINCE, LAO PDR
Population of District (2017)	48,188	
Population of District Town (2017)	48,188	
Population Growth Rate	1.65% annum	
Population of District Town (2025)	54,929	
Population of District Town (2032)	61,596	



One of the small towns in Lao PDR proposed for inclusion in the Adaptation Fund programme is **Sayphouthong** District in Savannakhet Province. Savannakhet Province is the most populated province in Lao PDR with the total population of 970,478 persons. The Province comprises of 15 districts of which four including Sayphouthong are officially classified as poor districts. The district of Sayphouthong is located in the Mekong lowlands in the western portion of Savannakhet province.

RAPID VULNERABILITY ASSESSMENT (RVA)		
1314	SAYPHOUTHONG	SAVANNAKHET PROVINCE, LAO PDR
<p>Sayphouthong District is the urban settlement located in the East-West Economic Corridor along Mekong river with the border with Thailand, the second friendship bridge across the Mekong at Savannakhet to Moukdahan (Thailand) and the already upgraded Highway No. 9 together with measures being taken to facilitate cross-border transportation created new opportunities to the community living along the Corridor. While Lao PDR is essentially a rural country, Sayphouthong District town of Savannakhet and other urban centers are playing an increasingly important role in the country's economic and social development.</p> <p>In view of the above, the Government of Lao PDR considers as of high priority the improvement of social and physical basic infrastructures of small towns along the Corridor in order to realize the expected benefits. Subsequently, Sayphouthong District Town with comparable advantage in terms of <i>"Climate action into urban planning to build resilient communities along an economic corridor in Lao PDR"</i>.</p> <p><b>Sayphouthong</b> District Town is composed of 39 core villages in 8 village clusters with a total 2017 population of 48,188 persons. In 2015, 100% of survey respondents belong to Tai-Kadai linguistic group (consisting of 73% Lao and 27% Phoutay) that form the majority of the national population. There are in total households, of which 8,908 households (27%) are considered as poor households.</p>		
CLIMATE CHANGE & DISASTER RISKS		
TEMPERATURE	Significant increase	
RAIN	Significant Decrease	
FLOOD	Years: every year	
STORM	Hima/Ketsana/Nokten/Songka	
DROUGHT	Years: every 3-4 years	
LANDSLIDE	Along Mekong River	
ENVIRONMENTAL ISSUES		
DEFORESTATION	No deforestation activity	
HYDROPOWER	No hydropower dam	
MINING	No mining activity	
UXO	None	
SOURCES OF INCOME		
AGRICULTURE	65%	
LIVESTOCK	20%	
HANDICRAFT	5%	
CASUAL LABOR	10%	
EDUCATION		
PRIMARY SCHOOL	36	
SECONDARY SCHOOL	28	
FULL SECONDARY SCHOOL	17	
HEALTH		
HOSPITAL	1	
DISPENSARY	30	
WATER-BORNE	Yes	
VECTOR-BORNE	Dengue	
WASH		
WATER	Dug well/deep bore well/Mekong river	
SANITATION	65% households have latrine	
PRIORITIZED NEEDS		
WATER SUPPLY	First priority	
HOUSEHOLD LATRINE	First priority	
SCHOOL LATRINE	Second priority	
HOSPITAL SANITATION	Second priority	
WASTEWATER (DEWATS)		
FLOOD PROTECTION	Bank protection of Mekong river (length: 700-800 m)	
LANDSLIDE PROTECTION		
WATER SOURCE	Mekong river	




RAPID VULNERABILITY ASSESSMENT (RVA)		
1314	SAYPHOUTHONG	SAVANNAKHET PROVINCE, LAO PDR
<b>MANAGEMENT</b>		
<b>SHELTER PROTECTION</b>		
<b>ISSUES/PROBLEM OF URBAN BASIC SERVICES</b>		
- Water Supply	<p>The Mekong River is the main water resource in Sayphouthong district. Its catchment accounts for 9% of the country's land area. According to a draft National Water Resource profile, the flow in the Mekong river varies from a minimum of 2,000 m<sup>3</sup>/s in the dry season to several thousand m<sup>3</sup>/s in the wet season, with an average of 15,000 m<sup>3</sup>/s. While the river is reportedly very high turbidity in the raining season, it carries large quantities of sediment in the wet season. The Mekong river is extensively used for irrigation.</p> <p>There are no water treatment facilities in the Sayphouthong District Town. Wealthier households buy bottled water at US\$15/m<sup>3</sup> about 100 times higher than the average tariff for formalized system. The majority of the population in the town relies on untreated water from open dug wells of over 40 meters deep, boreholes using hand pump and electric pump. Surface water (Sethamouak river) is also used during the rainy season although the turbidity is high. Water shortage in the dry season is a serious threat to the health of the population, particularly the poor households who could not afford to dig wells of over 35-40 meters deep.</p> <p>Present water supply coverage: <b>0%</b></p>	
- Wastewater/Drainage/Sanitation	<p>The issue of wastewater and the sanitation in Sayphouthong is not different from other small towns in the country: uncontrolled disposal of domestic wastewater, no drainage ditches in the public place such as markets, bus stations, schools or hospitals etc. Some households still have no sanitary latrine.</p> <p>Present sanitation coverage: <b>65%</b></p>	
- Solid Waste	<p>Solid waste is disposed in barren land without any control. Used plastic bags can be seen in areas around market places. Drainage ditches are provided only along the main urban road.</p>	
- Capacity Building	<p>Strengthening the capacity of the NSPE-Savannakhet aiming to ensure efficient and cost-effective management and operation, improved services to customers.</p>	
<b>PROPOSED INTERVENTIONS</b>		
- Integrating Climate Change Adaptation and Disaster Risk Management (DRM) in Urban Planning of Sayphouthong District	<ul style="list-style-type: none"> <li>• Improve understanding of the role of urban planning in climate change adaptation and disaster risk reduction;</li> <li>• Highlight importance of incorporating climate change adaptation and disaster risk information in urban planning;</li> <li>• Provide guidance on how to incorporate climate change adaptation and disaster risk information in urban planning; and</li> <li>• Identify enabling factors for incorporating disaster risk information in urban planning</li> </ul>	
- 24/7 Water Supply with water treatment system 3,600m <sup>3</sup> /day	<p>Proposed a water supply system 24/7 using surface water from Mekong river including:</p> <ul style="list-style-type: none"> <li>• Construction of intake involves construction of land disintegration prevention system by utilizing the Gabion Box system. Water will be pumped through submerging</li> </ul>	



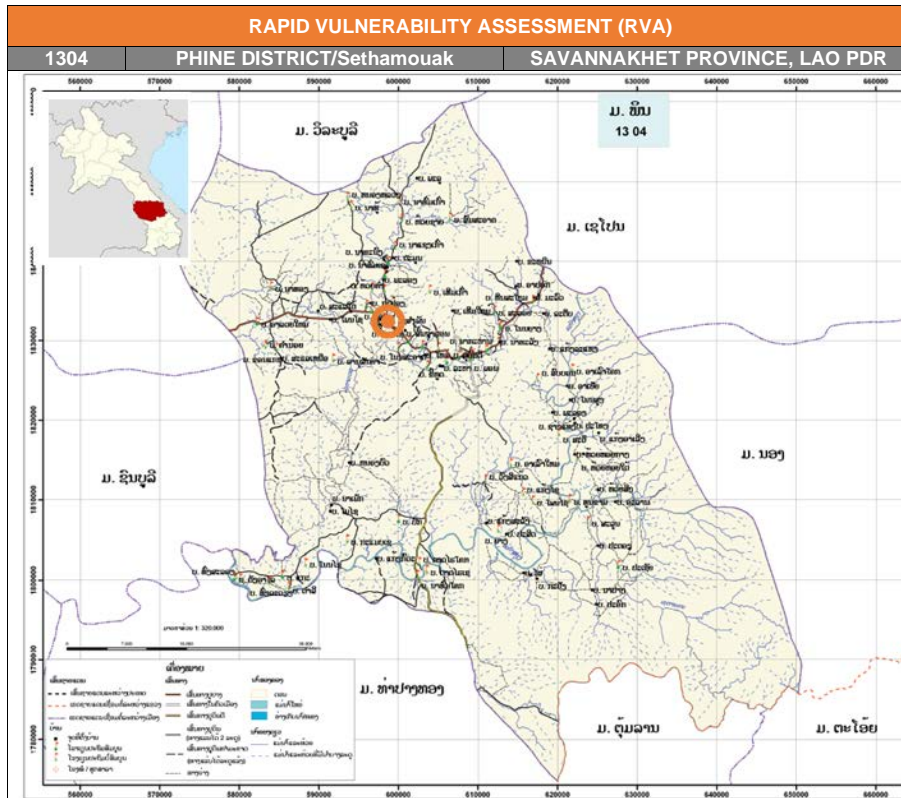
RAPID VULNERABILITY ASSESSMENT (RVA)		
1314	SAYPHOUTHONG	SAVANNAKHET PROVINCE, LAO PDR
		<p>pump and transmitted through DN 150 mm pipeline to the Pre-Sedimentation tank/Flocculation, Sedimentation Tank/Filters Tank/Clear Water Reservoir Tank/Pump House/Chlorine House/Elevated Reservoir 400 m3/Pump station with clear water tank 260 m3/Pipe Laying System and Sewage System inside the plant/Collection Pipe./Distribution Pipe network; and</p> <ul style="list-style-type: none"> <li>Household 24/7 water connection</li> </ul>
	- Sanitation	<ul style="list-style-type: none"> <li>Improvement/new construction of latrines for poor households</li> </ul>
	- Capacity Building	<ul style="list-style-type: none"> <li>Develop institutional capacities of the local authorities the disaster resilience of human settlements and infrastructure systems; and</li> <li>Capacity of the water supply utility improved resulting in more efficient and cost effective management and operation, and better service to the population</li> </ul>
<b>Expected Outcomes<sup>63</sup></b>		
	- Water Supply	<p>Improved water supply 24/7 to 54,929 people by 2025, including the poor and vulnerable; and</p> <ul style="list-style-type: none"> <li>Improved community health, disaster resilience and family income levels</li> </ul>
	- Sanitation	<ul style="list-style-type: none"> <li>Increased sanitation coverage to remaining poor people; and</li> <li>Greater awareness of the need for improved wastewater/drainage/ sanitation, leading to a cleaner urban environment.</li> </ul>
	- Solid Waste disposal	<ul style="list-style-type: none"> <li>Organize solid waste collection to promote a cleaner urban environment</li> </ul>
	- Capacity building	<ul style="list-style-type: none"> <li>Increase institutional capacities of the local authorities the disaster resilience of human settlements and infrastructure systems;</li> <li>More efficient and cost-effective management and operation; and</li> <li>Improve revenue generation, leading to sustainable improvements</li> </ul>
<b>COST OF INTERVENTIONS (US Dollars)</b>		
	Urban Planning	100,000
	Water Supply	3,200,000
	Sanitation	80,000
	Capacity building	50,000
	<b>Total</b>	<b>3,430,000</b>
	<b>Impact on building climate and disaster resilience capacities of vulnerable small town</b>	<p>Increase institutional capacities of the local authorities the disaster resilience of human settlements and infrastructure systems (as such water supply coverage and wastewater/drainage/sanitation conditions, particularly for the population living in area officially classified as poor and vulnerable district):</p> <ul style="list-style-type: none"> <li>Establish water supply24/7 for 48,188 peoples, including the poor and vulnerable;</li> <li>Pilot rainwater harvesting to promote the conservation rainwater and mitigate the flood;</li> <li>Increase sanitation coverage in the low-income and flood prone areas for the 16,865 remaining peoples;</li> </ul>

<sup>63</sup> Please note that the water supply was prioritized as the main adaptation measure for this proposal

RAPID VULNERABILITY ASSESSMENT (RVA)		
1314	SAYPHOUTHONG	SAVANNAKHET PROVINCE, LAO PDR
		and <ul style="list-style-type: none"> <li>• Enable communities in the small town to improve their well-being/health conditions by developing local capacities and resilience strategies for their settlements and infrastructure systems</li> </ul>
RAPID VULNERABILITY ASSESSMENT PICTURES		
Meeting with District governor Dated 19/07 /2018		
Meeting with stakeholder: DoNRE/DoL/DoH/DPWT/ NPSE-Savannakhet Dated 19/07 /2018		
Data collection		 
Consultation with communities		

RAPID VULNERABILITY ASSESSMENT (RVA)		
1314	SAYPHOUTHONG	SAVANNAKHET PROVINCE, LAO PDR
	Field visit with District governor: To select the location for Intake & WTP At Mekong river	  
	Field visit: Location for Elevated reservoir	

RAPID VULNERABILITY ASSESSMENT (RVA)		
1304	PHINE DISTRICT/Sethamouak	SAVANNAKHET PROVINCE, LAO PDR
Population of District (2018)		64,634
Population of District Town (2018)		8,956
Population Growth Rate		2.5% annum
Population of District Town (2025)		10,288
Population of District Town (2030)		11,358



One of the small towns in Lao PDR proposed for inclusion in the Adaptation Fund programme is **Sethamouak** the District Town of Phine in Savannakhet Province. Savannakhet Province is the most populated province in Lao PDR with the total population of 979,000 persons. The Province comprises of 15 districts of which four including Phine are officially classified as poor districts. Phine District is the third largest urban settlement located in the East-West Economic Corridor, on the junction between the highway No 9 linking the North East of Thailand to the central Part of Viet Nam and the highway No. 23 providing access to the South-East hinter land provinces (Saravane, Attapeu and Sekong).


In view of the above, the Government of Lao PDR considers as of high priority the improvement of social and physical basic infrastructures of small towns along the Corridor in order to realize the expected benefits. Subsequently, Sethamouak District Town of Phine District with comparable advantage in terms of **“Climate action into urban planning to build resilient communities along an economic corridor in Lao PDR”**.

**Sethamouak** Town is composed of 7 villages with a total 2018 population of 8,956 persons. About sixty two (62) percent of the population are “Phouthai, Katang and Mangkone”, three of the minority ethnic groups in Lao PDR. There are in total 1,533 households, of which 541 households (35%) are considered as poor households.





CLIMATE CHANGE & DISASTER RISKS	
<b>TEMPERATURE</b>	Significant increase
<b>RAIN</b>	Significant Decrease
<b>FLOOD</b>	Years: 2005/2009/2011/2012/2017
<b>STORM</b>	Hima/Ketsana/Nokten/Doksuri
<b>DROUGHT</b>	Years: 2013/2014/2015
ENVIRONMENTAL ISSUES	

RAPID VULNERABILITY ASSESSMENT (RVA)		
1304	PHINE DISTRICT/Sethamouak	SAVANNAKHET PROVINCE, LAO PDR
<b>DEFORESTATION</b>	No deforestation activity	
<b>HYDROPOWER</b>	No hydropower dam	
<b>MINING</b>	No mining activity	
<b>UXO</b>	None	
<b>SOURCES OF INCOME</b>		
<b>AGRICULTURE</b>	55%	
<b>LIVESTOCK</b>	25%	
<b>HANDICRAFT</b>	5%	
<b>CASUAL LABOR</b>	15%	
<b>EDUCATION</b>		
<b>PRIMARY SCHOOL</b>	6	
<b>SECONDARY SCHOOL</b>	6	
<b>FULL SECONDARY SCHOOL</b>	5	
<b>HEALTH</b>		
<b>HOSPITAL</b>	1	
<b>DISPENSARY</b>	6	
<b>WATER-BORNE</b>	Yes	
<b>VECTOR-BORNE</b>	Dengue	
<b>WASH</b>		
<b>WATER</b>	Hand dug well/deep bore well/Xetamouak river	
<b>SANITATION</b>	43% households have latrine	
<b>PRIORITIZED NEEDS</b>		
<b>WATER SUPPLY</b>	First priority	
<b>HOUSEHOLD LATRINE</b>	First priority	
<b>SCHOOL LATRINE</b>	Second priority	
<b>HOSPITAL SANITATION</b>	Second priority	
<b>WASTEWATER (DEWATS)</b>		
<b>FLOOD PROTECTION</b>	Bank protection of Sethamouak river (length: 80 m)	
<b>LANDSLIDE PROTECTION</b>		
<b>WATER SOURCE MANAGEMENT</b>	Sethamouak river	
<b>SHELTER PROTECTION</b>		
<b>ISSUES/PROBLEM OF URBAN BASIC SERVICES</b>		
- Water Supply	<p>There are no water treatment facilities in the Sethamouak District Town. Wealthier households buy bottled water at US\$15/m<sup>3</sup> about 100 times higher than the average tariff for formalized system. The majority of the population in the town relies on untreated water from open hand dug wells of over 40 meters deep, boreholes using hand pump and electric pump. Owners of private boreholes sell the water by drums of 200 litres at a cost of US\$0.2 to US\$0.3 per drum that is affordable to those who have substantial income such as those engaged in trade and service sectors. Surface water (Sethamouak river) is also used during the rainy season although the turbidity is high. Water shortage in the dry season is a serious threat to the health of the population, particularly the poor households who could not afford to dig wells of over 40 meters deep. Some have to rely on water confined in depression areas of river bed.</p> <p>Present water supply coverage: <b>0%</b></p>	
- Wastewater/Drainage/Sanitation	<p>The issue of wastewater and the sanitation in Phine is not different from other small towns in the country: uncontrolled disposal of domestic wastewater, no drainage ditches in the public place such as markets, bus stations, schools or hospitals etc. Some households</p>	

RAPID VULNERABILITY ASSESSMENT (RVA)		
1304	PHINE DISTRICT/Sethamouak	SAVANNAKHET PROVINCE, LAO PDR
		still have no sanitary latrine. Present sanitation coverage: <b>43%</b>
- Solid Waste		Solid waste is disposed in barren land without any control. Used plastic bags can be seen in areas around market places. Drainage ditches are provided only along the Highway No. 9
- Capacity Building		Strengthening the capacity of the NSPE-Savannakhet aiming to ensure efficient and cost-effective management and operation, improved services to customers.
PROPOSED INTERVENTIONS		
- Integrating Climate Change Adaptation and Disaster Risk Management (DRM) in Urban Planning of Phine District		<ul style="list-style-type: none"> <li>• Improve understanding of the role of urban planning in climate change adaptation and disaster risk reduction;</li> <li>• Highlight importance of incorporating climate change adaptation and disaster risk information in urban planning;</li> <li>• Provide guidance on how to incorporate climate change adaptation and disaster risk information in urban planning; and</li> <li>• Identify enabling factors for incorporating climate change adaptation and disaster risk information in urban planning</li> </ul>
- 24/7 Water Supply with water treatment system		<p>Proposed a water supply system 24/7 using surface water from Sethamouak river including:</p> <ul style="list-style-type: none"> <li>• Construction of Dam approx. 65 m length;</li> <li>• Construction of intake involves construction of land disintegration prevention system by utilizing the Gabion Box system. Water will be pumped through submerging pump and transmitted through DN 150 mm pipeline to the Pre-Sedimentation tank/Flocculation, Sedimentation Tank/Filters Tank/Clear Water Reservoir Tank/Pump House/Chlorine House/Elevated Reservoir 200 m<sup>3</sup>/Pipe Laying System and Sewage System inside the plant/Collection Pipe./Distribution Pipe network; and</li> <li>• Household 24/7 water connection. <a href="#">Further information can be found in Annex 4.</a></li> </ul>
- Sanitation		<ul style="list-style-type: none"> <li>• Improvement/new construction of latrines for poor households</li> </ul>
- Capacity Building		<ul style="list-style-type: none"> <li>• Develop institutional capacities of the local authorities the disaster resilience of human settlements and infrastructure systems; and</li> <li>• Capacity of the water supply utility improved resulting in more efficient and cost effective management and operation, and better service to the population</li> </ul>
Expected Outcomes		
- Water Supply		<ul style="list-style-type: none"> <li>• Improved water supply 24/7 to 10,288 people by 2025, including the poor and vulnerable; and</li> <li>• Improved community health, disaster resilience and family income levels</li> </ul>

RAPID VULNERABILITY ASSESSMENT (RVA)		
1304	PHINE DISTRICT/Sethamouak	SAVANNAKHET PROVINCE, LAO PDR
- Wastewater/Drainage/Sanitation	<ul style="list-style-type: none"> <li>Increased sanitation coverage to remaining poor people; and</li> <li>Greater awareness of the need for improved wastewater/drainage/ sanitation, leading to a cleaner urban environment.</li> </ul>	
- Solid Waste disposal	<ul style="list-style-type: none"> <li>Organize solid waste collection to promote a cleaner urban environment</li> </ul>	
- Capacity building	<ul style="list-style-type: none"> <li>Increase institutional capacities of the local authorities the disaster resilience of human settlements and infrastructure systems;</li> <li>More efficient and cost-effective management and operation; and</li> <li>Improve revenue generation, leading to sustainable improvements</li> </ul>	
<b>COST OF INTERVENTIONS (US Dollars)</b>		
Urban Planning	50,000	
Water Supply	750,000	
Sanitation	30,000	
Solid Waste disposal	20,000	
Capacity building	30,000	
<b>Total</b>	<b>880,000</b>	
<b>Impact on building climate and disaster resilience capacities of vulnerable small town</b>	<p>Increase institutional capacities of the local authorities the disaster resilience of human settlements and infrastructure systems (as such water supply coverage and wastewater/drainage/sanitation conditions, particularly for the population living in area officially classified as poor and vulnerable district):</p> <ul style="list-style-type: none"> <li>Establish water supply 24/7 for 8,956 people, including the poor and vulnerable;</li> <li>Pilot rainwater harvesting to promote the conservation rainwater and mitigate the flood;</li> <li>Increase sanitation coverage in the low-income and flood prone areas for the 5,104 remaining peoples; and</li> <li>Enable communities in the small town to improve their well-being/health conditions by developing local capacities and resilience strategies for their settlements and infrastructure systems</li> </ul>	
<b>RAPID VULNERABILITY ASSESSMENT PICTURES</b>		
Meeting with District governor/DoNRE/DPWT/ NPSE-Savannakhet Dated 13/12/2017		

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RAPID VULNERABILITY ASSESSMENT (RVA)		
1304	PHINE DISTRICT/Sethamouak	SAVANNAKHET PROVINCE, LAO PDR
	Data collection	
	Consultation with communities	
	Field visit: Sethamouak river (at downstream)	
	Field visit: Sethamouak river (at upstream)	



**Annex 2 – Comprehensive Gender Assessment of Sayphouthong and Phine Districts (Sethamouak is the largest population centre in Phine District)**



November 2018 – Revised April 2019

## **Background**

The proposed project's main objective is to build climate resilience in small towns along the east-west economic corridor in the central region of Lao PDR. The two towns of Sayphouthong, in the district of the same name and Sethamouak (in Phine district) are highly vulnerable settlements in the province of Savannakhet. These towns have been selected due to their low level of resilience based on high levels of poverty, high exposure to severe climatic events, low institutional capacity and preparation.

In Savannakhet Province, floods commonly destroy houses and infrastructure and public buildings and common health problems resulting from the consumption of contaminated water arise frequently. This combined with high levels of poverty, rapid urbanisation, almost no access to basic services, particularly continuous, clean water supply, limited knowledge of how climate change interplays with these issues, high numbers of indigenous people, and gender inequality, combine to give a low adaptive capacity. Based on these factors and through close and frequent consultations, authorities and communities unanimously prioritised the construction of water treatment plants in the two towns to serve the surrounding communities.

As described in [Part 1](#) of the proposal, women in the two target towns (and as in much of Laos) are particularly vulnerable to climate change, because severe hazards such as storms, floods and droughts combine with drivers of underlying vulnerability for women, such as lower levels of high school enrolment and graduation, lower levels of literacy, lower rates of unemployment, higher rates of economic inactivity, dependence on agriculture and a lack of social protection. Furthermore, social norms and traditions can place additional burdens on women. In many cases women are primary care givers, and are responsible for collecting water. Because of the additional burdens placed on women through water collection, care giving and the impacts of climate change, providing consistent water supply to households is an adaptation action that has benefits for all, but is particularly beneficial for women.

However, it is essential that the project is designed and implemented in a way that specifically benefits women. This annex provides baseline figures that the project partially seeks to address, and provides wider awareness of the contextual factors that constrain women's ability to adapt to climate change. This proposal also includes an environmental and social risk assessment and management plan (see [Annex 5](#)), in response to the Environmental and Social, and Gender Policies of the Adaptation Fund. Measures to protect and promote women in the implementation of the project are described there. This section focuses on the current baseline situation of women in the two target districts. However, this section, and the proposal more generally, has been developed in conjunction with Lao Women's Union and the quotas for female participation it includes have been discussed and agreed with LWU.

## **Context**

According to the 2015 Population and Housing Census, Savannakhet Province has a population of 969,700, making it the most populous province in the country, with around 15% of the national population. The male to female sex ratio is 0:98:1<sup>64</sup>.

As Savannakhet is situated along the EWEC and is characterised by high rates of urbanisation, development poses risks for vulnerable populations, particularly women. Fragile natural resources, a reliance on agriculture for food and income and low literacy levels amongst women all contribute to the vulnerabilities and risks of unplanned, unmonitored growth in Savannakhet.

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<sup>64</sup> LSB *et al* (2015) Lao Population and Housing Census Provisional Report, p.16

Furthermore, more frequent and severe natural disasters are affecting the area every year, which calls for an urgent need to act now rather than later.

Women in Laos, including in Savannakhet and the two target towns, play a critical role in agriculture and other economic activities – even when the statistics (such as those in the census) say that women are less likely to be in informal employment. Women in the target area are also responsible for providing primary care in the household, preparation of food and also spend long hours performing off-farm and household chores, including collecting water and firewood, and caring for children<sup>65</sup>.

Key socio-economic characteristics within Savannakhet follow trends of the country as a whole. Recent data has shown that women in most areas of Lao PDR face a lack of awareness about maternal health and malnutrition, and education inequality. Low-quality education and consistent dropout rates among girls have ranked Lao PDR as one of the lowest performers in the East Asia Pacific region in girls' education<sup>66</sup>.

During the stakeholder consultations, involving Lao Women's Union representatives in Savannakhet province, it was identified that mostly women and girls are responsible for the task of collecting water in the target settlements of the project (as like in many other places), which poses a serious burden, especially if they have to walk considerable distances while combining other chores such as caring for young children. Women lose out on other income opportunities while there are instances of girls dropping out of schools to attend to such domestic errands.

**Socioeconomic data on men and women in the target area**

Data	National	Savannakhet	Sayphouthong	Phine District/Sethamouak
Population	6,492,228 <sup>67</sup>	969,700 <sup>68</sup>	48,818	8,956 (Sethamouak)
Sex Ratio	0.99:1 M/F	0.99 (M/F)	0.88 (M/F)	0.84 (M/F Sethamouak)
Average Household Size <sup>69</sup>	5.3 <sup>70</sup>	6.1	5.3	6.3 (Phine), 5.9 (Sethamouak)
Female-Headed Households	13.2%		19.5%	8.4%
No. of Villages with electricity (/total villages) <sup>71</sup>	84% of households <sup>72</sup>	739/1017	39/40	49/100 (Phine)
No. of Villages with piped <sup>73</sup> water	7% of households <sup>74</sup>	111/1017	2/40	7/100

<sup>65</sup> *Khamphoui, Phanlany. 2012. "SCOPING STUDY ON WOMEN'S LEADERSHIP IN THE AGRICULTURE SECTOR IN LAO PDR: Capacity Building for Women's Leadership in Farmer Producer Organizations in Asia and the Pacific Region Project". Women Organising for Change in Agriculture and NRM (WOCAN).*

<sup>66</sup> *Japan International Cooperation Agency (JICA). 2013. "Profile on Environmental and Social Considerations in Lao P.D.R". Retrieved from <http://open.jicareport.jica.go.jp/pdf/12144762.pdf>*

<sup>67</sup> Lao Statistics Bureau (2015) Results of the Population and Housing Census, p.22

<sup>68</sup> LSB *et al* (2015) Lao Population and Housing Census Provisional Report, p.48

<sup>69</sup> *Ibid*

<sup>70</sup> Lao Statistics Bureau (2015) Results of the Population and Housing Census, p.83

<sup>71</sup> LSB *et al* (2015) Lao Population and Housing Census Provisional Report, p.48

<sup>72</sup> Lao Statistics Bureau (2015) Results of the Population and Housing Census, p.91

<sup>73</sup> *ibid*

<sup>74</sup> Lao Statistics Bureau (2015) Results of the Population and Housing Census, p.91

supply (/total villages)				
Primary School Enrolment and girl/boy ratio <sup>75</sup>	75.8% Male 75.3% Female	68.3%, 0.92 (G/B)	81.2%, 1:1	53.1% 0.9:1 (G/B – Phine District)
High school enrolment and girl/boy ratio	23.4% Male 20.1% Female	15%, 1.04:1 (G/B)	17.6%, 0.97:1 (G/B)	6.2%, 0.84:1 (G/B – Phine District)
Literacy Rate <sup>76</sup>	88.5% men 76.7% women	71% men 56% women	93.2% (gender disaggregated figures not available)	47.6% (gender disaggregated figures not available)
Dependency rate <sup>77,78</sup>	38.9%	36.4%	29.8%	43.4%
Women in Non-Agricultural Employment	37.2%	41.4%	46.2%	36.6%
Percentage of people born in the District they currently live <sup>79</sup>		89.5% men 92.9% women		

### Analysis

As we understand that underlying vulnerabilities affect women more greatly than men, the data provided above paints a picture of high levels of underlying vulnerability, especially for women. In Sethamouak Town (and Phine District) there is an average family size of around 6, much greater than the national average. As women are the primary domestic care-givers<sup>80</sup>, this means that in the target area, especially in Sethamouak, they are more heavily burdened but domestic responsibilities, which would be exacerbated by both having to fetch water daily and by any severe impacts of climate change. Underlying vulnerability is generally higher in Sethamouak Town/Phine District, so it is worth noting that the rate of female headed households is 2 and a half times higher – and well above the national average – in Sayphouthong. This also indicates higher vulnerability, as women are responsible for both providing the main source of income, as well as domestic tasks described elsewhere in this Gender Assessment.

Electricity coverage is high throughout the target area, which improves outcomes for women, especially safety, through better lighting. However, as shown above and elsewhere in the proposal water supply is virtually non-existent, only 2 of Sayphouthong and 7 of Phine District's villages – and none of the villages targeted in this project, have piped water in the house, meaning the burden of collecting water falls almost entirely on women. This is one of the major justifications why the project has proposed water supply as an adaptation measure, and why women stand to benefit exponentially from it.

<sup>75</sup> World Bank/Lao Statistics Bureau (2016) Where are the Poor? P.105

<sup>76</sup> Ibid, p.21 – refers to adults 25-64 years old

<sup>77</sup> People of working age not in education or formal employment and not currently seeking employment. This is a proxy for women who do unpaid domestic work

<sup>78</sup> Ibid, p.113

<sup>79</sup> Lao Statistics Bureau (2015) Results of the Population and Housing Census, p.140

<sup>80</sup> World Vision (2018) Gender Analysis Report: Partnership for Improved Nutrition in Lao PDR Pillar 3: Accelerating Healthy Agriculture and Nutrition

The education indicators in the target districts, as in much of Laos, are very poor. The primary enrolment rate nationally, in Savannakhet and in Sayphouthong has a relatively even girl to boy ratio, but in Phine District this is slightly lower for girls. However, the high school enrolment rate is very low throughout the country, but is even lower in Sayphouthong and a very low rate of just over 6 per cent in Phine District. The girl to boy ratio also decreases, especially in Phine. This is a severe development challenge – few people – especially women – are receiving sufficient education to enable them to move into industrial or service type jobs that tend to be less directly dependent on a conducive climate. The educational challenges are borne out in the literacy rate, which is low throughout the country and especially low in Phine. While gender disaggregated figures are not available, considering that female literacy is 15% lower in Savannakhet Province than male, we can assume that women's literacy is lower too in Phine. Literacy is a good proxy for adaptive capacity and it therefore shows that women have lower adaptive capacity.

The dependency rate is also high, again, especially in Phine District. Figures for the dependency ratio are not gender disaggregated, but a high dependency ratio is a proxy for high levels of women not in formal employment, and instead doing informal work inside and outside the home. In many cases, dependency ratios are high because women are required by the societal structure to do domestic tasks, such as collecting water and caring for infants or the elderly, while men work. High dependency often points to a household with only one breadwinner, thus increasing vulnerability if that income source is cut off. Moreover, economic opportunities are not forthcoming in many cases, meaning women also lack opportunities to engage in the formal economy. These factors are exacerbated by climate change during droughts, for example, when water is scarce, or during severe storms, when homes are often damaged (and basic services may not be available).

Finally, women born in the district where they currently live is high, and slightly higher than the comparative figure for men. This tends to suggest low overall rates of migration (which is also backed up by the 2015 Population and Housing Census Report), especially for women. However, it also suggests a lack of mobility (probably directly related with low skill levels). This also correlates with higher vulnerability, because if disasters hit or slow onset, long-run changes occur, people, and especially women, are less able to move. The benefits of the provision of a closed water source for vulnerable populations, especially women cannot be underestimated. Major vulnerabilities in our target area such as low literacy and high dependency levels, can be lessened by easing the pressures of daily burdens. Importantly, water supply in or very nearby the home frees up vital hours of the day for education, skill acquirement or farming; having the potential to lessen dependency levels with alternative sources of income. Women who have to walk a long distance to remote water sources are also exposed to the possibility of physical or sexual violence and the burden of carrying children. The project's activities will therefore have benefits beyond the climate change adaptation benefits for women through providing water in or adjacent to the home.

### **Provisions and Activities of the Project to include women**

While the analysis above points to complex socioeconomic problems that go well beyond the scope of the project's activities, the project nevertheless makes specific targets for the adaptation and benefit of women.

As shown in [Part III, Section E](#), the inclusion of women has been included throughout the Results Framework. All training and planning outputs and outcomes include at least 30% women. This represents an ambitious target, considering the paucity of professional female staff at the subnational level.

Component 2 of the project will provide adaptation benefits through year-round water supply to all households in both target towns, so there is no risk of exclusion for women as a result of this activity. However, female headed households will be prioritized so that they are the first to receive connections to the new infrastructure. Consultations will be held throughout the detailed planning and construction of the infrastructure in the two target towns, and this will involve specific focus groups/consultations with women (as well as indigenous people).

Component 3 will make specific recommendations to national policy development and enhancement, including, but not limited to, the under-formulation National Adaptation Plan and revision of the NDC. Specific knowledge will be generated and recommendations made on planning for and delivering adaptation projects in infrastructure in such a way that include and promote women, and enhance their adaptation outcomes.

In terms of the project's management and governance, as described in [Part III, Section A](#), Lao Women's Union will participate in the Project Management Committee, ensuring that a representative of women's interests will always participate in the highest management body of the project. The national level project team will have the explicit responsibility of ensuring that the project is included in compliance with the Gender Policy of the Adaptation Fund. The Project Execution Unit, which is the main manager of day-to-day activities at the provincial level, will also have a representative from Lao Women's Union and at least one other female member. Overall, it is the responsibility of the team leader (in the project team) to ensure compliance with the Gender Policy of the Adaptation Fund, while the PMC will oversee this and provide guidance.

#### **Gender Action Plan**

The project has developed the following gender action plan to ensure equal participation of women and other vulnerable groups, including indigenous people in the project's implementation. The GAP describes measures that have been or will be included in the project design and implementation approach to gender equality. This particularly focuses on the provisions that have been or will be made to ensure that women benefit equally from the planning and infrastructure components of the project and to ensure that women are not excluded.

Among the gender mainstreaming strategies to be implemented are:

- Ongoing consultations with women in women-only focus groups throughout the project implementation.
- Provide gender-sensitive training, awareness and communication for women, recognizing that literacy rates are low in the target area, especially for women
- Ensure that there are female staff members throughout the management hierarchy and that Lao Women's union is fully and meaningful engaged

The specific provisions of the gender action plan, by project outcome and activity, are highlighted in the table below:

Project Outcome	Output	Action	Indicator	Responsible Party
<b>Outcome 1.1</b> 40 government staff, at least 15 of whom female, have increased capacity to design climate resilient urban infrastructure in small towns	<b>Output 1.1.1</b> Training provided to district, provincial and national government staff on resilient infrastructure design. Female government staff must be represented	Define the trainee group ensuring that women in professional positions are identified  Conduct training needs assessment that includes information on barriers faced by women	Number of trainees – sex disaggregated  Training materials	Executing entity Team Leader PMC will review the engagement of women
<b>Outcome 1.2</b> 60 government staff, at least 20 of whom are female, have capacity to develop climate resilient town master plans and two master plans approved, that support the development of resilient infrastructure, serving 57,144 people, 53.5% of whom are female.	<b>Output 1.2.1</b> Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented  <b>Output 1.3.1</b> Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the project area	Define the trainee group ensuring that women in professional positions are identified (note this is a different trainee group from 1.1.1., above, and different women will be engaged)  Conduct training needs assessment that includes information on barriers faced by women  Conduct specific, targeted focus groups for women to ensure that the master plans have their input	Number of trainees – sex disaggregated  Training materials  2 masterplans that contain specific activities, targets and objectives for women.  Focus Group Discussion documentation (photographs, attendance, etc)	Executing entity Team Leader PMC will review the engagement of women
<b>Outcome 2</b> 57,144 people, 53.5% of whom are female, who currently have inadequate water and/or protective infrastructure, have access to year-round, clean water and protective infrastructure despite current climate hazards and future changes in climate	<b>Output 2.1.</b> New resilient infrastructure constructed in response to climate change impacts, including variability	Further consultations to take place before and during construction, that will include women-only focus groups  Ensure that women have the opportunity to work in construction (if they wish) and if they do, that facilities, including safety equipment and adequate sanitation facilities are available  Female headed households will be prioritized to receive the first connections	Focus Group Discussion documentation (photographs, attendance, etc)	Executing entity Team Leader PMC will review the engagement of women
<b>Outcome 3</b>	<b>Output 3.1.</b>	When developing case studies, at least 1 will	Case studies	Executing entity

<p>Project implementation is fully transparent. All stakeholders, including women, are informed of products and results and have access to these for replication.</p>	<p>Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.</p> <p><b>Output 3.2</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure, including the provision of infrastructure in a way that benefits women</p>	<p>be specific to the engagement of women in the project, and all case studies will stress the need to comprehensively engage women</p> <p>Identify 35 female government staff for awareness raising (these will be distinct from the government staff trained in Component 1)</p>	<p>Other awareness-raising materials</p>	<p>Team Leader PMC will review the engagement of women</p>
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**Annex 3 – Feasibility Study of Implementation for Sayphoutong Town**

LAO PEOPLE'S DEMOCRATIC REPUBLIC  
MINISTRY OF PUBLIC WORKS AND TRANSPORT  
DEPARTMENT OF WATER SUPPLY

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**FEASIBILITY STUDY FOR  
SAYPHOUTHONG TOWN**



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Prepared by  
UN-Habitat in association with NPSE-Savannakhet

## EXECUTIVE SUMMARY

### Project Description

Sayphouthong District is the urban settlement located in the East-West Economic Corridor along Mekong river with the border with Thailand, the second friendship bridge across the Mekong at Savannakhet to Moukdahan (Thailand) and the already upgraded Highway No. 9 together with measures being taken to facilitate cross-border transportation created new opportunities to the community living along the Corridor. While Lao PDR is essentially a rural country, Sayphouthong District town of Savannakhet and other urban centers are playing an increasingly important role in the country's economic and social development.

In view of the above, the Government of Lao PDR considers as of high priority the improvement of social and physical basic infrastructures of small towns along the Corridor in order to realize the expected benefits.

**Sayphouthong** is one of the small towns in Lao PDR proposed for inclusion in the Adaptation Fund programme. The proposed Sayphouthong district town aims to mainstream **“Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR”**, to provide safe, reliable and affordable 24/7 piped water supplies and village environmental improvements in small towns along an economic corridor. It has been formulated as a community-based project and in line with “Samsang” (3 level development), requiring the towns and their provincial authorities to demonstrate their commitment to the project and its associated reforms, thus encouraging a demand-driven approach. The project has a strong community participation focus, reinforced by environmental and social safeguard, health and sanitation awareness.

### Rationale

### Background

While Lao PDR is essentially a rural country, Sayphouthong district town and other urban centers are playing an increasingly important role in the country's economic and social development. Over the past decade, substantial investments have been made in the urban water supply sector; however the majority of investment has focused on Vientiane capital and the four secondary towns, which represent only about 47% of the country's urban population. The remaining small towns with populations ranging from 4,000 to 20,000 were largely neglected until the UN-Habitat's project MEKWATSAN.

Inadequate water supply and poor environmental conditions in Sayphouthong town and other small towns deter socio-economic development and restrict the ability of the towns to serve as centers for economic activity and delivery of social services for their surrounding rural areas.

### Project Supports Government Policy

The Project will build on the Government's policy of developing small towns as centers of marketing and agricultural processing, as economic links between rural, national and international markets, and as places offering non-farm employment to the rural poor. By developing these small urban centers, the Government is also seeking to reduce poverty through economic growth and improve geographical equity in urban social infrastructure development. The Project supports Government of Lao PDR's (GOL's) water supply sector goal which is to provide 24-hour per day access to safe drinking water for 80% of the urban population by the year 2020. [For further information on how the project supports the](#)

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government's priorities and complies with laws and technical standards, see Part II, Sections D and E.

### **Project Impact and Outcome**

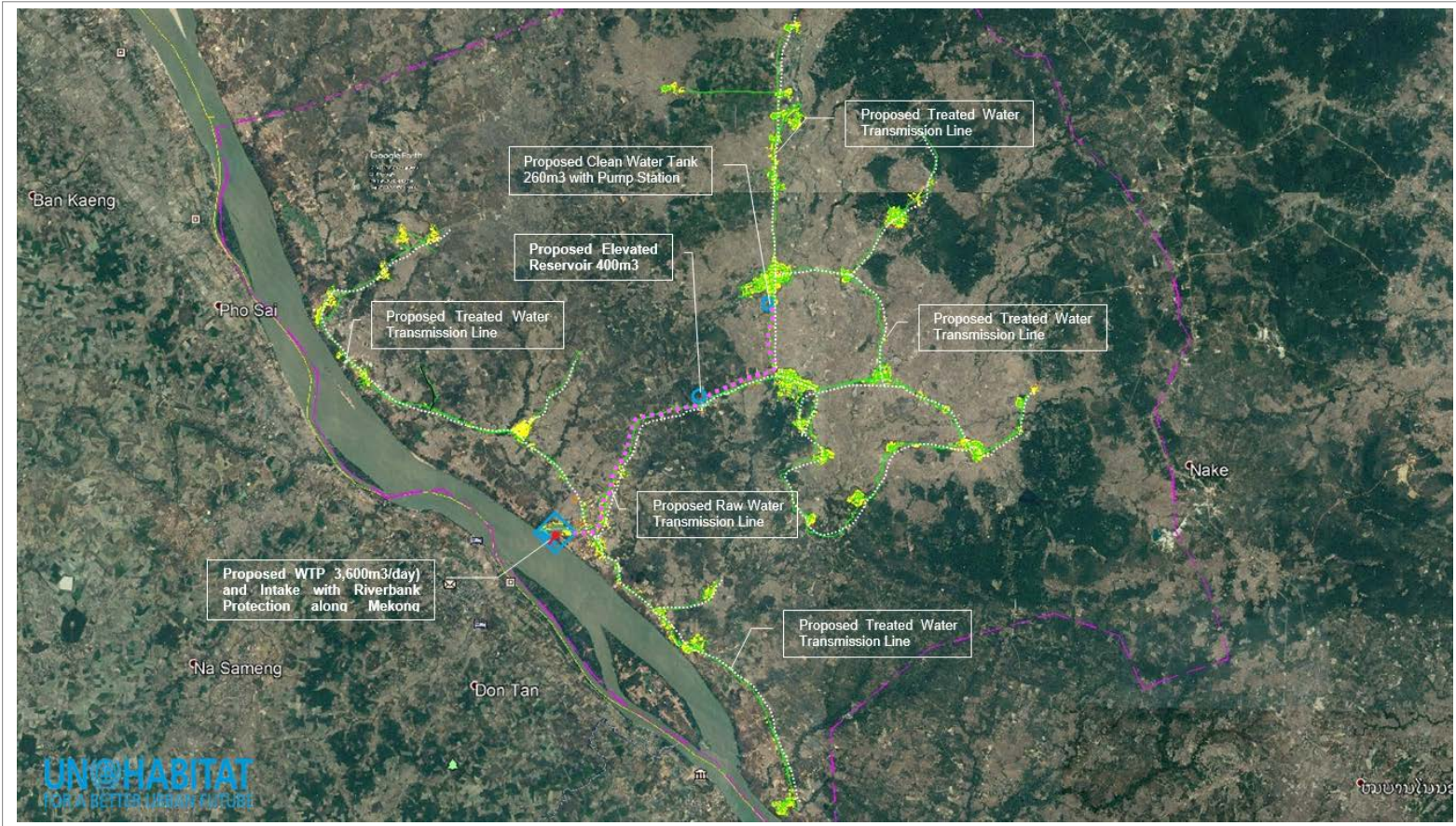
The expected impact of the Project is to build resilience to climate change in communities along an economic corridor in the central region of Lao PDR. This will be achieved by the provision of climate resilient infrastructure and the mainstreaming of climate action into urban planning. To achieve this objective, the project focuses its actions on highly vulnerable settlements along the economic corridor in the province of Savannakhet and also to improve quality of life of small town residents in Lao PDR and enhanced role of the small towns as economic, market, services, and manufacturing centers for their surrounding rural areas.

These outcomes will be achieved by:

- Mainstreaming climate action into urban planning to build resilient communities along an economic corridor in Lao PDR;
- Establishing new optimally sized water supply systems using appropriate innovation technologies;
- Motivating public participation in water and sanitation infrastructure development to improve the environment; and
- Strengthening the urban water supply sector planning, managing, and regulating capacity

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**Location Plan of Proposed Sayphouthong Water Treatment Plant**

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## PROJECT DESCRIPTION

### Project Description

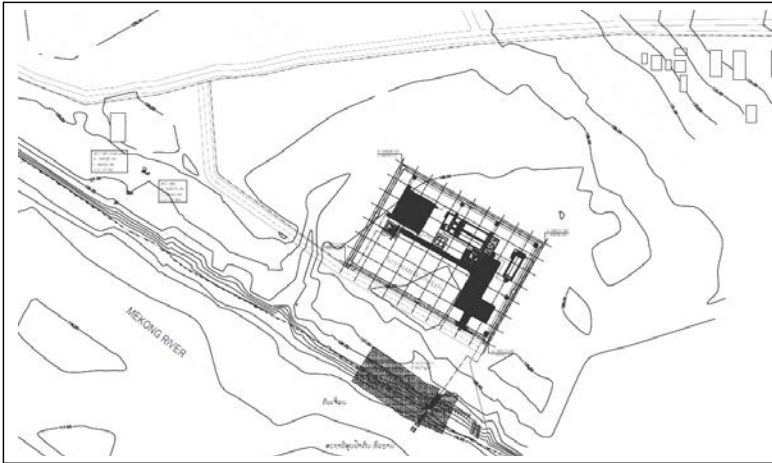
#### Water Supply Development

The project will develop a new 24/7 water supply system with individual house hold connections in Sayphouthong's 39 core villages, having a base Y2017 population of about 48,188.

The proposed water supply system will include:

- On the Mekong river a 3,600 m<sup>3</sup>/day water treatment plant (WTP) with a water intake and riverbank protection located at Thadan village;

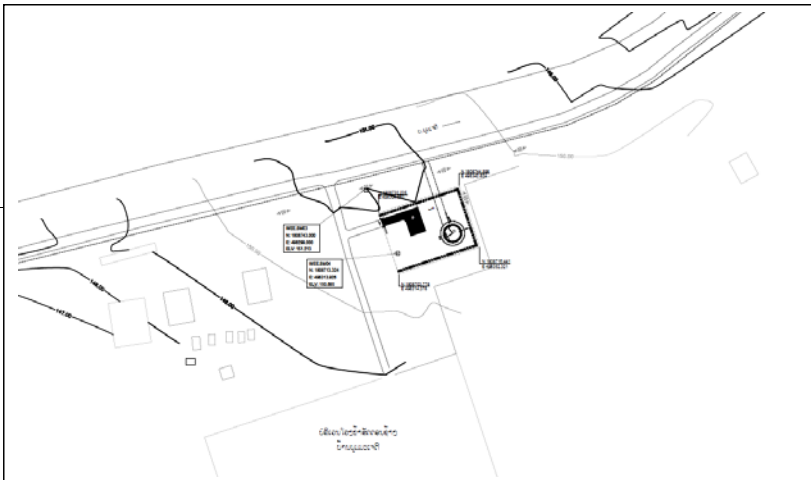
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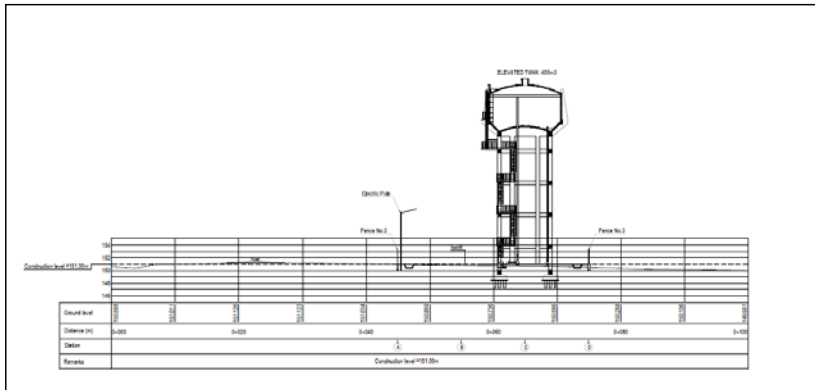


- The WTP located near the district center will include pre-sedimentation, flocculation, sedimentation, rapid gravity filtration, a backwash tank and chlorination facilities, 200 m<sup>3</sup> clear water reservoir, detention ponds, plant office, workshop, store and a small water testing laboratory. These facilities are all designed to ensure high quality water and to protect public health. This is designed to reduce environmental and social risk. The distribution and reticulation network will include about 60 km of pipelines, and 50mm rider mains in population centers. A branch Nam Papa (BNP) office will be constructed in the district center;

- A raw water transmission main line supply to 400 m<sup>3</sup>/day elevated reservoir at Phoumachedy village;

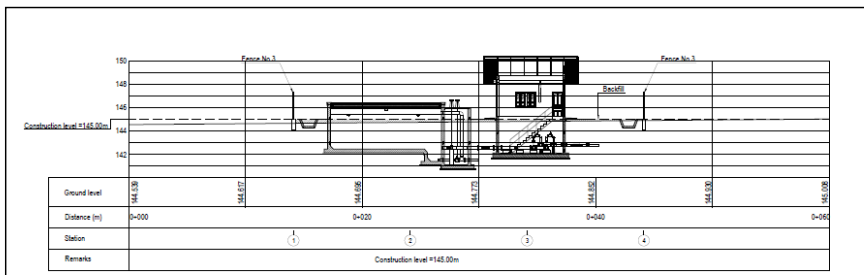
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- A lift transmission pumping station with 260 m3 clear water tank at Mouangkay village to supply the treated water to the distribution network for the 39 core villages in 8 village clusters in Sayphouthong District Town; and

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- Equipment for operation and maintenance (O&M) of the water supply systems will be procured for the Sayphouthong branch Nam Papa (BNP), including basic tools, laboratory equipment and office equipment. Households that apply to connect during the construction period will not be required to pay any up-front connection charges. This measure will assist poor and low-income groups to participate in the piped water supply system, encourage new connections and enhance PNP financial sustainability. Marketing and awareness campaigns will inform communities about the Project's connections policies and the benefits of connecting to PNP piped water supply.

The Provincial Execution Unit will implement the project. It will also enhance the capacities of village water and sanitation units (WATSANs) to implement and monitor the project.

**Capacity Development for O&M:** will help to develop more efficient systems in the town to manage urban services in a sustainable manner, by building the capacities of the provincial and branch NPSE and district Department of Public Works and Transport. It will also provide support

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to village water and sanitation units (WATSANs) and communities to enhance their capacities to operate and maintain village infrastructure and their on-site water and sanitation facilities.

### Executing Agency and Implementation Arrangements

[These are described in Part III, Section A.](#)

### Implementation Period

The Project will be implemented over a four-year period from fourth quarter 2019 until fourth quarter 2023. The detailed implementation will be governed by an agreement of cooperation between UN-Habitat and NPSE Savannakhet. For further information on the implementation arrangements, please see [Part III, Section A](#).

### Procurement

Goods, works and services financed under the project will be procured in accordance with *the UN Procurement Manual*. International Competitive Bidding (ICB) procedures will be used for major civil works contracts estimated to cost over \$1 million, and for supply contracts valued over \$500,000. Procurement of civil works valued at less than \$1.0 million equivalent will be undertaken through national competitive bidding (NCB). Shopping procedures will be followed for materials and equipment packages or works estimated to cost less than \$100,000 equivalent.

The PEU in each province will be responsible for overseeing procurement. Installation of water meters and service connections will be carried out by the construction contractor under the main water supply construction contract for each town.

### Tariff and Affordability

The financial objectives of the sector are: (i) fully recover utility wide operation and maintenance (O&M) costs; (ii) recover utility wide debt service; (iii) maintain a utility wide debt service ratio of at least 1.2; (iv) gradually recover an increasing proportion of annual depreciation expense of the utility wide fixed assets; and (v) maintain its accounts receivable at less than 90 days of annual sales. To meet the agreed upon financial objectives of the sector, the projected utility wide tariffs shall be increased at a minimum of 0.2% every three years to keep pace with inflation. The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG).

The percentages of monthly household income spent on water, inclusive of the monthly meter rental and turnover tax, by the average household and LIG are below 5% in 2014 and 2018. However, the Water Law states that the expenditure on water should not exceed 3% of household income, the projected water tariffs are considered affordable. This tariff can be increased to 5% however, where necessary, to offset maintenance or depreciation costs, according to policy guidance from the Department of Housing and Urban Planning, Ministry of Public Works (references in Part II, Section E of the proposal).

The results of the socio-economic survey revealed that households are willing to pay an average of about Kip 12,300 per month for piped water supply with 81% of respondents willing to pay at least Kip 10,000 per month. It was noted that asset ownership, such as motorcycles, is also very evident in the town. However, the analysis above shows that the average monthly water bill in 2014 and 2018, inclusive of the monthly meter rental and turnover tax, are higher than the households' willingness to pay. However, affordability seems to be a far more reliable indicator. In addition, it has been found that the few poor families who either cannot afford or are unwilling to pay for water, regulate their consumption to meet their particular circumstances. During this

**Deleted:** Project implementation arrangements are expected to be similar to the ongoing Adaptation Project phase I of UN-Habitat in 3 southern provinces of Lao PDR. MPWT and NPSE Savannakhet will be the Executing Agency (EA) for the project. A national project steering committee (PSC), which was established for the project, will also oversee this project, give overall direction and provide policy guidance. The same PCU/PIU that were established for the project in the Department of Water Supply (DWS) of MPWT will also be responsible for overall planning, coordination and management of this project. ¶  
PIUs will be established under the DPWT in each Project province. With assistance from the consultants and PCU/PIU will be responsible for day-to-day coordination and supervision of project implementation in the Project district. A provincial project steering committee (PPSC) will be established in each province to coordinate provincial and district agencies and make key decisions on behalf of the provincial government. At the district level, the district governor or vice governor will oversee the project, monitor progress, review quality of the work, coordinate the project with the PIU and local communities, and report on progress to the PPSC. ¶

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transition period, the PNPs forgive unpaid bills. In addition, it is recommended that the minimum 5m<sup>3</sup>/month be eliminated, so that the poor only pay for what they actually use.

### Project Benefits and Beneficiaries

The project will benefit an estimated **61,596 residents by 2032**, in the 39 core villages of Sayphouthong District Town by providing safe, reliable piped water supplies and improved urban environments that will have a direct impact on the health and living conditions of the town communities. Health and hygiene promotion activities will improve the health status of the target communities.

The town's economy will benefit from enhanced productivity as a result of health improvements, time savings in collecting water, as well as from increased urban efficiency arising from improved sanitation. Many residents will benefit from lower water costs and from savings in health care costs.

Sayphouthong There are in total households, of which 8,908 households (27%) households classified as poor. Nevertheless, all project interventions will either directly or indirectly benefit the poor. About 150 urban poor (Y2015) or 27% of the urban population will benefit from: (i) greater access to safe water supplies and sanitation which will improve health profiles, and; (ii) from improved sanitation that will enhance the poor's mobility and access to income-earning activities and government facilities such as schools and hospitals.

Both men and women will benefit from project activities, but women will be the major beneficiaries of the piped water supply system through timesaving, drudgery avoidance, and improved family health. Women will also benefit from the sanitation improvements. Female-headed households will be prioritized to receive water connections first, in accordance with the gender action plan, part of the gender assessment in Annex 2.

### Land Acquisition and Resettlement (LAR)

The LAR impacts in Sayphouthong District Town are insignificant, or **AF category B2-Midium Risk**. There are no severely affected households. The main water supply facilities such as the major part of the intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way, with minor impacts on land, property or crops.

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#### Deleted: Environmental Impacts¶

This subproject will improve the current water supply and sanitation facilities of Sayphouthong town. This improved supply of piped drinking water will lead to better public health and general living conditions. ¶

The Sayphouthong project will not cause any adverse permanent impacts on water and land resources. Temporary negative impacts during the construction phase will be managed through mitigation measures, while already existing constraints during operation will be avoided or limited through complementary or new preventive operation and maintenance related procedures of the new water supply system and existing sanitation scheme. The Environmental Safeguards Management Plan (ESMP) has included relevant counter measures, and recommends, in addition, the preparation of a Health, Safety & Environmental Plan (HSEP) as complementary step for minimizing disturbances to nature and people as they occur typically for construction sites of a water supply and sanitation scheme of small towns. ¶

¶ There is no specific environmental issue that would require high attention by the project so that standard implementation of an ESMP and HSEP should meet environmental conditions of national and international laws, guidelines and regulations. The identified mitigation is expected to bring negative temporary impacts during construction phase to acceptable levels with focus on the new intake construction site. Positive impacts on public health, quality of life and economic development during operation phase will be highly significant through the expansion of safe water supply to the Sayphouthong town's population. ¶

Environmental monitoring of river flows and of quality of raw and treated water should continue during operation by Provincial Nam Papa. ¶

As the project's environmental impacts in Sayphouthong town are insignificant, and meet the **AF category B2-Midium Risk**, no further environmental assessment is required beyond the detailed review of the ESMP during implementation the infrastructures works, and the preparation of a HSEP. ¶



## • PROFILE OF SAYPHOUTHONG AREA

### Town Location and Profile

**Sayphouthong** District is the urban settlement located in the East-West Economic Corridor along Mekong river with the border with Thailand, the second friendship bridge across the Mekong at Savannakhet to Moukdahan (Thailand) and the already upgraded Highway No. 9 together with measures being taken to facilitate cross-border transportation created new opportunities to the community living along the Corridor. While Lao PDR is essentially a rural country, Sayphouthong District town of Savannakhet and other urban centers are playing an increasingly important role in the country's economic and social development.

In view of the above, the Government of Lao PDR considers as of high priority the improvement of social and physical basic infrastructures of small towns along the Corridor in order to realize the expected benefits.

**Sayphouthong** District Town is composed of 39 core villages in 8 village clusters with a total 2017 population of 48,188 persons. In 2015, 100% of survey respondents belong to Tai-Kadai linguistic group (consisting of 73% Lao and 27% Phoutay) that form the majority of the national population. There are in total households, of which 8,908 households (27%) are considered as poor households.

The district town is the administrative, commercial and social center of the district, with many of the government offices, community and commercial facilities. Cluster 1 contains 7 primary schools and 1 secondary school; 10 pharmacies/dispensaries, 4 health clinics and 1 hospital; a market, and; nearly 200 businesses including restaurants, guesthouses, shops, garages, etc. The district administration offices and a bus station are also located in Cluster 1. In Cluster 2, there are 5 primary schools and 2 secondary schools; 5 pharmacies/dispensaries and 1 hospital; a market and about 50 small businesses.

### Natural Features

#### Topography

The town's 12 core villages are situated on the Mekong lowlands, about 25km northeast of the Mekong River. Songkhone district is bisected by the Xe Banghieng river, a major tributary of the Mekong. The Xe Banghieng originates at the Vietnam border some 200km northeast of Songkhone and joins the Mekong about 50km downstream of the town. The elevation of the core villages vary from about 140m at the Xe Banghieng riverbank, to 180m at Paksong near the district center. The town is surrounded by low-lying land and swamps which are transected by numerous intermittent streams.

#### Geology and Soils

Soils in Sayphouthong district consist of alluvial deposits of sand and sandy clay, underlain by sandstones. Nam Sa'at bore logs indicate 10m of soils and weathered rock overlying fissured sandstone. Sandstone outcrops are exposed at the lower end of the proposed water treatment plant site at Thadan Village and sandstone is likely to be encountered at river bed level near the proposed intake site where the Mekong river has formed a "hairpin" bend.

Lao PDR has a tropical monsoon climate which features a pronounced dry season (November to February) and wet season (May to October). The dry season is generally cooler, though temperatures rise significantly in March and April prior to the onset of the rains. Rainfall data for Savannakhet province indicate that maximum monthly rainfall occurs in July and August, averaging 322mm in July over the past decade.

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Average annual temperature is about 28°C, varying from a low of 18°C in December-February to a maximum of 35 °C in April. Monthly maximum temperatures are above 30 °C for most of the year. Evaporation averages 94mm/month, ranging from 60mm in August and September to more than 100mm from November until April.

### Surface water

The Mekong River is the main water resource in Sayphouthong district. Its catchment accounts for 9% of the country's land area. According to a draft National Water Resource profile, the flow in the Mekong River varies from a minimum of 2,000 m<sup>3</sup>/s in the dry season to several thousand m<sup>3</sup>/s in the wet season, with an average of 15,000 m<sup>3</sup>/s. While the river is reportedly very high turbidity in the raining season, it carries large quantities of sediment in the wet season. The Mekong River is extensively used for irrigation. The proposed investment will extract 0.002% of the daily flow of water from the Mekong. Far below a level of extraction that could cause downstream impacts.

### Groundwater

Groundwater is used extensively for domestic water supply throughout Sayphouthong's core villages, which contain over 3,216 pumped wells. Savannakhet Nam Saat (under the Provincial Department of Public Health) advised that, prior to 1995, the water table in Sayphouthong was at about 12m depth, but is now much lower because of increasing groundwater use which has affected the reliability of the wells. Household bores in Sayphouthong consist of two main types: typically 18m deep bores with hand pumps that yield about 0.3L/s, and 40-50m deep bores with electric pumps that yield about 0.5L/s. Nam Sa'at bore logs indicate that the deep bores take water from fissures within the underlying sandstone, which are rapidly depleted in the dry season. For this reason, groundwater extraction has been ruled out as an adaptation measure suitable for this project.

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### Population and Household Characteristics

In 2017, the total population of the 39 core villages in 8 cluster villages was 48,118 people. Women account for 46% of household members (male/female ratio of 0.88); overall, they head approximately 7.8% of households in the town. 66.7% of the population is working age (15-60 years).

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**Table Error! No text of specified style in document.-4: Sayphouthong Population Characteristics**

No	Core Villages	2017 Pop'n.	No. HH	Persons/ HH	M/F Ratio
1	Naphane	1,484	299	5.0	0.91
2	Thadan	1,868	353	5.3	0.86
3	Khanthacham	1,058	248	4.3	0.94
4	Doneway	634	129	4.9	1.06
	<b>Total Cluster 1-THADAN</b>	<b>5,044</b>	<b>1,029</b>	<b>4.9</b>	<b>0.92</b>
1	Somsaat	848	168	5.0	0.93
2	Thapho	2,738	577	4.7	0.89
3	Houahad	1,284	206	6.2	0.79

No	Core Villages	2017 Pop'n.	No. HH	Persons/ HH	M/F Ratio
4	Bungnady	703	151	4.7	0.85
	<b>Total Cluster 2-THAPHO</b>	<b>5,573</b>	<b>1,102</b>	<b>5.2</b>	<b>0.87</b>
1	Phoummachedy	1,549	356	4.4	0.93
2	Namakkeua	1,095	212	5.2	0.89
3	Phonsomhong	1,059	188	5.6	0.79
4	Phonthad	1,063	178	6.0	0.85
	<b>Total Cluster 3-PHOUMMACHADY</b>	<b>4,766</b>	<b>934</b>	<b>5.3</b>	<b>0.87</b>
1	Mouangkhai	3,139	631	5.0	0.93
2	Dontoum	702	189	3.7	0.89
3	Dongmakphay	1,979	331	6.0	0.79
4	Sysavangneua	976	145	6.7	0.85
	<b>Total Cluster 4-MOUANGKHAY</b>	<b>6,796</b>	<b>1,296</b>	<b>5.3</b>	<b>0.87</b>
1	Khamsan	1,245	200	6.2	0.93
2	Khouadam	1,043	190	5.5	0.89
3	Khamheng	1,270	222	5.7	0.79
4	Dongphosy	1,637	300	5.5	0.85
5	Namphou	2,198	375	5.9	0.85
6	Nadon	744	153	4.9	0.85
	<b>Total Cluster 5-NAMPHOU</b>	<b>8,137</b>	<b>1,440</b>	<b>3.7</b>	<b>0.87</b>
1	Takded	511	88	5.8	0.93
2	Phosykeo	1,618	205	7.9	0.89
3	Nakham	1,886	316	6.0	0.79
4	Nalaong	813	131	6.2	0.85
5	Khamsensay	1,485	220	6.8	0.85
6	Phonthan	946	154	6.1	0.85
	<b>Total Cluster 6-NAKHAM</b>	<b>7,259</b>	<b>1,114</b>	<b>4.2</b>	<b>0.87</b>
1	Namoong	703	128	5.5	0.93

No	Core Villages	2017 Pop'n.	No. HH	Persons/ HH	M/F Ratio
2	Sysavangtay	793	129	6.1	0.89
3	Houaymouang	1,285	291	4.4	0.79
4	Nadou	612	105	5.8	0.85
5	Nabo	879	145	6.1	0.85
6	Nachane	1,202	191	6.3	0.85
	<b>Total Cluster 7-NABO</b>	<b>5,474</b>	<b>989</b>	<b>3.8</b>	<b>0.87</b>
1	Houakhangong	1,162	247	4.7	0.93
2	Veunkhoun	878	169	5.2	0.89
3	Laomakhoud	732	149	4.9	0.79
4	Donesanod	285	60	4.8	0.85
5	Dongdokmay	1,432	238	6.0	0.85
6	Heunhinh	650	141	4.6	0.85
	<b>Total Cluster 8-VEUNKHOUN</b>	<b>5,139</b>	<b>1,004</b>	<b>3.4</b>	<b>0.87</b>
	<b>TOTAL</b>	<b>48,188</b>	<b>8,908</b>	<b>4.5</b>	<b>0.88</b>

### Ethnicity

In 2010, 100% of survey respondents belong to Tai-Kadai linguistic group (consisting of 73% Lao and 27% Phoutay) that form the majority of the national population.

### Population Growth and Migration

Between 2001 and 2006, the overall population of the core villages in Sayphouthong declined about 0.8%, possibly because of emigration of residents to work in Thailand. Sayphouthong is a well-established community. The 2007 data indicates that the average length of residency is more than 20 years. The population of the 39 core villages is forecast to grow at 1.65% p.a. with a projected population in 2032 of 61,596. (Section 4 describes the basis for population projections)

### Education

In Sayphouthong, approximately 8% of the population has never attended school. Of those who have attended school about 44.6% lower secondary level and only 0.21% have completed higher secondary respectively. About 20.7% have attended grade 1 to 4 of primary school and almost 19.8% have completed primary school.

### Health and Hygiene Conditions

The Sayphouthong 2015 survey results for '*incidence of water-related disease by HH*' did not highlight any significant incidence of disease for the last 6 months.

### Land and House Tenure

The majority of the interviewed households own their house and land (92%). Approximately 89.6% of those who owned the land and house obtained the ownership documents and most households said that they are allowed to sell their property.

### Occupations and Livelihoods

The main occupation of the population in Sayphouthong is farming (65%). Around 38% are the dependents including the children, the old age or disable people and the students who cannot contribute to the income of the family. Government staff and the teachers represent about 4% and 2% respectively. Based on data from surveyed households, the majority (60%) of women living in Sayphouthong core villages are economically active.

### Income and Poverty Levels

An attempt was made to ascertain the average monthly cash income and expenses of households. On analysis, it was found that figures provided were generally an estimation of the respondents. As with any study/survey one has to be extremely cautious. The monthly income per person is calculated dividing the yearly HH income by the average HH size in Sayphouthong (4.5), giving us an average monthly income of Kip 558,000 per person.

The new decree of the government issued in October 2009 has been applied to assess the proportion of poor households in Sayphouthong. The new criterion on poverty determined the limit of poverty: households with the monthly income less than Kip 180,000 per person regardless of age and gender are considered to be the poor households. The analysis of monthly income per capita has revealed that 4% of the households in the proposed service area live under poverty line of which 0.6% live in the poorest condition with the monthly income per capita less than Kip 80,000 on average per person/month.

### Existing Water Supply and Sanitation

#### Water Supply

The Mekong River is the main water resource in Sayphouthong district. Its catchment accounts for 9% of the country's land area. According to a draft National Water Resource profile, the flow in the Mekong River varies from a minimum of 2,000 m<sup>3</sup>/s in the dry season to several thousand m<sup>3</sup>/s in the wet season, with an average of 15,000 m<sup>3</sup>/s. While the river is reportedly very high turbidity in the rainy season, it carries large quantities of sediment in the wet season. The Mekong River is extensively used for irrigation. There are no water treatment facilities in the Sayphouthong District Town. Wealthier households buy bottled water at US\$15/m<sup>3</sup> about 100 times higher than the average tariff for formalized system. The majority of the population in the town relies on untreated water from open dug wells of over 40 meters deep, boreholes using hand pump and electric pump. Surface water (Mekong River) is also used during the rainy season although the turbidity is high. Water shortage in the dry season is a serious threat to the health of the population, particularly the poor households who could not afford to dig wells of over 35-40 meters deep.

Present piped water supply coverage: 0%.

#### On-Site Sanitation

The issue of wastewater and the sanitation in Sayphouthong is not different from other small towns in the country: uncontrolled disposal of domestic wastewater, no drainage ditches in the public place such as markets, bus stations, schools or hospitals etc. Some households still have no sanitary latrine.

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The town does not have a sludge collection tanker or septage disposal facilities.

Present sanitation coverage: **65%**

### Other Infrastructure

#### Roads and Drains

The Sayphouthong district center has about 7.2 km of bitumen sealed road. Other roads in the core villages comprise about 11km of urban and district roads with gravel pavement, and 17km of village access roads with dirt pavements. About 50% of urban gravel roads also have side drains, but village access roads lack side drains and are often boggy in the wet season. The terrain is relatively flat. Primary drains for the district center discharge to adjoining swamp areas and have limited outlets and poorly defined connecting channels, so that stormwater backs up in the wet season, causing minor flooding of the town.

#### Electricity

About 95% of households in the core villages are connected to the electricity grid, which provides 24-hour supply.

### • POPULATION GROWTH AND WATER DEMAND FORECASTS

#### General

Sayphouthong town is the center of services, trade and agriculture in Sayphouthong district, which is one of the largest districts along Mekong River in Savannakhet province. It is located on National Road 13, which links two main population centers – the provincial capital, Kaysone about 35km to the north of Sayphouthong, the capital of Champasak province about 166km to its south. Rice, water melons and soy beans are Sayphouthong's main agricultural products and provide more than 50% of the province's annual export production. At present there is no agro-processing or industrial development in Sayphouthong.

The district Governor in Sayphouthong has identified diversification and strengthening of agricultural production as the principal priority for economic development in the district. Future development is based on expanded rice cultivation. Although there are no plans for non-agricultural or industrial development, the district government encourages local and foreign investment in agricultural food processing, and is also promoting handicraft production.

#### Urban Master Plan

The Urban Master Plan for Sayphouthong was prepared by the MPWT's Urban Research Institute in June 2010, and was approved by the provincial governor in August 2010. The Master Plan is essentially a land use plan, but is based on the following orientation for future development:



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1	အုပ်ချုပ်ရေးဌာန	74	
2	အခြေခံအဆောက်အအုံ	490	
3	အခြားအဆောက်အအုံ	378	
စုစုပေါင်း		942	800

The existing urban area of Sayphouthong will continue to serve as the administrative and commercial center of the town.

### Population Projections

The population of Sayphouthong's 39 core villages was 48,188 in 2017, with population growth rate of 1.65% over the five-year period 2001-2017. The Urban Master Plan for the town does not provide population projections. Accordingly, population projections were made using population statistics for the province, modified to take account of local factors.

The population projections are set out in Table 4-3. Within the core villages, total population is forecast to increase from about 48,188 in 2017 to about 61,596 in 2032. **Population Projections for Sayphouthong's Core Villages**

Year 2017 Population	Growth Rate %	Forecast Population 2020	Forecast Population 2025	Forecast Population 2032
48,188	1.65	50,613	54,929	61,596

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## Water Demand Forecasts

### General Approach

Water demand forecasts for the Sayphouthong subproject were prepared by making separate projections of each component of demand, including:

Demand for domestic use (based on per capita consumption, coverage targets and population projections);

Demand for industry (based on a % of domestic use, and specific allowances for large industries);

Demand for services (based on a % of domestic use, and specific allowances for large services areas);

Unaccounted-for-water<sup>81</sup> (ufw) as a % of total demand, excluding the demand of large industrial zones.

Production losses in treatment plant (based % of total demands).

### Domestic Consumption

Water demand and consumption data for other provincial and district towns in Lao PDR show that domestic consumption accounts for about 90% of total demand. Per capita consumption figures for urban water supply systems in Lao PDR vary widely. For 52 water supply systems throughout the country (excluding Vientiane capital), per capita consumption ranges from 36 to 191 litres per capita per day (LPCD), with an average of 135 LPCD, while for 31 small town water supply systems, the corresponding figures are 11 to 145 LPCD, with an average of 79 LPCD. (WSD Statistics for PNPs, 2006).

Per capita consumption for Sayphouthong's three piped water supply systems (PNP and two private systems) varies from 46 to 88 LPCD, however customers supplement the piped supplies with bottled water and with rainwater in the wet season, so actual consumption is likely to be higher. According to the household surveys, householders estimate that their consumption varies from 38 to 260 LPCD, with an average of 130 LPCD.

Based on Sayphouthong household survey results and experience from other projects, per capita consumption for drinking and cooking is about 10 LPCD, while water for bathing and washing is in the order of 50 LPCD. About 4-16 LPCD will be required to operate a pour-flush toilet<sup>82</sup>, so per capita consumption for a typical household with pour flush toilet is estimated at 64-76 LPCD. Experience in other towns in Lao PDR indicates that piped connections directly to the house will usually increase water consumption over time. On the other hand, some residents in Sayphouthong will continue to use existing pumped wells and free sources of supply such as rainwater to minimize their overall water supply costs. To account for Sayphouthong having relatively low poverty levels, and a growing number of private businesses, this Feasibility Study has adopted a per capita consumption figure of 100 LPCD, 50m<sup>3</sup>/day for backwashing filters, plus 10% for non-domestic use and 15% for unaccounted for water (ufw).

The water demand calculation of 100 litres per day is based on the Technical Guideline for Water Supply Design issues by the Department of Water Supply, Ministry of Public Works, which says that water projects for secondary towns with a population between 20,000 and 50,000 people

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<sup>81</sup> Unaccounted-for-water is the difference between water production and authorized consumption.  
<sup>82</sup> In general, pour flush toilets require 1-4 liters of water per flush, including water for washing. Assuming that each member of the household uses the facility 4 times per day, consumption varies from 4-16 lpcd.



should be a minimum of 100 litres per person per day. This is also outlined in row 9 of the table presented below.

### Water Demand Forecasts

Table 4-4 summarizes the demand forecasts and design criteria for the Sayphouthong subproject. By 2032, the average daily water production at the water treatment plant is expected to be 3,600m<sup>3</sup>/d, comprising 78% domestic consumption, with the remaining 22% being for institutions, public use, services, handicraft and small industries, and allowances for NRW and backwashing the filters.

**Table Error! No text of specified style in document.-5: Water Demand Forecasts for Sayphouthong Town**

No.	Items	Unit	Forecasts			
			2017	2020	2025	2032
<b>A. Domestic Demand</b>						
1	<b>Growth Rate</b>	%	1.65	1.65	1.65	1.65
2	Population in Core Area		48,188	50,613	54,929	61,596
3	Population in Extension Area	No.				
4	<b>Total Population</b>	<b>No.</b>	<b>48,188</b>	<b>50,613</b>	<b>54,929</b>	<b>61,596</b>
5	Coverage in Core Area	%	-	80	80	80
6	Coverage in Extension Area	%	-	80	80	80
7	Percentage Coverage	%	-	80%	80%	80%
8	<b>Population with Piped Water</b>	<b>No.</b>	<b>-</b>	<b>17,668</b>	<b>19,175</b>	<b>21,502</b>
9	<b>Per Capita Consumption</b>	<b>l/c/d</b>	<b>-</b>	<b>100</b>	<b>100</b>	<b>100</b>
10	Total Domestic Demand	m <sup>3</sup> /d	-	1,767	1,917	2,150
<b>B. Non Domestic Demand</b>						
1	Services, Small Industry, Institutions, Public (% Dom)	%	-	20	20	20
2	Total Non domestic demand	m <sup>3</sup> /d	-	353	383	430
<b>C. Subtotal Water Demand All Categories</b>						
<b>D. Non Revenue Water (NRW) in Distribution system</b>						
1	NRW as % Average Daily Water Production	%	-	15	15	15
2	NRW (physical losses only-pipelines and WTP)	m <sup>3</sup> /d	-	318	345	387
<b>E. Average Daily Water Production (C+D) rounded</b>						
<b>F. Peak Daily Water Demand</b>						
1	Peak Daily Water Demand		-	1.2	1.2	1.2
2	Peak Daily Water Demand (PDD)	m <sup>3</sup> /d	-	2,928	3,180	3,564
3	Peak Daily Water Demand	l/s	-	33.9	36.8	41.3
<b>G. Required Treatment Plant Output (rounded)</b>						
<b>H. Treatment Plant Backwashing</b>						
1	Backwashing as % of Treatment Plant Output	%	-	5	5	5
2	Treatment Plant Backwashing	m <sup>3</sup> /d	-	147	159	178
<b>I. Raw Water System</b>						
1	Required Capacity of Source & Raw Water System	m <sup>3</sup> /d	-	3,077	3,339	3,738
2	<b>Required Source Capacity (rounded)</b>	<b>m<sup>3</sup>/d</b>	<b>-</b>	<b>3,080</b>	<b>3,340</b>	<b>3,740</b>
3	<b>Required Source Capacity</b>	<b>l/s</b>	<b>-</b>	<b>35.6</b>	<b>38.7</b>	<b>43.3</b>
<b>J. Peak Hourly Demand (Distribution System)</b>						
1	Peak Hourly Factor	%	-	1.5	1.5	1.5
2	Peak Hourly Demand (Kh x PDD / 86.4)	l/s	-	53.5	58.0	64.9

- **DESIGN & TECHNOLOGY CHOICE**

**Introduction**

This section outlines design and planning criteria for the Sayphouthong water supply system. It also discusses water treatment technology.

**Design and Planning Periods**

The Project is scheduled for implementation in the period 2019-2023. Sayphouthong project the planning has considered development to 2032 (15 year design life), to ensure that: (i) adequate provisions are made in the Project for future expansion; (ii) facilities are optimally sized, and; (iii) adequate land areas are reserved for future facilities. The proposed design horizons for intakes, raw water transmission and water treatment plants were determined by least cost analyses, while design periods for other parts of the system were determined by practical considerations. (e.g. problems and risks associated with future land acquisition and upgrading operating water supply systems in growing urban areas).

The adopted design periods for various parts of the water supply system are as follows:

**Table Error! No text of specified style in document.-6: Recommended Design Periods**

Component	Design Approach
Intake and raw water transmission mains	Design for Y2032 demands
Water treatment plant	Design for Y2032 demands, with provision (e.g. adequate hydraulic capacity) for plant uprating. Acquire adequate land to enable plant duplication in future.
Treated water transmission and trunk mains	Design for Y2032 demands, including provision for future extension to non-core areas.
Pumping Stations	Design mechanical plant for Y2032 demands, with provision for pump (or impeller) replacement with larger capacity units after 2025. Acquire adequate land to enable pumping station duplication in future.
Distribution and reticulation	Design for Y2032 demands
Service reservoirs	Design and construct for 2032 demands. Acquire adequate land to enable reservoir duplication in future.

**Water Treatment Technology**

The choice of water treatment technology for Sayphouthong is dictated primarily by the raw water quality, operator capacity and financial resources to ensure sustainability. Wet season turbidity of the Mekong River is high, and is subject to rapid fluctuations. Slow sand filters and rapid sand filters were considered for possible use in Sayphouthong. Although slow sand filters are relatively simple to operate, they require a large land area and require presedimentation and/or sedimentation processes to operate with highly turbid waters. Limited land is available in Sayphouthong and the raw water is very turbid. Slow sand filters are not therefore a viable option. Rapid sand filters are the most appropriate system.

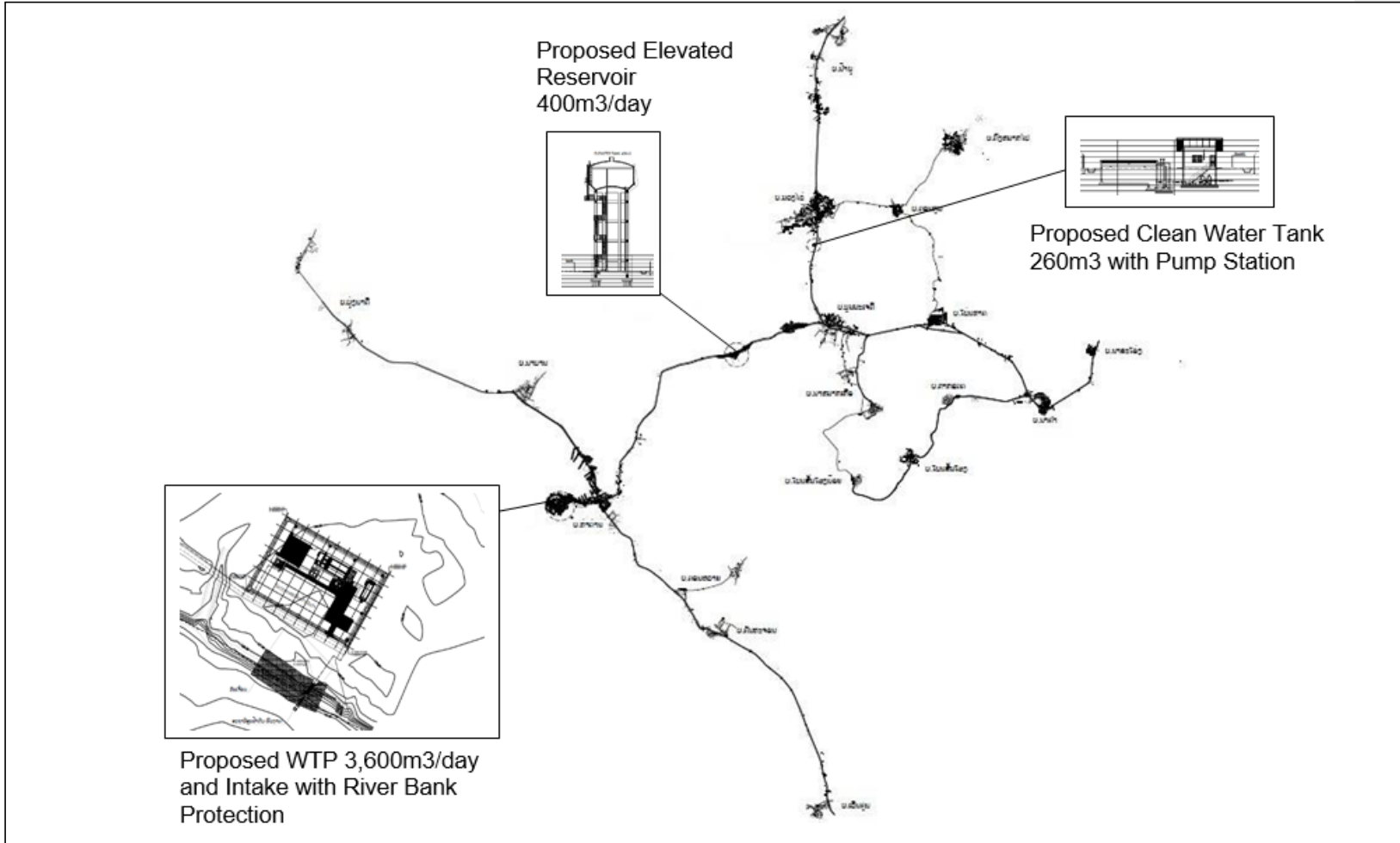
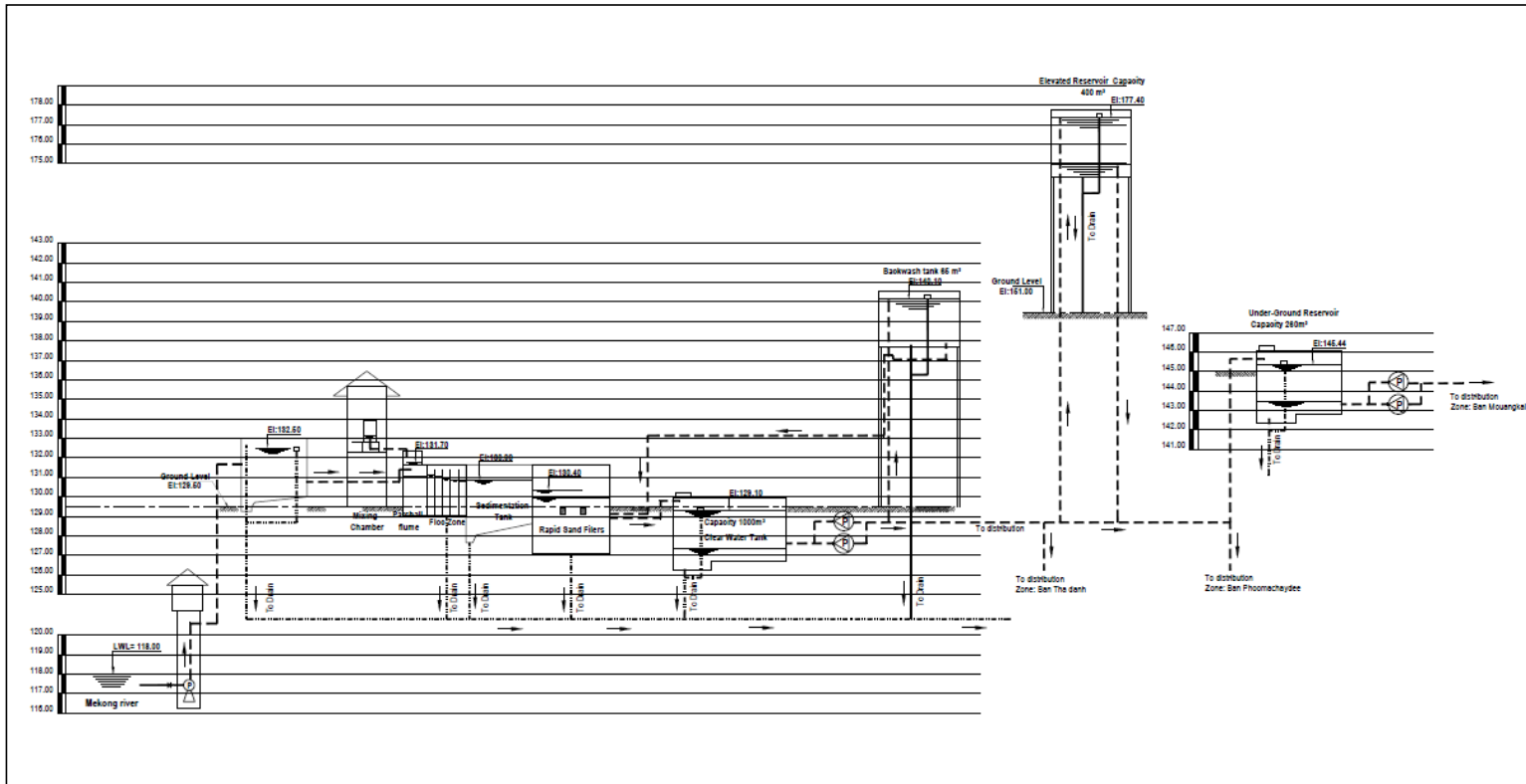
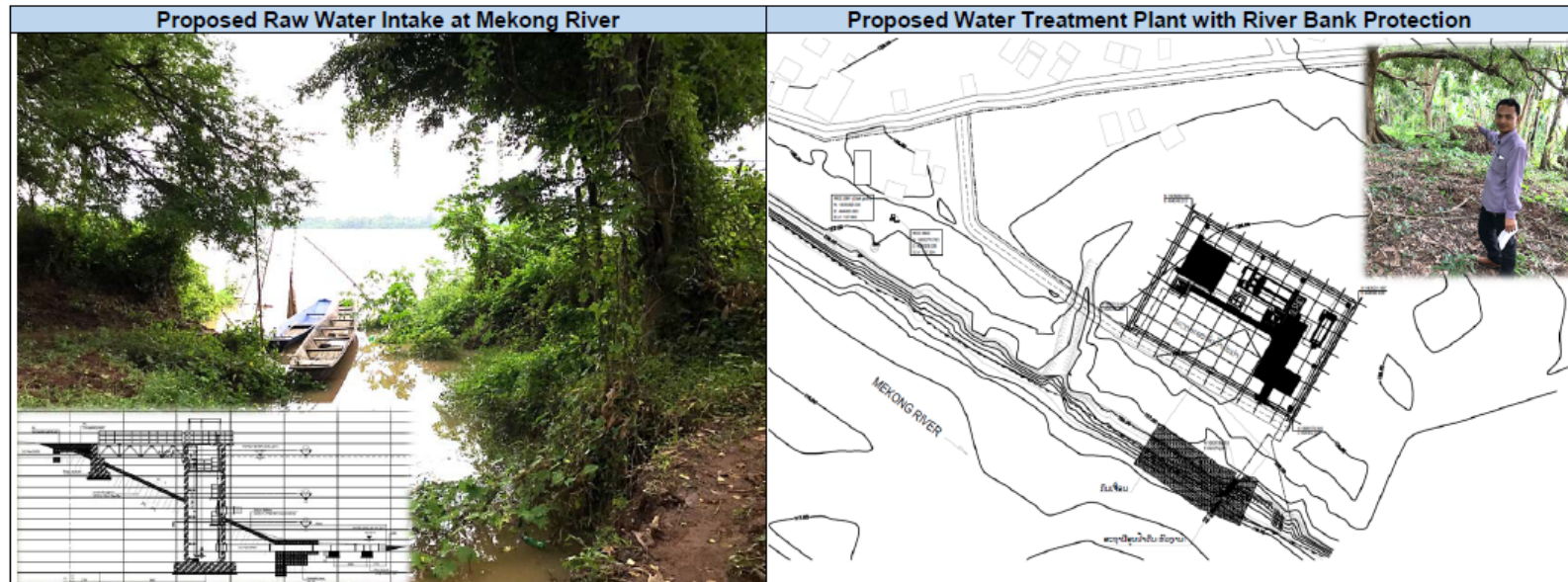


Figure Error! No text of specified style in document.-1 Proposed Sayphouthong Water Treatment Plan Conceptual Design





**Sayphouthong Town: IEE - Visual Impact of Proposed Water Treatment Plant (WTP) at Mekong River**



**Notes:**

- |     |   |
|-----|---|
| (1) | The new water treatment plant (WTP) is proposed at the right embankment of the River Mekong, at an existing unused area about 300m adjacent to the village. The location has been selected because of existing soil roads to and from the WTP compound avoiding environmental or land acquisition requirements.   |
| (2) | Similar to the water treatment plant, the new water intake is proposed at the right embankment of the River Mekong. The location has been selected at a downstream location of the WTP area allowing an alignment of a new raw water pipe to the WTP only about 100m, outside of the village area.  |
| (3) | Imposing the designed water treatment plant and water intake on the current situation indicates that this new water infrastructure would use a limited area within the shown area.  |
| (4) | The Mekong River is the main water resource in Sayphouthong district. Its catchment accounts for 9% of the country's land area. According to a draft National Water Resource profile, the flow in the Mekong River varies from a minimum of 2,000 m <sup>3</sup> /s in the dry season to several thousand m <sup>3</sup> /s in the wet season, with an average of 15,000 m <sup>3</sup> /s and the Mekong River is extensively used for irrigation. |

### Management Arrangements

The District Nam Papa will be responsible for managing, operating and maintaining the new water supply system. The Provincial NamPapa in the provincial capital will provide ongoing technical and managerial support to the District Nam Papa following commissioning of the new water supply system. It will process/print water bills in the provincial office, and coordinate BNP staff training. The PWT will be responsible for managing the new or improved sanitation systems.

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The Project will procure essential O&M equipment for the District NamPapa, and Department of Public Works and Transport, as shown in Tables 6-1 and 6-2.

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### O&M Equipment for PNP and Sayphouthong BNP

Item No	Description of Item	No
(i)		
(ii) 1	1 tonne Flatbed truck	1
(iii) 2	Set of furniture for water treatment plant, including desks, chairs, and work benches.	1
(iv) 3	Basic laboratory equipment for water quality testing	1
(v) 4	Standard software programs such as standard accounting (assumes billing will be centralized at the PNP provincial office)	1
(vi) 5	Workshop tools such as pipe cutting, threading and tapping machines; lathe; pedestal drill; grinder; workbench and complete tool chest with spanners, wrenches etc.	1
(vii) 6	Field tools and equipment for O&M of water supply system, such as valve keys; wheel barrows, shovels, picks and crow bars, portable lighting, small dewatering pump, soil compactor, powered weed / grass cutter, and other minor construction/ repair equipment.	1

**Table Error! No text of specified style in document.-7: O&M Equipment for OPWT**

Item No	Item	No
1	Set of minor office equipment including fax and A4 photocopier)	1
2	Computer and printer for management, administration, accounting and engineering	2
3	Standard software programs such as MS office	1
4	Minor field tools and equipment for O&M of drains and public sanitation facilities, such as powered weed / grass cutter, soil compactor, wheel barrows, shovels and picks, portable lighting, small dewatering pump, and other minor construction/ repair equipment.	1

- **Calculation of Water Tariffs**

#### **Project-Specific Tariff**

The project-specific tariff was determined using the Average Incremental Financial Cost (AIFC) approach, which is regarded as an approximation of the long-run marginal cost. The average tariff required for full cost recovery of the subproject is Kip 4,551 / m<sup>3</sup>. The average tariff required to cover the subproject's full O&M cost and 30% of capital cost is Kip 2,438 / m<sup>3</sup>. The long run utility wide average tariff, which will also be applied to the subproject, is Kip 4,997 / m<sup>3</sup> at 2010 price level. The use of utility wide tariff for the subproject does not result to a subsidy for subproject consumers.

#### **Affordability and Willingness to Pay**

An affordability analysis was undertaken to ensure that domestic consumers, particularly female headed households and those in low-income groups, can afford the projected water tariff levels that meet the financial objectives of the sector. The affordability analysis was done for year 2017, two years before the project is assumed to be operational, and year 2024.

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The results of the socio-economic survey revealed that households are willing to pay an average of about Kip 20,000 per month for piped water supply with 43% of respondents willing to pay between Kip 11,000 to Kip 70,000 per month. The analysis above shows that the average monthly water bill in 2017 and 2024, inclusive of the monthly meter rental and turnover tax, are higher than the households' willingness to pay. During this transition period, the PNPs forgive unpaid bills. In addition, it is recommended that the minimum 5m<sup>3</sup>/month be eliminated, so that the poor only pay for what they actually use.

- **PROJECT ECONOMIC ANALYSIS**

Capital costs and incremental operation and maintenance (O&M) costs of the water supply and sanitation system have been considered. Economic costs have been derived from the financial project costs. All costs were expressed in constant (2010) prices. Taxes and duties have been excluded from base costs. Economic costs were valued using the domestic price numeraire and expressed in local currency. Tradable components have been adjusted to economic prices using shadow exchange rate factors (SERF) and non-traded components are valued at domestic market prices. A shadow wage rate factor (SWRF) for unskilled labor has been used to reflect its opportunity costs in the context of wide availability of labor in Lao PDR.

#### **Demand Forecast**

Water demand in the subproject town was derived from the current population within the planned service area, population growth, current and future domestic water consumption levels, and a provision for non-domestic water consumption. Reliable data on the amount of water presently consumed by households without piped-water connection in the subproject town is not available. Households typically utilize a variety of water sources and do not measure or assess their consumption. However, based on the socio-economic household survey result as well as observations of water use behavior in the subproject town during the field visits, it is estimated that average daily demand from existing sources of non-piped water ranges between 40 and 70 liters per capita per day, depending on the effort and resources needed to acquire the water, and on income levels. Internationally accepted lifeline consumption requirement was estimated to be 40 lpcd, however, this figure does not factor in future economic or population growth, and the proposed project is based on a demand estimate of 100 litres per household per day.

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Per capita water consumption is expected to increase after construction of the piped water supply system, due primarily to (i) the reduced cost of acquiring water, (ii) improved water quality, and (iii) greater convenience and reliability of the piped water supply system. Demand is also a function of changes in price and household income and estimated price and income elasticity were incorporated in the demand forecasts.



- **PROJECT BENEFITS AND IMPACTS**

### **Expected Beneficiaries and Benefits**

In Sayphouthong, the investment will provide direct and indirect benefits for all people living and working in the 39 core villages of the town. Specifically, this will include up to 54,929 people in 2025 and 61,596 people in 2032.

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For people living in Sayphouthong, the principal benefits derive from the development of a system of piped, treated water. They include improved convenience and reliability of water supplies for domestic uses in all core villages, as well as increased quantities of water and improved water quality.

Health benefits will result from the provision of safe water and improved household sanitation conditions that reduce the incidence of diarrhea, dysentery, kidney stones and other water-related illness. Other health benefits will include reduced costs for health care and a reduction in work time lost. Moreover, the help all people in the town adapt to climate change by providing year-round water supply, even in dry years. This is a significant improvement on the current situation, where people either source water from wells, that have an increasing propensity to dry out, and bottled water, which is expensive.

The availability of treated water and reliable water supplies may also support the development of economic activities in Sayphouthong. For example, it can improve the opportunities to establish hotels, guesthouses, restaurants and other entertainment venues, if demand increases as a result of the town's location on main Road 13. Home-based and other enterprises that produce rice wine, rice noodles and other processed foods will benefit from access to treated water.

Over 60% of surveyed households in Sayphouthong purchase bottled water for drinking. All households rely partially or entirely on other sources of water for household drinking water, for example, by boiling well water. The availability of treated piped water may result in modest reductions in household expenditures for households that buy water, although this may be offset by increased consumption of water as well as continued purchase of bottled water due to, for example, taste preferences.

### **Poverty Reduction**

In the case of the small number of poor households in the subproject area, the Project policies help to ensure equitable benefits. Specifically, poor households are entitled to (i) no upfront charges for connection to the water supply system regardless of when they connect, on condition that they pay for a minimum amount of water use; (ii) progressive tariffs based on consumption levels (to be confirmed); and, (iii) financial assistance to construct or upgrade their sanitation facilities.

The direct benefits of piped water to the house and hygienic latrines that may contribute to reducing poverty levels of poor households include (i) reduced costs for health care due to the availability of clean water and proper sanitation; and, (ii) reduced costs for drinking water, if households substitute boiled piped water for purchased bottled water; and, (iii) increased opportunities for income-generating activities that require a water source (e.g., food processing or a small restaurant) and/or increased profitability of existing activities.

### **Gender**

Everyone surveyed in core villages agreed that the water supply system offers significant benefits for adult women, as well as for men. In addition to improved health, people believe that women and men will both enjoy time savings and reduced workload. That is, the time and effort to get water will be less compared with current practices of getting water from wells or, in villages close to the Mekong River, going to the river to wash clothes or bathe. The majority felt that access to piped, treated water would result in greater income-generating opportunities,

although the benefit for men was seen to be slightly higher than for women. More than half of respondents indicated that as a result of the water supply system, both girls and boys would have reduced workloads and more time for education.

Women and men in Sayphouthong are almost equally involved in community affairs, measured as the percentages of households with active members. Men tend to be involved in activities of the Youth Union, while women participate through the Lao Women's Union. The objective of the Project gender strategy is to build on the interests and strengths of both women and men to be involved in the proposed village-level activities, and to ensure that the views of both groups are taken into consideration in making decisions. ▾

[Further analysis of the gender situation is provided in Annex 2.](#)

### **Minority Ethnic Groups**

Sayphouthong District Town is composed of 39 core villages in 8 village clusters with a total 2017 population of 48,188 persons. In 2015, 100% of survey respondents belong to Tai-Kadai linguistic group (consisting of 73% Lao and 27% Phoutay) that form the majority of the national population. There are in total households, of which 8,908 households (27%) are considered as poor households.

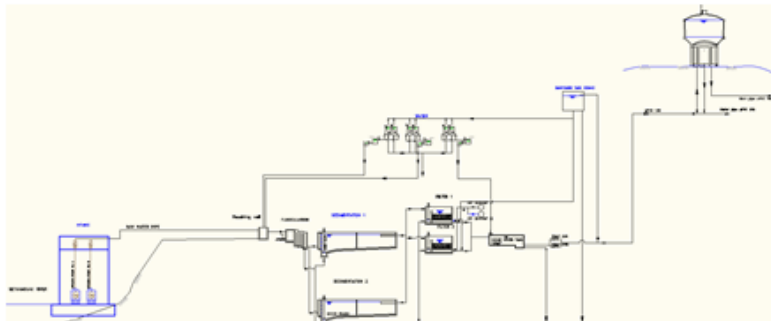
**Deleted:** Therefore, the following specific gender actions will be undertaken for the Sayphouthong project.

## **Annex 4 – Feasibility Study of Implementation for Sethamouak Town**

LAO PEOPLE'S DEMOCRATIC REPUBLIC  
MINISTRY OF PUBLIC WORKS AND TRANSPORT  
DEPARTMENT OF WATER SUPPLY

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## FEASIBILITY STUDY FOR SETHAMOUAK TOWN



**UN HABITAT**  
FOR A BETTER URBAN FUTURE



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Prepared by  
UN-Habitat in association with NPSE-Savannakhet

## Project Description

**Sethamouak** is one of the small towns in Lao PDR proposed for inclusion in the Adaptation Fund programme. The proposed Sethamouak district town aims to mainstream **“Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR”**, to provide safe, reliable and affordable 24/7 piped water supplies and village environmental improvements in small towns along an economic corridor. It has been formulated as a community-based project and in line with “Samsang” (3 level development), requiring the towns and their provincial authorities to demonstrate their commitment to the project and its associated reforms, thus encouraging a demand-driven approach. The project has a strong community participation focus, reinforced by environmental and social safeguard, health and sanitation awareness.

## Rationale

### Background

**Sethamouak** Town is composed of 7 villages with a total 2018 population of 8,956 persons. About sixty two (62) percent of the population are Phouthai, Katang and Mangkone, three of the minority ethnic groups in Lao PDR. There are in total 1,533 households, of which 541 households (35%) are considered as poor households.

Inadequate water supply and poor environmental conditions in Sethamouak town and other small towns deter socio-economic development and restrict the ability of the towns to serve as centers for economic activity and delivery of social services for their surrounding rural areas.

### Project Supports Government Policy

The Project will build on the Government’s policy of developing small towns as centers of marketing and agricultural processing, as economic links between rural, national and international markets, and as places offering non-farm employment to the rural poor. By developing these small urban centers, the Government is also seeking to reduce poverty through economic growth and improve geographical equity in urban social infrastructure development. The Project supports Government of Lao PDR’s (GOL’s) water supply sector goal which is to provide 24-hour per day access to safe drinking water for 80% of the urban population by the year 2020. [For further information on how the project supports the government’s priorities and complies with laws and technical standards, see Part II, Sections D and E.](#)

### Project Impact and Outcome

The expected impact of the Project is to build resilience to climate change in communities along an economic corridor in the central region of Lao PDR. This will be achieved by the provision of climate resilient infrastructure and the mainstreaming of climate action into urban planning. To achieve this objective, the project focuses its actions on highly vulnerable settlements along the economic corridor in the province of Savannakhet and also to improve quality of life of small town residents in Lao PDR and enhanced role of the small towns as economic, market, services, and manufacturing centers for their surrounding rural areas.

These outcomes will be achieved by:

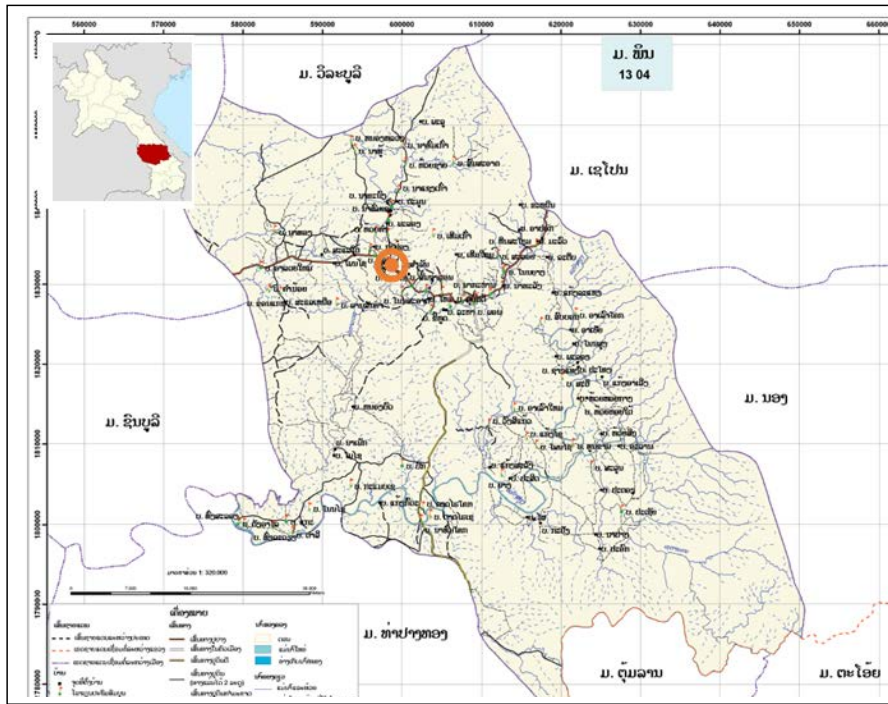
- Mainstreaming climate action into urban planning to build resilient communities along an economic corridor in Lao PDR;
- Establishing new optimally sized water supply systems using appropriate innovation technologies;
- Motivating public participation in water and sanitation infrastructure development to improve the environment; and

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- Strengthening the urban water supply sector planning, managing, and regulating capacity

Figure 1-5: Location of Project: **Sethamouak Town in Savannakhet Province**



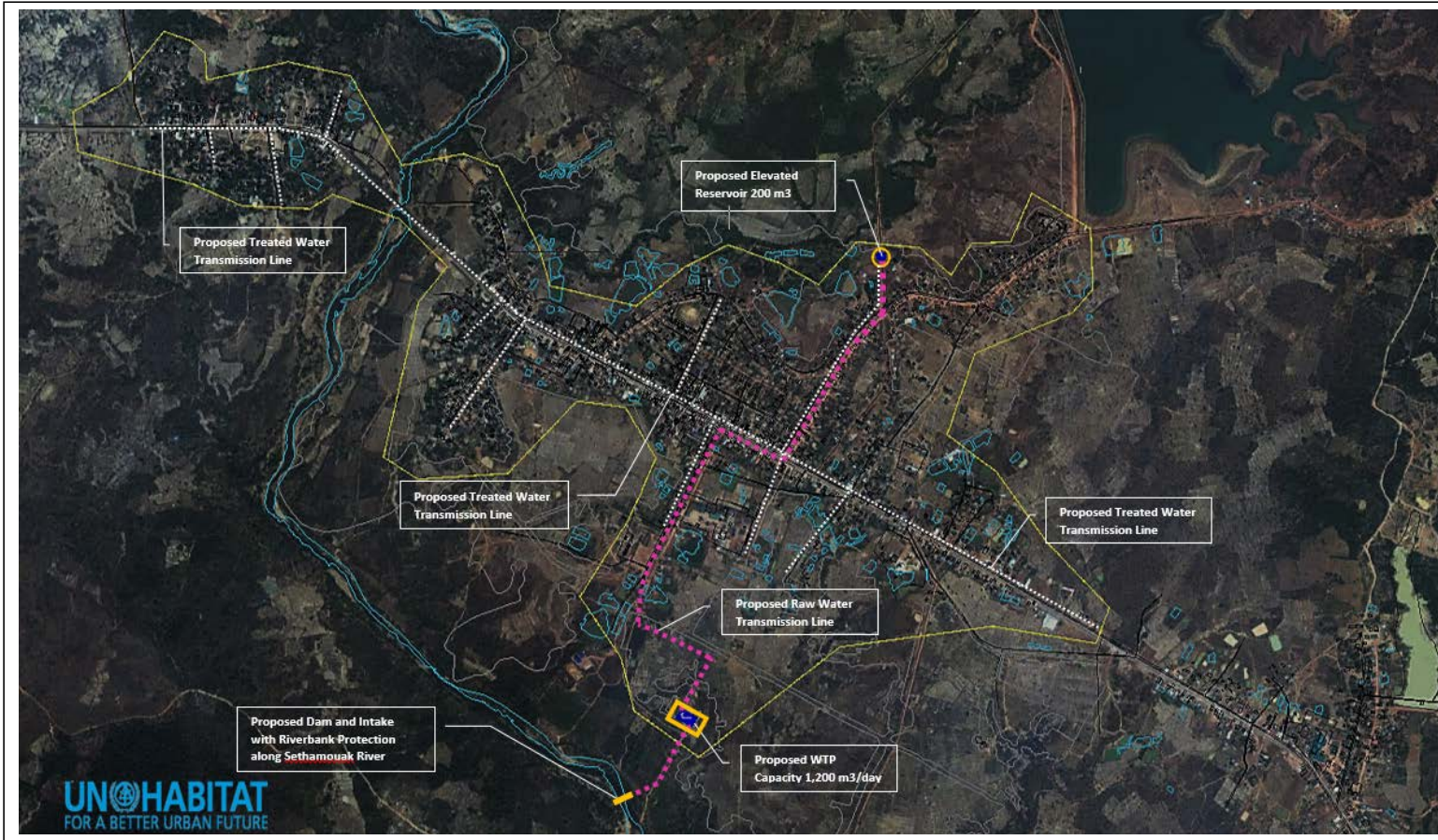


Figure 1-6: Location Plan of Proposed Sethamouak Water Treatment Plan

**Water Supply Development**

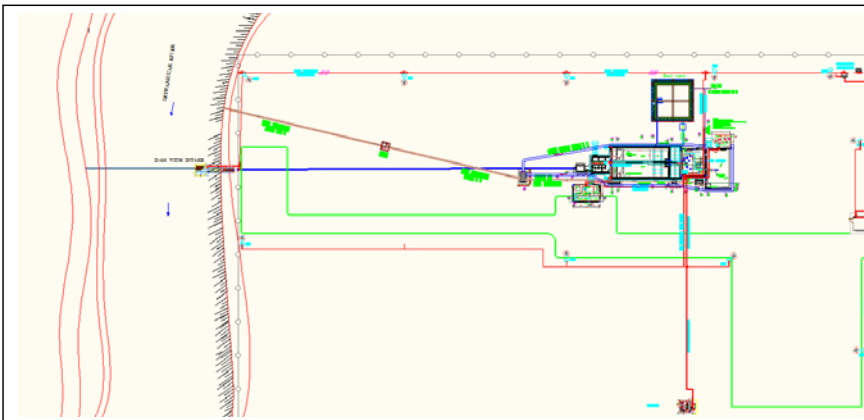
The project will develop a new 24/7 water supply system with individual household connections in Sethamouak's 7 core villages, having a base Y2018 population of about 8,956.

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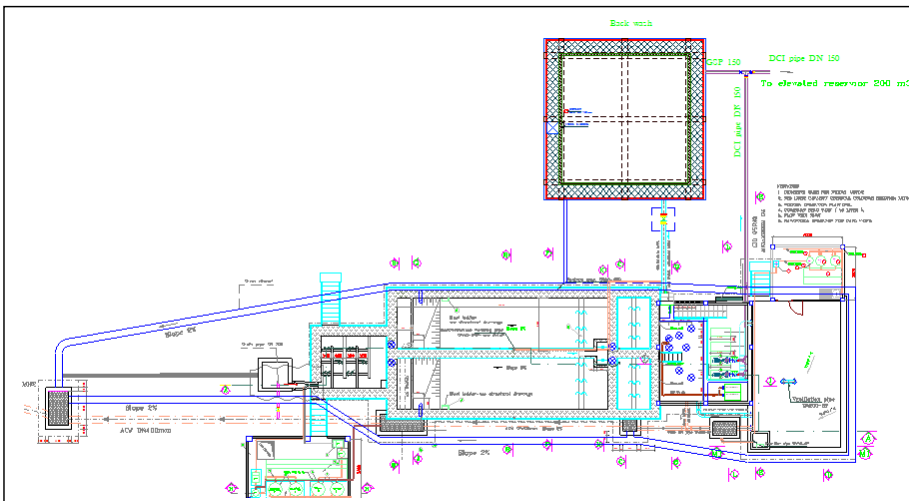
The proposed water supply system will include:

- A 1,200 m<sup>3</sup>/day water treatment plant (WTP) with a check dam and water intake on the Sethamouak River located at Xaysomboun village;

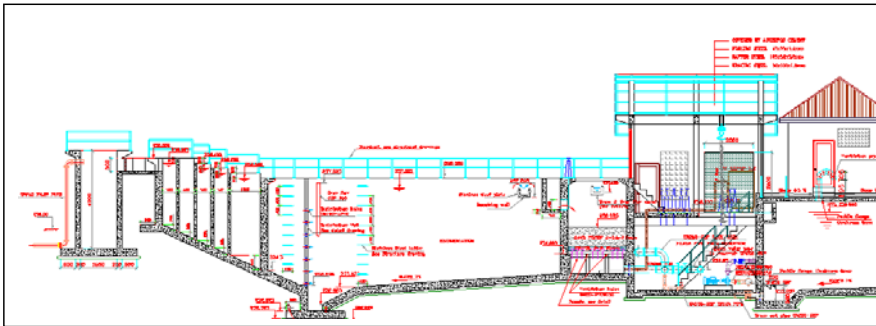
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- The WTP will include pre-sedimentation, flocculation, sedimentation, rapid gravity filtration, a backwash tank and chlorination facilities, 100 m<sup>3</sup> clear water reservoir, detention ponds, plant office and a small water testing laboratory. The distribution and reticulation network will include about 15 km of pipelines. A branch Nam Papa (BNP) office will be constructed in the district center;

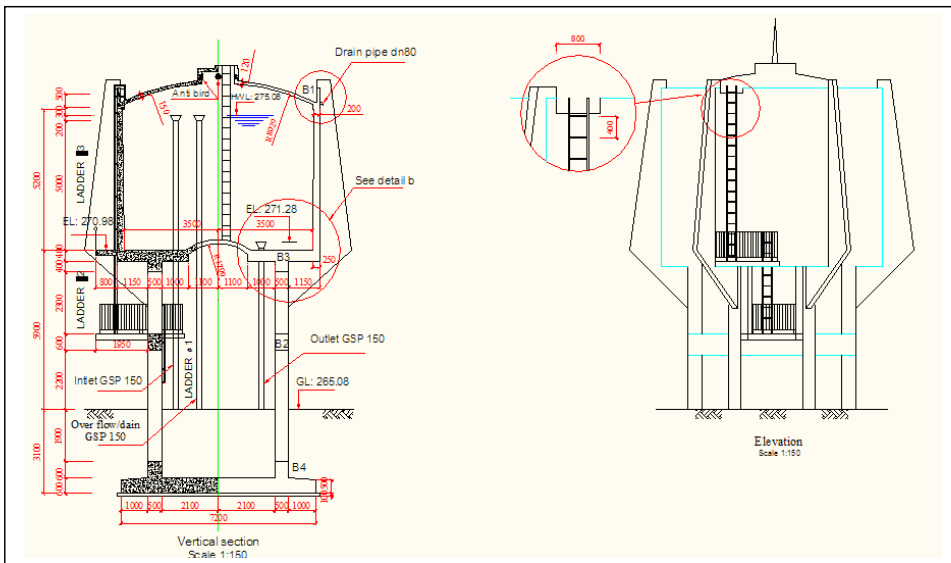


Details of Water Treatment Plan with capacity of 1,200 m3/day



Longitudinal-Section of Water Treatment Plan with capacity of 1,200 m3/day

- A raw water transmission main line supply to 200 m3/day elevated reservoir at Palek village;



**Improved Capacity for Project Implementation and O&M**

This output includes project implementation assistance, capacity development for O&M and incremental administration support.

The Provincial Execution Unit will implement the project. It will also enhance the capacities of village water and sanitation units (WATSANS) to implement and monitor the project.



**Capacity Development for O&M:** will help to develop more efficient systems in the town to manage urban services in a sustainable manner, by building the capacities of the provincial and branch Nam Papa (BNP) and district PWT. It will also provide support to village water and sanitation units (WATSANs) and communities to enhance their capacities to operate and maintain village infrastructure and their on-site water and sanitation facilities.

**Deleted: Project Implementation Assistance (PIA):** will provide consulting services and training to assist the provincial project coordination unit (PCU) each District project implementation unit (PIU) to implement the project. It will also enhance the capacities of PIUs, and village water and sanitation units (WATSANs) to implement and monitor the project.¶

## Executing Agency and Implementation Arrangements

[These are described in Part III, Section A](#)

### Implementation Period

The Project will be implemented over a four-year period from fourth quarter 2019 until fourth quarter 2023. The detailed implementation will be governed by an agreement of cooperation between UN-Habitat and NPSE Savannakhet. For further information on the implementation arrangements, please see [Part III, Section A](#).

**Deleted:** Project implementation arrangements are expected to be similar to the ongoing Adaptation Project phase I of UN-Habitat in 3 southern provinces of Lao PDR. MPWT and NPSE Savannakhet will be the Executing Agency (EA) for the project. A national project steering committee (PSC), which was established for the project, will also oversee this project, give overall direction and provide policy guidance. The same PCU/PIU that were established for the project in the Department of Water Supply (DWS) of MPWT will also be responsible for overall planning, coordination and management of this project. ¶

### Procurement

Goods, works and services financed under the project will be procured in accordance with the UN Procurement Manual. International Competitive Bidding (ICB) procedures will be used for major civil works contracts estimated to cost over \$1.0 million, and for supply contracts valued over \$500,000. Procurement of civil works valued at less than \$1.0 million equivalent will be undertaken through national competitive bidding (NCB). Shopping procedures will be followed for materials and equipment packages or works estimated to cost less than \$100,000 equivalent.

PIUs will be established under the DPWT in Savannakhet's province. With assistance from the consultants and PCU/PIU will be responsible for day-to-day coordination and supervision of project implementation in the Project district. A provincial project steering committee (PPSC) will be established to coordinate district agencies and make key decisions on behalf of the provincial government. At the district level, the district governor or vice governor will oversee the project, monitor progress, review quality of the work, coordinate the project with the PIU and local communities, and report on progress to the PPSC. ¶

The **PEU in the province** will be responsible for overseeing procurement. Installation of water meters and service connections will be carried out by the construction contractor under the main water supply construction contract for each town.

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### Tariff and Affordability

The financial objectives of the sector are: (i) fully recover utility wide operation and maintenance (O&M) costs; (ii) recover utility wide debt service; (iii) maintain a utility wide debt service ratio of at least 1.2; (iv) gradually recover an increasing proportion of annual depreciation expense of the utility wide fixed assets; and (v) maintain its accounts receivable at less than 90 days of annual sales. To meet the agreed upon financial objectives of the sector, the projected utility wide tariffs shall be increased at a minimum of 0.2% every three years to keep pace with inflation. The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG).

The percentages of monthly household income spent on water, inclusive of the monthly meter rental and turnover tax, by the average household and LIG are below 5% in 2014 and 2018. However, the Water Law states that the expenditure on water should not exceed 3% of household income, the projected water tariffs are considered affordable. [This tariff can be increased to 5% however, where necessary, to offset maintenance or depreciation costs, according to policy guidance from the Department of Housing and Urban Planning, Ministry of Public Works \(references in Part II, Section E of the proposal\).](#)

The results of the socio-economic survey revealed that households are willing to pay an average of about Kip 12,300 per month for piped water supply with 81% of respondents willing to pay at least Kip 10,000 per month. It was noted that asset ownership, such as motorcycles, is also very evident in the town. However, the analysis above shows that the average monthly water bill in 2014 and 2018, inclusive of the monthly meter rental and turnover tax, are higher than the households' willingness to pay. However, affordability seems to be a far more reliable indicator. In addition, it has been found that the few poor families who either cannot afford or are unwilling to pay for water, regulate their consumption to meet their particular circumstances. During this

transition period, the Provincial Nam Paps forgive unpaid bills. In addition, it is recommended that the minimum 5m<sup>3</sup>/month be eliminated, so that the poor only pay for what they actually use.

**Project Benefits and Beneficiaries**

The project will benefit an estimated **11,358 residents (Y2030)** in the 7 core villages of Sethamouak Town by providing safe, reliable piped water supplies and improved urban environments that will have a direct impact on the health and living conditions of the town communities. Health and hygiene promotion activities will improve the health status of the target communities.

The Sethamouak town's economy will benefit from enhanced productivity as a result of health improvements, time savings in collecting water, as well as from increased urban efficiency arising from improved sanitation. Many residents will benefit from lower water costs and from savings in health care costs.

In Sethamouak Town there 1,533 total households, of which 541 households (35%) households are classified as poor. Nevertheless, all project interventions will either directly or indirectly benefit the poor. The target population will benefit from: (i) greater access to safe water supplies and sanitation which will improve health profiles, and; (ii) from improved sanitation that will enhance the poor's mobility and access to income-earning activities and government facilities such as schools and hospitals. These two things are critical in the context of climate change where water is becoming more scarce

Both men and women will benefit from project activities, but women will be the major beneficiaries of the piped water supply system through timesaving, drudgery avoidance, and improved family health. Women will also benefit from the sanitation improvements. Female-headed households will be prioritized to receive water connections first, in accordance with the gender action plan, part of the gender assessment in Annex 2.

**Land Acquisition and Resettlement (LAR)**

The LAR impacts in Sethamouak Town are insignificant, or **AF category B2-Midium Risk**. There are no severely affected households. The main water supply facilities such as the check dam, intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way, with minor impacts on land, property or crops.

- PROFILE OF SAYPHOUTHONG AREA

**Town Location and Profile**

**Sethamouak** town is the District Town of Phine in Savannakhet Province. Savannakhet Province is the most populated province in Lao PDR with the total population of 979,000 persons. The Province comprises of 15 districts of which four including Phine are officially classified as poor districts. Phine District is the third largest urban settlement located in the East-West Economic Corridor, on the junction between the highway No 9 linking the North East of Thailand to the central Part of Viet Nam and the highway No. 23 providing access to the South earn provinces of Laos. (Saravane, Attapeu and Sekong).

In view of the above, the Government of Lao PDR considers as of high priority the improvement of social and physical basic infrastructures of small towns along the East-West Corridor in order to realize the expected benefits.

**Sethamouak** Town is composed of 7 villages with a total 2018 population of 8,956 persons. About sixty two (62) percent of the population are Phouthai, Katang and Mangkone, three of the minority ethnic groups in Lao PDR. There are in total 1,533 households, of which 541 households (35%) are considered as poor households.

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 This subproject will improve the current water supply and sanitation facilities of Sethamouak town. This improved supply of piped drinking water will lead to better public health and general living conditions. ¶  
 The Sethamouak project will not cause any adverse permanent impacts on water and land resources. Temporary negative impacts during the construction phase will be managed through mitigation measures, while already existing constraints during operation will be avoided or limited through complementary or new preventive operation and maintenance related procedures of the new water supply system and existing sanitation scheme. The Environmental Safeguards Management Plan (ESMP) has included relevant counter measures, and recommends, in addition, the preparation of a Health, Safety & Environmental Plan (HSEP) as complementary step for minimizing disturbances to nature and people as they occur typically for construction sites of a water supply and sanitation scheme of small towns. ¶  
 ¶  
 There is no specific environmental issue that would require high attention by the project so that standard implementation of an ESMP and HSEP should meet environmental conditions of national and international laws, guidelines and regulations. The identified mitigation is expected to bring negative temporary impacts during construction phase to acceptable levels with focus on the new dam and intake construction site. Positive impacts on public health, quality of life and economic development during operation phase will be highly significant through the expansion of safe water supply to the Sethamouak town's population. ¶  
 Environmental monitoring of river flows and of quality of raw and treated water should continue during operation by Provincial Nam Papa. ¶  
 As the project's environmental impacts in Sethamouak town are insignificant, and meet the **AF category B2-Midium Risk**, no further environmental assessment is required beyond the detailed review of the ESMP during implementation the infrastructures works, and the preparation of a HSEP. ¶

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## Natural Features

### Topography

The town's 7 core villages are situated on the lowlands, about 61 km northeast of the Mekong River. Phine district is bisected by the Sethamouak River, a major tributary of the Mekong. The elevation of the core villages vary from about 148m at the Sethamouak riverbank, to 182m above mean seal level at Paksong near the district center. The town is surrounded by low-lying land and swamps which are transected by numerous seasonal streams.

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### Geology and Soils

Soils in Sethamouak district consist of alluvial deposits of sand and sandy clay, underlain by sandstones. Nam Sa'at bore logs indicate 10 m of soils and weathered rock overlying fissured sandstone. Sandstone outcrops are exposed at the lower end of the proposed water treatment plant site at Xaysomboun Village and sandstone is likely to be encountered at river bed level near the proposed intake site where the Sethamouak River has formed a "hairpin" bend.

Rainfall data for Savannakhet province indicate that maximum monthly rainfall occurs in July and August, averaging 322mm in July over the past decade.

Deleted: Lao PDR has a tropical monsoon climate which features a pronounced dry season (November to February) and wet season (May to October). The dry season is generally cooler, though temperatures rise significantly in March and April prior to the onset of the rains.

Average annual temperature is about 28°C, varying from a low of 18°C in December-February to a maximum of 35 °C in April. Monthly maximum temperatures are above 30 °C for most of the year.

Evaporation averages 94 mm/month, ranging from 60mm in August and September to more than 100 mm from November until April.

### Surface water

The Sethamouak River is the main water resource in Phine district. Its catchment accounts for about 65% of the District's land area. While the river is reportedly very high turbidity in the rainy season, it carries large quantities of sediment in the wet season. The Sethamouak River is extensively used for irrigation.

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### Groundwater

Groundwater is used extensively for domestic water supply throughout Sethamouak's core villages. Savannakhet Nam Saat (under the Department of Public Works) advised that, prior to 1995, the water table in Sethamouak was at about 18 m depth, but is now much lower because of increasing groundwater use which has affected the reliability of the wells. Household bores in Sethamouak consist of two main types: typically about 20 m deep bores with hand pumps that yield about 0.3L/s, and about 40-50m deep bores with electric pumps that yield about 0.5L/s. Nam Sa'at bore logs indicate that the deep bores take water from fissures within the underlying sandstone, which are rapidly depleted in the dry season.

## Population and Household Characteristics

In 2018, the total population of the 7 core villages was 8,956 people. Women account for 56% of household members (male/female ratio of 0.84); overall, they head approximately 7.8% of households in the town. About 60% of the population is working age (15-60 years).

**Table 1-2: Sethamouak Population Characteristics**

No	Core Villages	2018 Pop'n.	No. HH	Persons/ HH	M/F Ratio
1	Oudomxay	1,201	260	4.6	0.83
2	Xesavang	1,447	236	6.1	0.89

No	Core Villages	2018 Pop'n.	No. HH	Persons/ HH	M/F Ratio
3	Xanamixay	882	118	7.5	0.79
4	Xaisomboun	1,444	227	6.4	0.85
5	Sibounheuang	2,028	338	6.0	0.84
6	Palek	490	94	5.2	0.85
7	Nonxay	1,464	260	5.6	0.83
	<b>TOTAL</b>	<b>8,956</b>	<b>1,533</b>	<b>5.9</b>	<b>0.84</b>

### Education

During 2018's survey, in Sethamuak town have approximately 1 Children school, 5 primary schools and 1 secondary school (table 1-3 summarize the number of schools in the Sethamuak town)

#### Deleted: Ethnicity¶

In 2018, about sixty two (62) percent of the population are "Phouthai, Katang and Mangkone", three of the minority ethnic groups in Lao PDR. There are in total 1,533 households, of which 541 households (35%) are considered as poor households.¶

**Table 1-3: Schools in Sethamuak's Core Villages**

No.	Name of school	Student			Teacher		
		Total	male	female	Total	Male	Female
1	Xethamuak Secondary school	806	418	388	35	10	25
2	Xethamuak Children school	140	70	70	8	-	8
3	Oudomxay Primary school	197	87	110	7	1	6
4	Thaoudom Primary school	121	59	62	7	2	5
5	Xesavath Primary school	289	128	161	13	2	11
6	Nonxay Primary school	183	83	100	6	2	4
7	Sibounheuang Primary school	292	139	153	9	3	6
	<b>Summary</b>	<b>2,028</b>	<b>984</b>	<b>1,044</b>	<b>85</b>	<b>20</b>	<b>65</b>

### Health and Hygiene Conditions

The Sethamuak's 2018 survey results for 'incidence of water-related disease by HH' did not highlight any disease for the last 6 months.

### Land and House Tenure

The majority of the interviewed households own their house and land (97%). Approximately 85% of those who owned the land and house obtained the ownership documents and most households said that they are allowed to sell their property.

### Occupations and Livelihoods

The main occupation of the population in Sethamuak is farming (55%). Around 40% are the dependents including the children, the old age or disable people and the students who cannot contribute to the income of the family. Government staff and the teachers represent about 5% and 2% respectively.

Based on data from surveyed households, the majority (61%) of women living in Sethamuak core villages are economically active.

### Income and Poverty Levels

An attempt was made to ascertain the average monthly cash income and expenses of households. On analysis, it was found that figures provided were generally an estimation of the respondents. As with any study/survey one has to be extremely cautious.

The monthly income per person is calculated dividing the yearly HH income by the average HH size in Sethamouak (5.9), giving us an average monthly income of Kip 480,000 per person.

**Existing Water Supply and Sanitation**

**Water Supply**

The Sethamouak River is the main water resource in Phine district. There are no water treatment facilities in the Sethamouak Town. Wealthier households buy bottled water at US\$15/m3 about 100 times higher than the average tariff for the formalized system. The majority of the population in the town relies on untreated water from open dug wells of over 40 meters deep, boreholes using hand pump and electric pump. Surface water (Sethamouak River) is also used during the rainy season although the turbidity is high. Water shortage in the dry season is a serious threat to the health of the population, particularly the poor households who could not afford to dig wells of over 35-40 meters deep. This problem is likely to be exacerbated by climate change in the future. Present water supply coverage: **0%**.

**Deleted:** The Sethamouak River is the main water resource in Phine district. Its catchment accounts for about 65% of the District's land area. While the river is reportedly very high turbidity in the raining season, it carries large quantities of sediment in the wet season. The Sethamouak River is extensively used for irrigation.

**Other Infrastructure**

**Roads and Drains**

The Sethamouak town center has about 45% of urban gravel roads also have side drains, but village access roads lack side drains and are often boggy in the wet season. The terrain is relatively flat. Primary drains for the district center discharge to adjoining swamp areas and have limited outlets and poorly defined connecting channels, so that stormwater backs up in the wet season, causing minor flooding of the town.

**Deleted: On-Site Sanitation**  
The issue of wastewater and the sanitation in Sethamouak is not different from other small towns in the country: uncontrolled disposal of domestic wastewater, no drainage ditches in the public place such as markets, bus stations, schools or hospitals etc. Some households still have no sanitary latrine. The town does not have a sludge collection tanker or septage disposal facilities. Present sanitation coverage: **43%**

**Electricity**

Over 98% of households in the core villages are connected to the electricity grid, which provides 24-hour supply.

**General**

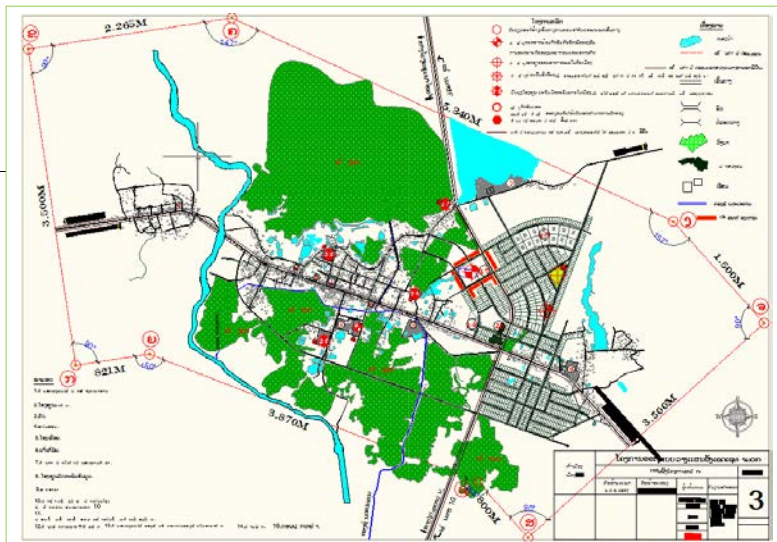
Sethamouak town is the center of services, trade and agriculture in Phine District, which is officially classified as poor district. Phine District is the third largest urban settlement located in the East-West Economic Corridor, on the junction between the highway No 9 linking the North East of Thailand to the central Part of Viet Nam and the highway No. 23 providing access to the South-East hinder land provinces (Saravane, Attapeu and Sekong).

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Rice, water melons and soy beans are Sethamouak's main agricultural products. At present there is no agro-processing or industrial development in Sethamouak.

**Urban Master Plan**

The Urban Master Plan for Sethamouak was prepared by the Department of Public Work and Transport of Savannakhet in 2016, and was approved by the provincial governor in 2017. The Master Plan is essentially a land use plan, but is based on the following orientation for future development:



### Population Projections

The population projections are set out in Table 1-4. Within the core villages, total population is forecast to increase from about 8,956 in 2018 to about 11,358 in 2030.

Table 1-4: Population Projections for Sethamouak's Core Villages

Year 2018 Population	Growth Rate %	Forecast Population 2020	Forecast Population 2025	Forecast Population 2030
8,956	2.00	9,318	10,288	11,358

### Water Demand Forecasts

#### General Approach

Water demand forecasts for the Sethamouak subproject were prepared by making separate projections of each component of demand, including:

Demand for domestic use (based on per capita consumption, coverage targets and population projections);

Demand for industry (based on a % of domestic use, and specific allowances for large industries);

Demand for services (based on a % of domestic use, and specific allowances for large services areas);

Unaccounted-for-water<sup>83</sup> (ufw) as a % of total demand, excluding the demand of large industrial zones.

Production losses in treatment plant (based % of total demands).

#### Domestic Consumption

Water demand and consumption data for other provincial and district towns in Lao PDR show that domestic consumption accounts for about 90% of total demand. Per capita consumption figures for urban water supply systems in Lao PDR vary widely. For 52 water supply systems throughout the country (excluding Vientiane capital), per capita consumption ranges from 36 to 191 LPCD, with an average of 135 LPCD, while for 31 small town water supply systems, the corresponding figures are 11 to 145 LPCD, with an average of 79 LPCD. (WSD Statistics for Provincial Nam Papeas, 2006).

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<sup>83</sup> Unaccounted-for-water is the difference between water production and authorized consumption.

Per capita consumption for Sethamouak's the piped water supply systems (Provincial Nam Papis and the private systems) varies from 40 to 80 LPCD, however customers supplement the piped supplies with bottled water and with rainwater in the wet season, so actual consumption is likely to be higher. According to the household surveys, householders estimate that their consumption varies from 30 to 130 LPCD, with an average of 80 LPCD.

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Based on Sethamouak household survey results and experience from other projects, per capita consumption for drinking and cooking is about 10 LPCD, while water for bathing and washing is in the order of 50 LPCD. About 4-16 LPCD will be required to operate a pour-flush toilet<sup>84</sup>, so per capita consumption for a typical household with pour flush toilet is estimated at 64-76 LPCD. Experience in other towns in Lao PDR indicates that piped connections directly to the house will usually increase water consumption over time. On the other hand, some residents in Sethamouak will continue to use existing pumped wells and free sources of supply such as rainwater to minimize their overall water supply costs. To account for Sethamouak having relatively low poverty levels, and a growing number of private businesses, this Feasibility Study has adopted a per capita consumption figure of 80 LPCD, 49 m<sup>3</sup>/day for backwashing filters, plus 10% for non-domestic use and 15% for unaccounted for water (ufw).

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**Water Demand Forecasts**

Table 1-4 summarizes the demand forecasts and design criteria for the Sethamouak subproject. By 2030, the average daily water production at the water treatment plant is expected to be 1,200 m<sup>3</sup>/day, comprising 78% domestic consumption, with the remaining 22% being for institutions, public use, services, handicraft and small industries, and allowances for NRW and backwashing the filters.

**Table 1-5: Water Demand Forecasts for Sethamouak Town**

<sup>84</sup> In general, pour flush toilets require 1-4 liters of water per flush, including water for washing. Assuming that each member of the household uses the facility 4 times per day, consumption varies from 4-16 lpcd.

No.	Items	Unit	Forecasts			
			2018	2020	2025	2030
<b>A. Domestic Demand</b>						
1	<b>Growth Rate</b>	%	2.50	2.50	2.50	2.50
2	Population in Core Area		8,956	9,318	10,288	11,358
3	Population in Extension Area	No.				
4	<b>Total Population</b>	No.	8,956	9,318	10,288	11,358
5	Coverage in Core Area	%	-	80	80	80
6	Coverage in Extension Area	%	-	80	80	80
7	Percentage Coverage	%	-	80%	80%	80%
8	<b>Population with Piped Water</b>	No.	-	7,454	8,230	9,087
9	<b>Per Capita Consumption</b>	l/c/d	-	80	80	80
10	Total Domestic Demand	m <sup>3</sup> /d	-	596	658	727
<b>B. Non Domestic Demand</b>						
1	Services, Small Industry, Institutions, Public (% Dom)	%	-	20	20	20
2	Total Non domestic demand	m <sup>3</sup> /d	-	119	132	145
<b>C. Subtotal Water Demand All Categories</b>						
<b>D. Non Revenue Water (NRW) in Distribution system</b>						
1	NRW as % Average Daily Water Production	%	-	15	15	15
2	NRW (physical losses only-pipelines and WTP)	m <sup>3</sup> /d	-	107	119	131
<b>E. Average Daily Water Production (C+D) rounded</b>						
<b>F. Peak Daily Water Demand</b>						
1	Peak Daily Water Demand		-	1.2	1.2	1.2
2	Peak Daily Water Demand (PDD)	m <sup>3</sup> /d	-	984	1,092	1,200
3	Peak Daily Water Demand	l/s	-	11.4	12.6	13.9
<b>G. Required Treatment Plant Output (rounded)</b>						
<b>H. Treatment Plant Backwashing</b>						
1	Backwashing as % of Treatment Plant Output	%	-	5	5	5
2	Treatment Plant Backwashing	m <sup>3</sup> /d	-	49	55	60
<b>I. Raw Water System</b>						
1	Required Capacity of Source & Raw Water System	m <sup>3</sup> /d	-	1,029	1,145	1,260
2	<b>Required Source Capacity (rounded)</b>	m <sup>3</sup> /d	-	1,030	1,140	1,260
3	<b>Required Source Capacity</b>	l/s	-	11.9	13.2	14.6
<b>J. Peak Hourly Demand (Distribution System)</b>						
1	Peak Hourly Factor	%	-	1.5	1.5	1.5
2	<b>Peak Hourly Demand (KhpPDD/86.4)</b>	l/s	-	17.9	19.8	21.9

## Introduction

This section outlines design and planning criteria for the Sethamouak water supply system. It also discusses water treatment technology.

## Design and Planning Periods

The Project is scheduled for implementation in the period 2019-2021. Sethamouak project the planning has considered development to 2030 (12 year design life), to ensure that: (i) adequate provisions are made in the Project for future expansion; (ii) facilities are optimally sized, and; (iii) adequate land areas are reserved for future facilities. The proposed design horizons for intakes, raw water transmission and water treatment plants were determined by least cost analyses, while design periods for other parts of the system were determined by practical considerations. (e.g. problems and risks associated with future land acquisition and upgrading operating water supply systems in growing urban areas).

## Water Treatment Technology

The choice of water treatment technology for Sethamouak is dictated primarily by the raw water quality, operator capacity and financial resources to ensure sustainability. Wet season turbidity of the Sethamouak River is high, and is subject to rapid fluctuations. Slow sand filters and rapid sand filters were considered for possible use in Sethamouak. Although slow sand filters are relatively simple to operate, they require a large land area and require pre-sedimentation and/or sedimentation processes to operate with highly turbid waters. Limited land is available in Sethamouak and the raw water is very turbid. Slow sand filters are not therefore a viable option. Rapid sand filters are the most appropriate system.



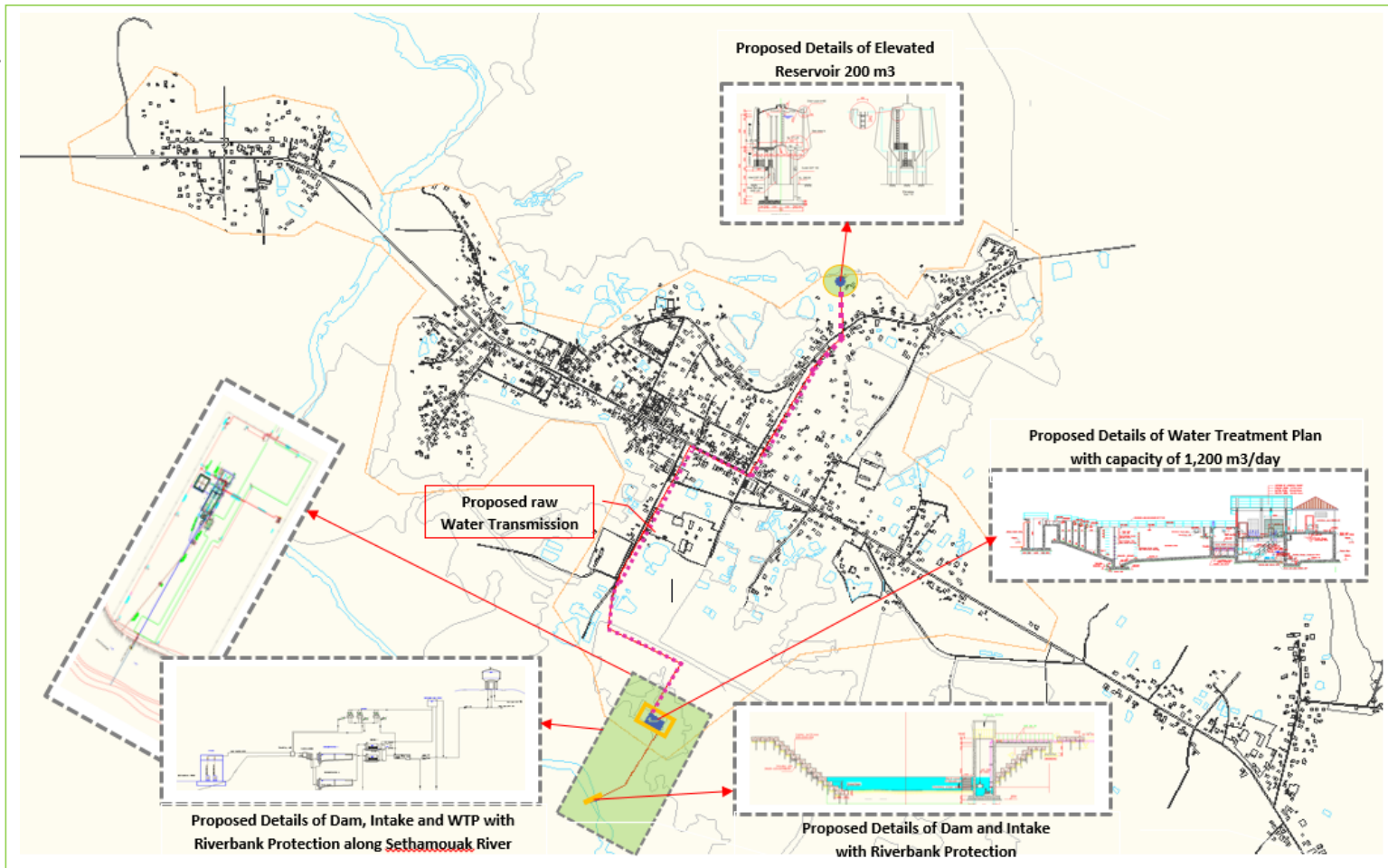


Figure 1-3: Proposed Sethamouak WTP Conceptual Design

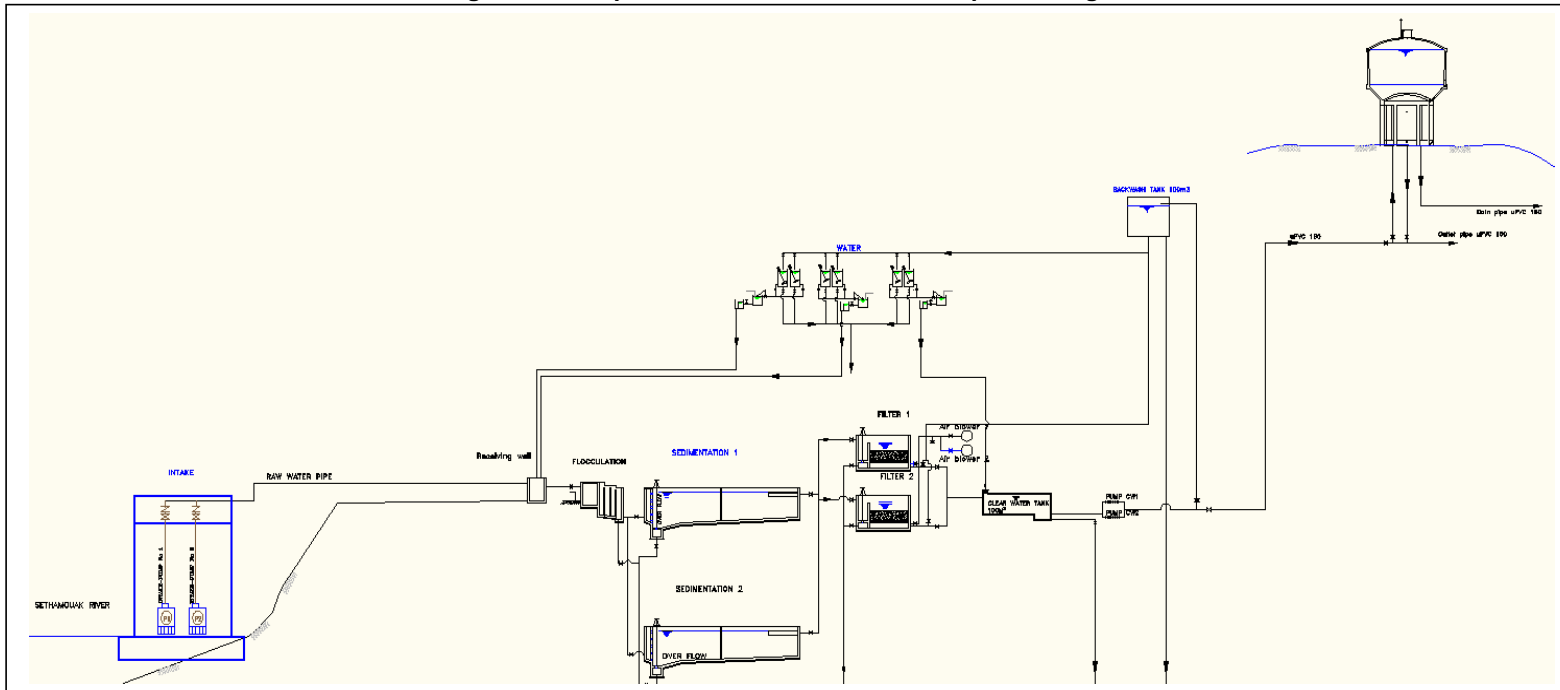


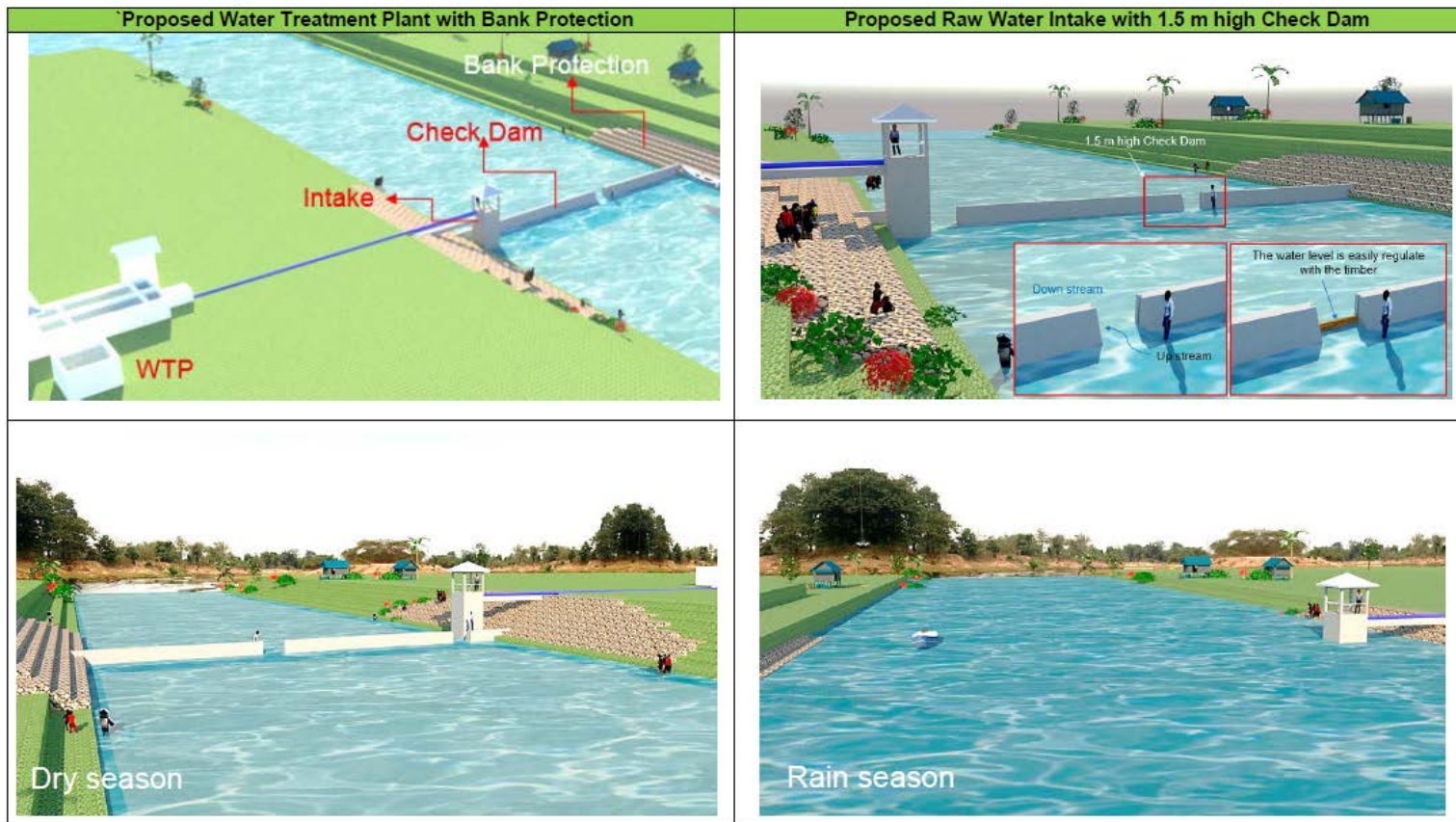
Figure 1-4: Proposed Sethamouak WTP Conceptual Design

Sethamouak Town: IEE - Visual Impact of Proposed Water Treatment Plant (WTP) in Sethamouak River

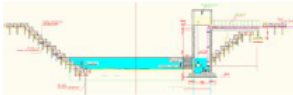
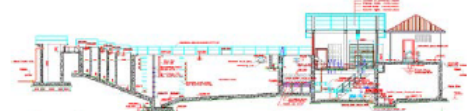


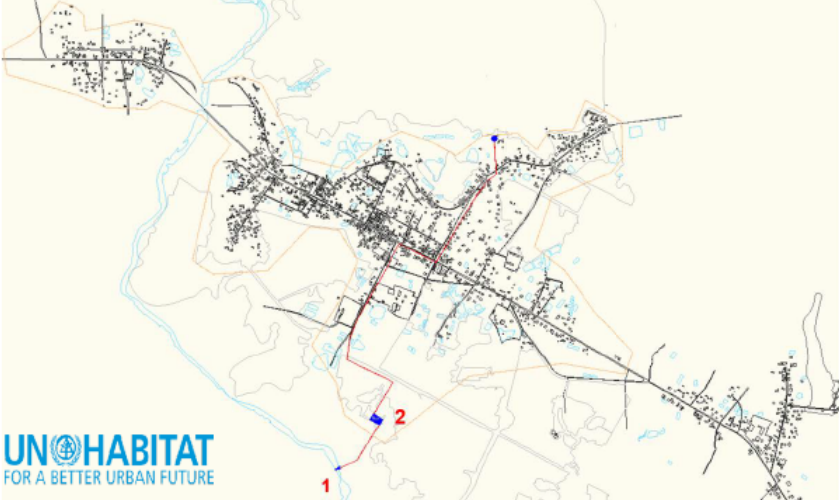



3 D VIEW OF PROPOSED WATER INFRASTRUCTURE

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**Schematic Description: Sketched and depicted information related to planned Water Treatment Plant (WTP) in Sethamouak Town**

			
<p>[1] Raw Water Intake and Check Dam with Riverbank Protection</p>	<p>[2] Water Treatment Plant (WTP) with capacity of 1,200 m3/day</p>	<p>[3] Schematic of Water Treatment Plant (WTP)</p>	
			
<p>Proposed site of the new Water Treatment Plant at Sethamouak River</p>		<p>Typical small town conditions in Sethamouak</p>	
			
<p>Sethamouak River in the dry season</p>	<p>Bridge over Sethamouak River</p>		
<p><b>Notes</b></p> <ol style="list-style-type: none"> <li>1. Not to scale</li> <li>2. Map is schematic, not detailed</li> <li>3. Shown locations are indicative</li> </ol>	<p><b>Environmental Impacts and Mitigation:</b></p> <ul style="list-style-type: none"> <li>• No negative impacts on water/land resources</li> <li>• No permanent adverse impacts on people</li> <li>• Improvement of health conditions through water supply system and water facilities (Please see Annex)</li> </ul>	<p><b>ESMP:</b></p> <ul style="list-style-type: none"> <li>• Raw / potable water quality monitoring</li> <li>• Health, Safety &amp; Environmental supervision of construction work to avoid/limit disturbances to communities</li> </ul>	<p><b>Sources</b></p> <ul style="list-style-type: none"> <li>• District Governor</li> <li>• NPSE-Savannakhet</li> <li>• UN-Habitat Lao PDR</li> </ul> <p><b>Date</b></p> <ul style="list-style-type: none"> <li>• April 2019</li> </ul>

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### Management Arrangements

The new District Nam Papa will be established and responsible for managing, operating and maintaining the new or rehabilitated water supply systems. The Provincial Nam Papa in the provincial capital will provide ongoing technical and managerial support to the District Nampapa following commissioning of the new water supply system. It will process/print water bills in the provincial office, and coordinate District Nam Papa staff training. The Provincial Public Works and Transport (PWT) will be responsible for managing the new or improved sanitation systems.

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### Project-Specific Tariff

The project-specific tariff was determined using the Average Incremental Financial Cost (AIFC) approach, which is regarded as an approximation of the long-run marginal cost. The average tariff required for full cost recovery of the subproject is Kip 4,551 / m<sup>3</sup>. The average tariff required to cover the subproject's full O&M cost and 30% of capital cost is Kip 2,438 / m<sup>3</sup>. The long run utility wide average tariff, which will also be applied to the subproject, is Kip 4,997 / m<sup>3</sup> at 2010 price level. The use of utility wide tariff for the subproject does not result to a subsidy for subproject consumers.

### Affordability and Willingness to Pay

An affordability analysis was undertaken to ensure that domestic consumers, particularly those in lower income groups and female headed households, can afford the projected water tariff levels that meet the financial objectives of the sector. The affordability analysis was done for year 2017, two years before the project is assumed to be operational, and year 2024.

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The results of the socio-economic survey revealed that households are willing to pay an average of about Kip 20,000 per month for piped water supply with 43% of respondents willing to pay between Kip 11,000 to Kip 70,000 per month. The analysis above shows that the average monthly water bill in 2017 and 2024, inclusive of the monthly meter rental and turnover tax, are higher than the households' willingness to pay. During this transition period, the PNPs forgive unpaid bills. In addition, it is recommended that the minimum 5m<sup>3</sup>/month be eliminated, so that the poor only pay for what they actually use.

- PROJECT ECONOMIC ANALYSIS

Capital costs and incremental operation and maintenance (O&M) costs of the water supply and sanitation system have been considered. Economic costs have been derived from the financial project costs. All costs were expressed in constant (2010) prices. Taxes and duties have been excluded from base costs. Economic costs were valued using the domestic price numeraire and expressed in local currency. Tradable components have been adjusted to economic prices using shadow exchange rate factors (SERF) and non-traded components are valued at domestic market prices. A shadow wage rate factor (SWRF) for unskilled labor has been used to reflect its opportunity costs in the context of wide availability of labor in Lao PDR.

### Demand Forecast

Water demand in the subproject town was derived from the current population within the planned service area, population growth, current and future domestic water consumption levels, and a provision for non-domestic water consumption. Reliable data on the amount of water presently consumed by households without piped-water connection in the subproject town is not available. Households typically utilize a variety of water sources and do not measure or assess their consumption. However, based on the socio-economic household survey result as well as observations of water use behavior in the subproject town during the

field visits, it is estimated that average daily demand from existing sources of non-piped water ranges between 40 and 70 liters per capita per day, depending on the effort and resources needed to acquire the water, and on income levels. Internationally accepted lifeline consumption requirement was estimated to be 40 LPCD.

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Per capita water consumption is expected to increase after construction of the piped water supply system, due primarily to (i) the reduced cost of acquiring water, (ii) improved water quality, and (iii) greater convenience and reliability of the piped water supply system. Demand is also a function of changes in price and household income and estimated price and income elasticity were incorporated in the demand forecasts.

- PROJECT BENEFITS AND IMPACTS

### Expected Beneficiaries and Benefits

In Sethamouak, the subproject will provide direct and indirect benefits for all people living and working in the 7 core villages of the town. Specifically, this will include up to 10,288 people in 2025 and 11,358 people in 2030.

For people living in Sethamouak, the principal benefits derive from the development of a system of piped, treated water. They include improved convenience and reliability of water supplies for domestic uses in all core villages, as well as increased quantities of water and improved water quality, as well as climate change adaptation benefits of guaranteed water supply, even in dry years. This is a significant improvement on the current situation, where people either source water from wells, that have an increasing propensity to dry out, and bottled water, which is expensive.

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Health benefits will result from the provision of safe water and improved household sanitation conditions that reduce the incidence of diarrhea, dysentery, kidney stones and other water-related illness. Other health benefits will include reduced costs for health care and a reduction in work time lost.

The availability of treated water and reliable water supplies may also support the development of economic activities in Sethamouak. About 68% of surveyed households in Sethamouak purchase bottled water for drinking. All households rely partially or entirely on other sources of water for household drinking water, for example, by boiling well water. The availability of treated piped water may result in modest reductions in household expenditures for households that buy water, although this may be offset by increased consumption of water as well as continued purchase of bottled water due to, for example, taste preferences.

### Poverty Reduction

In the case of the small number of poor households in the target area, the Project policies help to ensure equitable benefits. Specifically, poor households are entitled to (i) no upfront charges for connection to the water supply system regardless of when they connect, on condition that they pay for a minimum amount of water use; (ii) progressive tariffs based on consumption levels (to be confirmed); and, (iii) financial assistance to construct or upgrade their sanitation facilities.

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The direct benefits of piped water to the house and hygienic latrines that may contribute to reducing poverty levels of poor households include (i) reduced costs for health care due to the availability of clean water and proper sanitation; and, (ii) reduced costs for drinking water, if households substitute boiled piped water for purchased bottled water; and, (iii) increased opportunities for income-generating activities that require a water source (e.g., food processing or a small restaurant) and/or increased profitability of existing activities.

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## Gender

Everyone surveyed in core villages agreed that the water supply system offers significant benefits for adult women, as well as for men. In addition to improved health, people believe that women and men will both enjoy time savings and reduced workload. That is, the time and effort to get water will be less compared with current practices of getting water from wells or, in villages close to the Sethamouak River, going to the river to wash clothes or bathe. The majority felt that access to piped, treated water would result in greater income-generating opportunities, although the benefit for men was seen to be slightly higher than for women. More than half of respondents indicated that as a result of the water supply system, both girls and boys would have reduced workloads and more time for education.

Women and men in Sethamouak are almost equally involved in community affairs, measured as the percentages of households with active members. Men tend to be involved in activities of the Youth Union, while women participate through the Lao Women's Union. The objective of the Project gender strategy is to build on the interests and strengths of both women and men to be involved in the proposed village-level activities, and to ensure that the views of both groups are taken into consideration in making decisions.

[Further analysis of the gender situation is provided in Annex 2.](#)

Deleted: Therefore, the following specific gender actions will be undertaken for the Sethamouak subproject.

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## Purpose

The purpose of this overview is to demonstrate compliance of the project with the Environmental and Social Safeguards of the Adaptation Fund. It provides a summary of the measures taken in the project design phase to ensure that the project promotes positive environmental and social benefits, avoids, reduces or mitigates adverse environmental and social risks and impacts considering the 15 Adaptation Fund principles. It further details the measures put in place to uphold the principles throughout the project implementation.

## Compliance Process

In line with UN-Habitat's Environmental and Social Management System and the Adaptation Fund's ESP (and Gender Policy). UN-Habitat, in partnership with NPSE Savannakhet completed a comprehensive environmental and social assessment of the target site, which consisted of: a rapid climate change vulnerability assessment, a feasibility study of the two proposed investments (as shown in Annexes 3 and 4), and an initial environmental examination (IEE<sup>85</sup>) to support the preparation of this proposal. The full IEE document can be provided on request. The IEE was designed to ensure compliance with both Lao laws and the Environmental and Social Policy of the Adaptation Fund. Its key findings are presented in this Annex.

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UN-Habitat's staff in the Laos country office supported the rapid VA, feasibility study and IEE, while taking the lead in developing this Annex and the proposal generally, by ensuring that consultations took place with vulnerable groups, and that additional information could be gathered to demonstrate compliance with the requirements of the AF ESP. The consultations focused on climate change related hazards, the perceptions, requirements and priorities of the poorest and most vulnerable, beneficial activities, potential risks and effective risk mitigation.

Deleted: These documents are available on request This IEE (which covers Component 2 of the proposed project) also ensures that the ESMP and safeguarding process is compliant with Laos' legal requirements. ¶

For a full description of the project that was designed based on these consultations, please see [Part II, Section A](#) of the project proposal document.

## Screening and Categorization

As part of the rapid VA, feasibility study and IEE, a screening and assessment was carried out to identify and evaluate environmental and social risks and impacts of proposed interventions.

Planning and policy related activities, which make up all actions under Components 1 and 3 have been screened against the 15 AF ESP principles and no potential risks have been observed, or potential risks are sufficiently inconsequential that no further actions are required. Despite this, there will be ongoing monitoring for compliance undertaken as the project is implemented to ensure that risks don't develop.

Activities under Component 2 are 'hard' investments and as such some relatively minor risks have been identified. These are presented in Tables 10-13, below. The design of the project incorporates means to ensure that risks are minimised, by working in only two locations and maximising community engagement, there are no incentives for mismanagement and substantial incentives to ensure compliance with Environmental and Social Principles. Design features to minimise risks are presented in Tables 10&11, below. The investments are also sufficiently small-scale that any negative impacts that arise would be relatively minor

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<sup>85</sup> Note, this document is only available in Lao, but a screen shot has been presented here and it has been used as a reference in the development of this safeguards assessment and the feasibility studies in Annexes 3&4

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and localised in their scale. Nevertheless, these activities can be classified as category B for environmental and social safeguard risks and as such an ESMP has been developed, below.

Table 8 - Activity level safeguarding sheet for Sayphouthong Town

District Name	Sayphouthong		
Specific Activity and Brief Description	<p>“Construct a water infrastructure climate resilient with 3,600m<sup>3</sup>/day WTP that serves 24/7 of 48,188 residents in Sayphouthong town”. Further information about the technical design is presented in Annex 3. Further screening in Tables 12 and 13, below.</p>		
Environmental and Social Safeguard Principle	<p>Yes/No and Specific Risks</p>	Linkage to the Vulnerability Assessment	Risk Mitigation Actions incorporated in the infrastructure and project design
Compliance with the law	<p><b>No</b></p> <p><u>The project has assessed that there is no realistic risk under any of the project’s proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section E of this proposal.</u></p> <p><u>The main water supply facilities such as the intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way.</u></p>	<p>The project has assessed that there is no realistic risk under any of the project’s proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section 5 of this proposal</p>	<p><i>Relevant national, local authorities and engineers were consulted during the project design phase to ensure compliance with all relevant laws and technical standards.</i></p> <p><i>It will be ensured that each person associated with the subproject is aware of domestic and international laws and compliance needs to 8<sup>th</sup> NSEDP, SDG and Lao technical standards requirements.</i></p> <p><u>Engagement with Department of Land Management under the Provincial Department of Natural Resources and the Environment, Urban Planning and Construction under PWT at the provincial level Integrating legal compliance into all training and awareness. Continued monitoring throughout the project</u></p> <p>UN-Habitat will work with executing entities to monitor developments and changes to the law and train partners, where appropriate.</p>
Access and	<p>Yes</p>	<p><u>Indigenous people, women and female headed households tend to</u></p>	<p><i>Consultations have and will continue to capture all needs of the target communities/households and the</i></p>

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See Tables 12&13, below

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<p><b>Equity</b></p>	<p><u>That certain groups are denied access to infrastructure, or that preferential access is given to others.</u></p> <p><u>This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people (see below)</u></p>	<p><u>have higher level of vulnerability</u></p>	<p><i>activities have been designed according to their 'access and equity' needs. Mapping all the groups and their needs, planning/management and monitoring process for implementing all components and community management with rules ensuring that equal 'access and equity' is guaranteed. A pro-poor tariff will be implemented to reduce the possibility that people can't access the services.</i></p>
<p><b>Marginalised and Vulnerable Groups</b></p>	<p><b>Yes</b></p> <p><u>According to the feasibility study and IEE in the preparation of the proposal, 49 per cent of Sayphouthong District are indigenous people. In each case, they come from the Phoutong, Katang and Mangkone ethnic groups (all of which have languages from the Thai-Kadai ethnolinguistic family. In total, 27,649 (49.8 per cent) of the beneficiaries are indigenous people.</u></p> <p><u>In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 30,567 will be women, meaning that 53.5% of the project's beneficiaries are women.</u></p> <p><u>Approximately 30% of</u></p>	<p><u>Indigenous people, women and female headed households tend to have higher level of vulnerability</u></p>	<p><i>Community management with rules ensuring that equal access is guaranteed, including for indigenous populations. This means that all consultations and meetings should be made accessible in indigenous languages, where people cannot, or do not wish to communicate in the Lao Language.</i></p> <p><i>Consultations have and will continue to capture all issues and needs of "marginalized and vulnerable groups" and particular impacts on- and needs of marginalized and vulnerable groups will be assessed throughout the project.</i></p> <p><i>The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water supply, despite their low incomes.</i></p> <p><u>Female headed households will be prioritised to receive connections first.</u></p> <p><u>Because of high rates of illiteracy (especially among women and indigenous people) information</u></p>

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Deleted: According to the Feasibilities study conducted in the preparation of this proposal, 62 per cent of the residents of Sethamouak Town and 49 per cent of Sayphouthong District are indigenous people. In each case, they come from the Phoutong, Katang and Mangkone ethnic groups (all of which have languages from the Thai-Kadai ethnolinguistic family. In total, 27,649 (49.8 per cent) of the beneficiaries are indigenous people.

	<p><u>households are considered poor throughout the project area.</u></p> <p><u>Given the presence of marginalised and vulnerable groups, there is medium risk under the proposed activities under component 2 to them as a result of the project, however, they are the intended beneficiaries.</u></p> <p><u>There is some illiteracy in Sayphouthong. Without mitigation measures there is a risk that the illiterate may be marginalised or disenfranchised if written information is the primary mode of communication between the project and beneficiary communities. Illiteracy is thought to be a more significant problem for women.</u></p> <p><u>Without mitigation measures each of the above could marginalise people</u></p>		<p><u>generated by the project will never be presented solely in writing. Village chiefs and other local elders will be responsible for providing information orally to people, if this is more suitable for them.</u></p>
<b>Human Rights</b>	<p><b>No</b></p> <p><u>Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example.</u></p> <p><u>However, the risk of this is very low, under the proposed activities under component 2.</u></p>	<p>In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 29,669 will be women, meaning that 53.5% of the project's beneficiaries are women.</p>	<p>See measures of other risk categories.</p>

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	<p><u>as the project (and its supporting structures) are being created to provide continuity of clean water supply to people. All construction works are taking pace on public land, and water supplies will be provided to all people in the target towns.</u></p>		
<b>Gender Equity and Women's Empowerment</b>	<p><b>Yes</b></p> <p><u>Women could be denied access to infrastructure or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2.</u></p> <p><u>Further assessment of the risks to women arising from the project, as well as</u></p>	<p><u>The VA and gender assessment finds women more vulnerable to climate change because although the exposure they face to hazards is similar to men, they are more sensitive and have lower adaptive capacity because, for example, they are responsible for collecting water, are less likely to work in the formal economy, are not covered by social protection and on the whole have lower levels of educational attainment and literacy, <i>inter alia</i>. Further information in Annex 2.</u></p>	<p>Quotas for female participation in decision making at all levels. Engagement throughout the project with the Lao Women's Union and the Women's representative which exists in every village.</p> <p><i>The project will actively pursue of <b>Gender Equity and Women's Empowerment</b> participation in project activities and stakeholder consultation, e.g. through quota systems and /or organization of separate working groups during the implementation of components 1&amp;2.</i></p> <p><u><i>A comprehensive action plan has been presented in Annex 2. Further information can be found there.</i></u></p>

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Deleted: Women could be denied access to infrastructure, or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2.

	<u>underlying vulnerabilities existing in the target area, are analysed further in Annex 2.</u>		
<b>Core Labour Rights</b>	<b>Yes</b> <u>The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.</u>	<u>Jobs are often low-paid, temporary or informal. There is a high dependency rate, meaning many people are outside the formal economy (especially women)</u>	<i>All community contracts must be scrutinised to ensure they comply with both national law and international standards.</i>  <i>The project will monitor that international and national labour laws are respected, for any work that may be carried out in relation to the project.</i>
<b>Indigenous People</b>	<b>Yes</b> <u>See Marginalised and Vulnerable Groups, above</u>	<u>Indigenous people tend to be more vulnerable to climate change because they are, in many cases, poorer, are more likely to live in low-quality housing, less likely to have access to basic services such as water supply, and are more likely to be illiterate.</u>	The State pursues the policy of promoting Unity and Equality among all ethnic groups. All ethnic groups have the rights to protect, preserve and promote the fine customs and cultures of their own tribes and the nation. All Acts of creating Division and Discrimination among ethnic groups are forbidden. The State implements every measure to gradually develop and upgrade the economic and social level of all ethnic groups". <i>Consultations have and will continue to capture all issues and needs of all communities (as the indigenous people, make up the majority of the population nationwide and in the target areas) and particular impacts on- and needs of indigenous people and other communities will be assessed throughout the project.</i>
<b>Involuntary Resettlement</b>	<b>No</b> <u>Eviction arising from conflicts</u>	<u>Land ownership is not a major source of vulnerability in the target area. Rates of privately held, owner-</u>	<i>No activity will be implemented where there is the possibility, however small, of forced eviction. AoCs and contracts will include standard clauses stating</i>

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Deleted: The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.

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Deleted: Possible eviction arising from conflicts over land ownership. However, this is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project.

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	<p><u>over land ownership is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project. There is currently no one living on or immediately adjacent to the project's construction sites, and the sites are not being used for livelihood activities like agriculture or informal markets.</u></p>	<p><u>occupied land are high. The few people living informally are generally more vulnerable, but these people were not found to be living on, or immediately adjacent to the site of the project intervention.</u></p> <p>See also 'Marginalised and Vulnerable Groups, above'</p>	<p><i>that target communities will not be 'involuntary resettled', also after the project.</i></p> <p><i><u>The status of the land will be checked again before the start of construction. Land ownership and occupation can change quickly in growing settlements. Construction can only begin once it is clear that no one is living on or adjacent to the land, or dependent on it for their livelihood.</u></i></p>
<p><b>Protection of Natural Habitat</b></p>	<p><b>Yes</b></p> <p><u>There is a risk of damage to local ecosystems, including forests, and rivers from infrastructure construction. This risk is low significance, under the proposed activities under component 2, but not impossible, considering that water the be supplied will be sourced from the river in both towns.</u></p> <p><u>There is no risk to the river ecology or downstream livelihoods for the investment at Sayphouthong because of the relatively miniscule amount of water being</u></p>	<p><u>Natural habitats have come under pressure from human activities in recent years, including deforestation (both small and industrial scale) and mining activities. No major evidence was found, however, that the climate is affecting natural habitat, but rather that natural habitats are essential to help people adapt to changes in the climate</u></p>	<p>Incorporating protection of habitats and ecosystems into action planning.</p> <p>The water supply system design includes river bank protection and stabilisation. <u>This is designed to ensure that the construction of the intake and associated infrastructure doesn't destabilise the banks, which may have knock-on impacts on the riverbank protection.</u></p> <p><u>Further information on the design aspects can be found in Annex 3</u></p>

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Deleted: Damage to local ecosystems, including forests, and rivers from infrastructure construction. This risk is low significance, under the proposed activities under component 2, but not impossible, considering that water be supplied will be sourced from the river in both towns.



	<p><u>extracted from the river at that point. At Sayphouthong the Mekong river never goes below 6.5m deep in the dry season (and can be over 13m in the rainy season) and is about 1.16km wide from bank to bank at the point where construction will take place. Minimum river flow around Sayphouthong is about 2,000m<sup>3</sup> per second in the dry season (and as much as 7 times this in the rainy season), meaning the maximum daily usage of river water for the system is equal to less than 2 seconds of river flow or about 0.002% of the daily flow – a miniscule amount that will not have affects on the downstream hydrology or ecology of the river.</u></p>		
<b>Conservation of Biological Diversity</b>	<p><b><u>No additional risks other than those identified in protection of natural habitats</u></b></p>	See Protection of Natural Habitats	See Protection of Natural Habitats
<b>Climate Change</b>	<b>Yes</b>		Incorporating waste management and disposal into design and operating procedures for the

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**Deleted:** Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance

The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal.

The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal.

The construction activities are not anticipated to generate large scale emissions. Where possible, materials will be sourced locally (and where this is not possible, nationally) to avoid emissions arising from unnecessary transportation. The operation of the equipment does not involve fossil fuel burning or any other activity that generates emissions.

Long-term changes in the climate, as discussed on Part I and Annex 1 of this proposal, pose a risk – particularly if the dry season continues to become longer and dryer and temperatures increase further. In Sayphouthong however, future declines in rain or an increasingly prolonged dry season will not diminish the water level in the Mekong to such a level that the infrastructure doesn't function. The structure requires surface water and the Mekong – Asia's 4<sup>th</sup> largest river by water volume – doesn't dry out at

See Part I and Annex 1 for analysis of the impacts of climate change

construction.

The infrastructure has been designed to avoid 'maladaptation' by ensuring that hazards are not shifted onto other locations not covered by the project. The project will not cause upstream flooding, downstream water shortage or detract from the ability of any other towns or villages to access water for drinking, domestic or agricultural purposes. Analysis has been conducted that shows that at Sayphouthong the maximum amount of water taken from the river will be 0.002% of the daily total flow in the dry season (and substantially less in the rainy season)

*Climate Change policies and guidelines to be explained to understood by project personnel prior to implementation and monitored by implementing partners.*

	<p><u>Sayphouthong. Even with the most extreme projections of climate change, there is no realistic risk that the river would run dry.</u></p> <p><u>See Pollution prevention and resource efficiency for provisions regarding waste</u></p>		
<b>Pollution Prevention and Resource Efficiency</b>	<p><b>Yes</b></p> <p><u>Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance</u></p>	<p>Water infrastructure could be open to contamination, spreading water-borne diseases</p>	<p>Incorporating public health considerations (Especially relating to water contamination) into training under Component 2.</p> <p><i>The project will use local materials for construction where possible. <u>The project will ensure that all waste materials generated in the course of construction are recycled where possible, and where this is not possible, they are disposed of in proper facilities according to the law and in compliance with guidance from the Ministry of Natural Resources and the Environment.</u></i></p>
<b>Public Health</b>	<p><b>Yes</b></p> <p><u>Water infrastructure could be open to contamination, spreading water-borne diseases. River water may not be clean because of upstream pollutants, beyond the control of project staff of NPSE Savannakhet.</u></p> <p><u>Neither the infrastructure at Sayphouthong or Sethamouak will create open pools of water or generate any stagnant water. As such, there is no discernable risk of increased vector-borne disease.</u></p>	<p><u>There are public health problems arising from climate change, as identified in the vulnerability assessment. This includes people currently sourcing poor quality, turbid water, and prevalence of disease.</u></p>	<p><u>The project includes an advanced filtration system that will ensure the water provided is of high quality, and in line with WHO standards.</u></p> <p>See <u>also</u> Protection of Natural Habitats</p>

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<b>Physical and Cultural Heritage</b>	<p><b>No</b></p> <p><u>No risks to physical and cultural heritage were identified. The proposed infrastructure is on public land, that is not currently used for residential, livelihood or cultural activities. The amount of water being extracted from the river is so small that there will be no downstream impacts that could affect sites of cultural interest, and the consultations did not reveal any sites of intangible cultural heritage.</u></p>		<p><u>The proposed infrastructure will include a public space on the reinforced embankment that people can use for recreation</u></p>
<b>Lands and Soil Conservation</b>	<p><b><u>No additional risks to those identified under protection of natural habitats,</u></b></p>	See also protection of natural habitats	

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**Table 9 - Activity level safeguarding sheet for Sethamouak Town**

District Name	Sethamouak		
Investment and Brief Description	<p>“Construct a water infrastructure climate resilient with 1,200 m3/day WTP that serves 24/7 of 8,956 residents in Sethamouak Town.” <b>Further information about the technical design is presented in Annex 4. Further screening in Tables 12 and 3 below</b></p>		
Environmental and Social Safeguard Principle	Yes/No and Specific Risks	Linkage in the VA	Risk Mitigation Actions incorporated in the design
Compliance with the law	<p><b>No</b></p> <p><u>The project has assessed that there is no realistic risk under any of the project's proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section E of this proposal.</u></p> <p><u>The main water supply facilities such as the intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way.</u></p>		<p><i>Relevant national, local authorities and engineers were consulted during the project design phase to ensure compliance with all relevant laws and technical standards.</i></p> <p><i>It will be ensured that each person associated with the subproject is aware of domestic and international laws and compliance needs to 8<sup>th</sup> NSEDP, SDG and Lao technical standards requirements.</i></p> <p><u>Engagement with Department of Land Management under the Provincial Department of Natural Resources and the Environment, Urban Planning and Construction under PWT at the provincial level Integrating legal compliance into all training and awareness. Continued monitoring throughout the project</u></p> <p>UN-Habitat will work with executing entities to monitor developments and changes to the law and train partners, where appropriate.</p>

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**Deleted:** The project has assessed that there is no realistic risk under any of the project's proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section 5 of this proposal

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<p><b>Access and Equity</b></p>	<p><b>Yes</b></p> <p><u>That certain groups are denied access to infrastructure, or that preferential access is given to others.</u></p> <p><u>This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people (see below)</u></p>	<p><u>Indigenous people, women and female headed households tend to have higher level of vulnerability,</u></p>	<p><i>Consultations have and will continue to capture all needs of the target communities/households and investments have been designed according to their <b>'access and equity'</b> needs. A pro-poor tariff will be implemented to reduce the possibility that people can't access the services.</i></p> <p><i>Mapping all the groups and their needs, planning/ management and monitoring process for implementing all components and community management with rules ensuring that equal <b>'access and equity'</b> is guaranteed</i></p>
<p>Marginalised and Vulnerable Groups</p>	<p><b>Yes</b></p> <p><u>According to the feasibility study and IEE in the preparation of the proposal, 62 per cent of the residents of Sethamouak Town are indigenous people. They come from the Phoutong, Katang and Mangkone ethnic groups (all of which have languages from the Thai-Kadai ethnolinguistic family. Across the whole project area, 27,649 (49.8 per cent) of the beneficiaries are indigenous people.</u></p> <p><u>In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 30,567 will be women, meaning that</u></p>	<p><u>Indigenous people, women and female headed households tend to have higher level of vulnerability,</u></p>	<p><i>Community management with rules ensuring that equal access is guaranteed, including for indigenous populations. This means that all consultations and meetings should be made accessible in indigenous languages, where people cannot, or do not wish to communicate in the Lao Language.</i></p> <p><i>Consultations have and will continue to capture all issues and needs of <b>"marginalized and vulnerable groups"</b> and particular impacts on- and needs of marginalized and vulnerable groups will be assessed throughout the project, as part of M&amp;E.</i></p> <p><i>The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water supply, despite their low incomes (see also – access and equity)</i></p>

**Deleted:** That certain groups are denied access to infrastructure, or that preferential access is given to others. This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people

**Deleted:** See Tables 12&13, below

**Deleted:** According to the Feasibility study conducted in the preparation of this proposal, 62 per cent of the residents of Sethamouak Town and 49 per cent of Sayphouthong District are indigenous people. In each case, they come from the Phoutong, Katang and Mangkone ethnic groups (all of which have languages from the Thai-Kadai ethnolinguistic family. In total, 27,649 (49.8 per cent) of the beneficiaries are indigenous people. ¶ In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 29,669 will be women, meaning that 53.5% of the project's beneficiaries are women.

	<p><u>53.5% of the project's beneficiaries are women. Further information can be found in Annex 2</u></p> <p><u>Approximately 30% of households are considered poor throughout the project area. There are higher rates of poverty in Sethamouak than in Sayphouthong</u></p> <p><u>Illiteracy rates are also high, especially in Sethamouak Town. Without mitigation measures there is a risk that the illiterate may be marginalised or disenfranchised if written information is the primary mode of communication between the project and beneficiary communities. Illiteracy is thought to be a more significant problem for women.</u></p> <p><u>Without mitigation measures each of the above could marginalise people</u></p>		<p><u>Female headed households will be prioritised to receive connections first.</u></p> <p><u>Because of high rates of illiteracy (especially among women and indigenous people) information generated by the project will never be presented solely in writing. Village chiefs and other local elders will be responsible for providing information orally to people, if this is more suitable for them.</u></p>
<b>Human Rights</b>	<p><b>No</b></p> <p><u>Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example.</u></p> <p><u>However, the risk of this is very low, under the proposed</u></p>	<p><u>In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 29,669 will be women, meaning that 53.5% of the project's beneficiaries are women.</u></p>	<p>See measures of other risk categories. The specific Human rights risks are negligible.</p>

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 However, the risk of this is very low, under the proposed activities under component 2, as the project (and its supporting structures) are being created to provide continuity of clean water supply to people.

	<p>activities under component 2, as the project (and its supporting structures) are being created to provide continuity of clean water supply to people. All construction works are taking pace on public land, and water supplies will be provided to all people in the target towns.</p>		
<b>Gender Equity and Women's Empowerment</b>	<p><b>Yes</b></p> <p><u>Women could be denied access to infrastructure or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2.</u></p> <p><u>Further assessment of the risks to women arising from the project, as well as</u></p>	<p><u>The VA and gender assessment finds women more vulnerable to climate change because although the exposure they face to hazards is similar to men, they are more sensitive and have lower adaptive capacity because, for example, they are responsible for collecting water, are less likely to work in the formal economy, are not covered by social protection and on the whole have lower levels of educational attainment and literacy, inter alia. Further information in Annex 2.</u></p>	<p>Quotas for female participation in decision making at all levels. Engagement throughout the project with the Lao Women's Union and the Women's representative which exists in every village.</p> <p><i>The project will actively pursue of <b>Gender Equity and Women's Empowerment</b> participation in project activities and stakeholder consultation, e.g. through quota systems and /or organization of separate working groups during Components 1&amp;2.</i></p> <p><u>A comprehensive action plan has been presented in Annex 2. Further information can be found there.</u></p>

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Deleted: Women could be denied access to infrastructure, or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2.



	<u>underlying vulnerabilities existing in the target area, are analysed further in Annex 2.</u>		
<b>Core Labour Rights</b>	<b>Yes</b> <u>The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.</u>	<u>Jobs are often low-paid, temporary or informal. There is a high dependency rate, meaning many people are outside the formal economy (especially women).</u>	<i>All community contracts must be scrutinised to ensure they comply with both national law and international standards.</i>  <i>The project will monitor that international and national labour laws are respected, for any work that may be carried out in relation to the project.</i>  AoCs stipulate the need to respect core labour rights in line with international norms/ILO standards.
<b>Indigenous People</b>	<b>Yes</b> <u>See Marginalised and Vulnerable Groups, above</u>	<u>Indigenous people tend to be more vulnerable to climate change because they are, in many cases, poorer, are more likely to live in low-quality housing, less likely to have access to basic services such as water supply, and are more likely to be illiterate.</u>	The State pursues the policy of promoting Unity and Equality among all ethnic groups. All ethnic groups have the rights to protect, preserve and promote the fine customs and cultures of their own tribes and the nation. All Acts of creating Division and Discrimination among ethnic groups are forbidden. The State implements every measure to gradually develop and upgrade the economic and social level of all ethnic groups".  <i>Consultations have and will continue to capture all issues and needs of all communities (as the indigenous people, make up the majority of the population nationwide and in the target areas) and particular impacts on- and needs of indigenous people and other communities will be monitored throughout the project</i>
<b>Involuntary</b>	<b>No</b>	<u>Land ownership is not a major source of vulnerability in the</u>	<i>No activity will be implemented where there is the possibility, however small, of forced eviction. AoCs and</i>

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<p><b>Resettlement</b></p>	<p><u>Eviction arising from conflicts over land ownership is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project. There is currently no one living on or immediately adjacent to the project's construction sites, and the sites are not being used for livelihood activities like agriculture or informal markets.</u></p>	<p><u>target area. Rates of privately held, owner-occupied land are high. The few people living informally are generally more vulnerable, but these people were not found to be living on, or immediately adjacent to the site of the project intervention.</u></p> <p><u>See also 'Marginalised and Vulnerable Groups, above'</u></p>	<p><i>contracts will include standard clauses stating that target communities will not be 'involuntary resettled', also after the project.</i></p> <p><i>The status of the land will be checked again before the start of construction. Land ownership and occupation can change quickly in growing settlements. Construction can only begin once it is clear that no one is living on or adjacent to the land, or dependent on it for their livelihood.</i></p>
<p><b>Protection of Natural Habitat</b></p>	<p><b>Yes</b></p> <p><u>There is a risk of damage to local ecosystems, including forests, and rivers from infrastructure construction. This risk is low significance, under the proposed activities under component 2, but not impossible, considering that water the be supplied will be sourced from the river in both towns.</u></p> <p><u>There is a small risk that the check dam structure on the Sethamouak River which is to be 65m wide in total (about 42 metres bank to bank).</u></p>	<p>Damage to local ecosystems, including forests, and rivers from infrastructure construction. This risk is low significance, under the proposed activities under component 2, but not impossible, considering that water be supplied will be sourced from the river in both towns.</p>	<p><u>The investment also includes bank protection and stabilisation works to ensure that the riverbank is not damaged, doesn't collapse and is not prone to erosion.</u></p> <p><u>The check dam structure spans the width of the Sethamouak river, but is only 1.5m high. As shown in Annex 4, the water will therefore flow over the check dam structure during the rainy season and the early months of the dry season, when the water level is high. Accordingly, there is no disruption to the water flow in the rainy season as the water flows over the dam, while the intake only takes a small proportion – estimated at less than 0.1% of the water flow.</u></p> <p><u>In the dry season, the water level can drop below the height of the check dam. To ensure continued water flow during the dry season, a 1.5m wide</u></p>

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	<p><u>Without specific design provisions this could cause risk to downstream water flow, affecting downstream livelihoods and water access, fish and causing upstream flooding See right-hand column and table 13, below, for further information on design measures.</u></p>		<p><u>weir has been added to the dam design to ensure continuity of water flow downstream and to prevent flooding upstream. The weir will remain open for at least 16 hours per day, and will only be closed at night when the system is drawing water. Nam Papa staff will be responsible for opening and closing the weir. The IEE assesses that there is no risk of upstream flooding, or downstream lack of water, affects to livelihoods, river ecology of the ability of fish to traverse the river with the addition of the weir.</u></p> <p><u>Further information about the entire structure, including the weir, including the design and images, can be found in Annex 4</u></p>
<b>Conservation of Biological Diversity</b>	<p><u>No additional risk, other than that described above</u></p> <p><u>See protection of natural habitats, above</u></p>	See Protection of Natural Habitats	See Protection of Natural Habitats
<b>Climate Change</b>	<p><b>Yes</b></p> <p><u>The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal.</u></p> <p><u>The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal.</u></p> <p><u>The construction activities are not anticipated to generate large scale emissions. Where</u></p>	<p><u>See Part I and Annex 1 for analysis of the impacts of climate change</u></p>	<p>Incorporating waste management and disposal into design and operating procedures for the construction.</p> <p><i>The infrastructure has been designed to avoid 'maladaptation' by ensuring that hazards are not shifted onto other locations not covered by the project. The IEE determines that the check dam structure will not affect the ability of people downstream to access water and will not increase the likelihood of upstream flooding.</i></p> <p><i>Climate Change policies and guidelines to be explained to understood by project personnel prior</i></p>

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	<p><u>possible, materials will be sourced locally (and where this is not possible, nationally) to avoid emissions arising from unnecessary transportation. The operation of the equipment does not involve fossil fuel burning or any other activity that generates emissions.</u></p> <p><u>Long-term changes in the climate, as discussed on Part I and Annex 1 of this proposal, pose a risk – particularly if the dry season continues to become longer and dryer and temperatures increase further. In Sethamouak the estimated lowest depth point of the river is between 60-90cm, so there is a risk from further decreases in the river flow. However, this structure also requires surface water.</u></p> <p><u>See Pollution prevention and resource efficiency for provisions regarding waste</u></p>		<p><i>to implementation and monitored by implementing partners.</i></p> <p><u>The infrastructure at Sethamouak is designed to continue functioning at 30cm river depth. This is less than half the estimated known lowest point of the river during the dry season, meaning the infrastructure can continue functioning, even if the trend of a prolonged dry season continues – unlike ground water systems that are already becoming inviable in the area.</u></p>
<p><b>Pollution Prevention and Resource Efficiency</b></p>	<p><b>Yes</b></p> <p><u>Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance</u></p>	<p>Water infrastructure could be open to contamination, spreading water-borne diseases</p>	<p>Incorporating public health considerations (Especially relating to water contamination) into training under Component 2</p> <p><i>The project will use local materials for construction where possible. <u>The project will ensure that all waste materials generated in the course of construction are recycled where possible, and where this is not possible, they are disposed of in</u></i></p>

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			<u>proper facilities according to the law and in compliance with guidance from the Ministry of Natural Resources and the Environment.</u>
<b>Public Health</b>	<p><b>Yes</b></p> <p><u>Water infrastructure could be open to contamination, spreading water-borne diseases. River water may not be clean because of upstream pollutants, beyond the control of project staff of NPSE Savannakhet.</u></p> <p><u>Neither the infrastructure at Sayphouthong or Sethamouak will create open pools of water or generate any stagnant water. As such, there is no discernable risk of increased vector-borne disease.</u></p>	<p><u>There are public health problems arising from climate change, as identified in the vulnerability assessment. This includes people currently sourcing poor quality, turbid water, and prevalence of disease. The Sethamouak river has particular problems with turbidity in the dry season.</u></p>	<p><u>The project includes an advanced filtration system that will ensure the water provided is of high quality, and in line with WHO standards.</u></p>
<b>Physical and Cultural Heritage</b>	<p><b>No</b></p> <p><u>No risks to physical and cultural heritage were identified. The proposed infrastructure is on public land, that is not currently used for residential, livelihood or cultural activities.</u></p> <p><u>The amount of water being extracted from the river is negligible and no downstream impacts that could affect sites of cultural interest were found. The consultations undertaken in the preparation of this proposal didn't reveal any sites of intangible cultural heritage.</u></p>		<p><u>The area surrounding the check dam will be a public space</u></p>

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<b>Land and Soil Conservation</b>	<b><u>No risk beyond those identified for protection of natural habitats,</u></b>	See also Protection of Natural Habitats	See also Protection of Natural Habitats

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Table 10 - Environmental and social assessment of investments under Component 2

Investment	Target District/Town	Estimated number of beneficiaries	Risk Assessment			
			Impact description of potential risk (considering the 15 AF principles)	Significance of impact of potential risk*	Proposed risk mitigation / justification of risk reduction / mitigation incorporated within design	
2.1	Construct a water infrastructure climate resilient with 3,600 m <sup>3</sup> /day WTP that serves 24/7 of 48,188 residents in Sayphouthong Town	Sayphouthong	48,188	<p><u><b>Compliance with the Law.</b> The project has assessed that there is no realistic risk under any of the project's proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section E of this proposal.</u></p> <p><u>The main water supply facilities such as the intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way.</u></p> <p><u><b>Access and Equity</b> That certain groups are denied access to infrastructure, or that preferential access is given to others.</u></p>	<p>None</p> <p>Medium</p>	<p><u>Relevant national, local authorities and engineers were consulted during the project design phase to ensure compliance with all relevant laws and technical standards.</u></p> <p><u>It will be ensured that each person associated with the subproject is aware of domestic and international laws and compliance needs to 8<sup>th</sup> NSEDP, SDG and Lao technical standards requirements.</u></p> <p><u>Engagement with Department of Land Management under the Provincial Department of Natural Resources and the Environment, Urban Planning and Construction under PWT at the provincial level</u></p> <p><u>Integrating legal compliance into all training and awareness. Continued monitoring throughout the project</u></p> <p><u>UN-Habitat will work with executing entities to monitor developments and changes to the law and train partners, where appropriate.</u></p> <p><u>Consultations have and will continue to capture all needs of the target communities/households and the activities have been designed according to their 'access and equity' needs.</u></p>

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			<p><u>This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people (see below)</u></p> <p><b><u>Marginalised and vulnerable groups</u></b> According to the feasibility study and IEE in the preparation of the proposal, 49 per cent of Sayphouthong District are indigenous people. In each case, they come from the Phoutong, Katang and Mangkone ethnic groups (all of which have languages from the Thai-Kadai ethnolinguistic family. In total, 27,649 (49.8 per cent) of the beneficiaries are indigenous people.</p> <p><u>In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 30,567 will be women, meaning that 53.5% of the project's beneficiaries are women.</u> <u>Approximately 30% of households are considered poor throughout the project area.</u></p> <p><u>Given the presence of marginalised and vulnerable groups, there is medium risk under the proposed activities under component 2 to them as a result of the project, however, they are the intended beneficiaries.</u></p> <p><u>There is some illiteracy in Sayphouthong. Without mitigation measures there is a risk that the illiterate may</u></p>	<p>Low</p>	<p><u>Mapping all the groups and their needs, planning/ management and monitoring process for implementing all components and community management with rules ensuring that equal 'access and equity' is guaranteed. A pro-poor tariff will be implemented to reduce the possibility that people can't access the services.</u></p> <p><u>Community management with rules ensuring that equal access is guaranteed, including for indigenous populations. This means that all consultations and meetings should be made accessible in indigenous languages, where people cannot, or do not wish to communicate in the Lao Language.</u></p> <p><u>Consultations have and will continue to capture all issues and needs of "marginalized and vulnerable groups" and particular impacts on- and needs of marginalized and vulnerable groups will be assessed throughout the project.</u></p> <p><u>The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water supply, despite their low incomes.</u></p> <p><u>Female headed households will be prioritised to receive connections first.</u></p> <p><u>Because of high rates of illiteracy (especially among women and indigenous people) information generated by the project will never be presented solely in writing. Village chiefs and other local elders will be responsible for providing information orally to people, if this is</u></p>
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			<p><u>be marginalised or disenfranchised if written information is the primary mode of communication between the project and beneficiary communities. Illiteracy is thought to be a more significant problem for women.</u></p> <p><u>Without mitigation measures each of the above could marginalise people</u></p> <p><b><u>Human Rights:</u></b> <u>Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example.</u></p> <p><u>However, the risk of this is very low, under the proposed activities under component 2, as the project (and its supporting structures) are being created to provide continuity of clean water supply to people. All construction works are taking pace on public land, and water supplies will be provided to all people</u></p> <p><b><u>Gender Equality and Women's Empowerment</u></b>  <u>Women could be denied access to infrastructure or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2.</u></p> <p><u>Further assessment of the risks to women arising from the project, as well as underlying</u></p>	<p><u>more suitable for them.</u></p> <p>The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water supply, despite their low incomes;</p> <p>None,</p> <p><u>Quotas for female participation in decision making at all levels. Engagement throughout the project with the Lao Women's Union and the Women's representative which exists in every village.</u></p> <p><u>The project will actively pursue of Gender Equity and Women's Empowerment participation in project activities and stakeholder consultation, e.g. through quota systems and /or organization of separate working groups during the implementation of components 1&amp;2.</u></p> <p><u>A comprehensive action plan has been presented in Annex 2. Further information can be found there.</u></p>	
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			<p><u>vulnerabilities existing in the target area, are analysed further in Annex 2.</u></p> <p><b><u>Core Labour Rights</u></b> <u>The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.</u></p> <p><b><u>Indigenous People</u></b> <u>See marginalised and vulnerable groups, above</u></p> <p><b><u>Involuntary Resettlement</u></b> <u>Eviction arising from conflicts over land ownership is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project. There is currently no one living on or immediately adjacent</u></p>	<p>Low</p> <p>None</p>	<p><u>All community contracts must be scrutinised to ensure they comply with both national law and international standards.</u></p> <p><u>The project will monitor that international and national labour laws are respected, for any work that may be carried out in relation to the project.</u></p> <p><u>The Government of Laos pursues the policy of promoting Unity and Equality among all ethnic groups. All ethnic groups have the rights to protect, preserve and promote the fine customs and cultures of their own tribes and the nation. All Acts of creating Division and Discrimination among ethnic groups are forbidden. The State implements every measure to gradually develop and upgrade the economic and social level of all ethnic groups".</u></p> <p><u>Consultations have and will continue to capture all issues and needs of all communities (as the indigenous people, make up the majority of the population nationwide and in the target areas) and particular impacts on- and needs of indigenous people and other communities will be assessed throughout the project.</u></p> <p><u>No activity will be implemented where there is the possibility, however small, of forced eviction. AoCs and contracts will include standard clauses stating that target communities will not be 'involuntary resettled', also after the project.</u></p> <p><u>The status of the land will be checked again</u></p>
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			<p><u>to the project's construction sites, and the sites are not being used for livelihood activities like agriculture or informal markets.</u></p> <p><b><u>Protection of Natural Habitats</u></b> - There is a low risk of damage to local ecosystems, including forests and rivers from infrastructure construction under Component 2.</p> <p><u>There is no risk to the river ecology or downstream livelihoods for the investment at Sayphouthong because of the negligible amount of water being extracted from the river at that point. At Sayphouthong the Mekong river never goes below 6.5m deep in the dry season (and can be over 13m in the rainy season) and is about 1.16km wide from bank to bank at the point where construction will take place. Minimum river flow around Sayphouthong is about 2,000m<sup>3</sup> per second in the dry season (and as much as 7 times this in the rainy season), meaning the maximum daily usage of river water for the system is equal to less than 2 seconds of river flow or about 0.002% of the daily flow – a miniscule amount that will not have affects on the downstream hydrology or ecology of the river.</u></p> <p><b><u>Conservation of biological diversity</u></b> <u>See protection of natural habitats, above</u></p> <p><b><u>Climate Change</u></b> - The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal. The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this</p>	<p><u>Medium</u></p> <p><u>before the start of construction. Land ownership and occupation can change quickly in growing settlements. Construction can only begin once it is clear that no one is living on or adjacent to the land, or dependent on it for their livelihood. Incorporating protection of habitats and ecosystems into action planning.</u></p> <p><u>The water supply system design includes river bank protection and stabilisation. This is designed to ensure that the construction of the intake and associated infrastructure doesn't destabilise the banks, which may have knock-on impacts on the riverbank protection.</u></p> <p><u>Further information on the design aspects can be found in Annex 3</u></p> <p><u>None</u></p> <p><u>Low</u></p> <p><u>See protection of natural habitats, above</u></p> <p><u>Incorporating waste management and disposal into design and operating procedures for the construction.</u></p>
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			<p><u>proposal.</u></p> <p><u>The construction activities are not anticipated to generate large scale emissions. Where possible, materials will be sourced locally (and where this is not possible, nationally) to avoid emissions arising from unnecessary transportation. The operation of the equipment does not involve fossil fuel burning or any other activity that generates emissions.</u></p> <p><u>Long-term changes in the climate, as discussed on Part I and Annex 1 of this proposal, pose a risk – particularly if the dry season continues to become longer and dryer and temperatures increase further. In Sayphouthong, future declines in rain or an increasingly prolonged dry seasons will not diminish the water level in the Mekong to such a level that the infrastructure doesn't function. The structure requires surface water and the Mekong – Asia's 4<sup>th</sup> largest river by water volume – doesn't dry out at Sayphouthong.</u></p> <p><u>See Pollution prevention and resource efficiency for provisions regarding waste</u></p> <p><b><u>Pollution prevention and resource efficiency</u></b> - Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance</p>	<p><u>The infrastructure has been designed to avoid 'maladaptation' by ensuring that hazards are not shifted onto other locations not covered by the project. The project will not cause upstream flooding, downstream water shortage or detract from the ability of any other towns or villages to access water for drinking, domestic or agricultural purposes. Analysis has been conducted that shows that at Sayphouthong the maximum amount of water taken from the river will be 0.002% of the daily total flow in the dry season (and substantially less in the rainy season)</u></p> <p><u>Climate Change policies and guidelines to be explained to understood by project personnel prior to implementation and monitored by implementing partners.</u></p> <p><u>The project will use local materials for construction where possible. The project will ensure that all waste materials generated in the course of construction are recycled where possible, and where this is not possible, they are disposed of in proper facilities according to the law and in compliance with guidance from the Ministry of Natural Resources and the Environment.</u></p> <p><u>The project includes an advanced filtration system that will ensure the water provided is of high quality, and in line with WHO standards.</u></p>
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				<p><b><u>Public Health</u></b> - Water infrastructure could be open to contamination, spreading water-borne diseases. River water may not be clean because of upstream pollutants, beyond the control of project staff of NPSE Savannakhet.</p> <p>Neither the infrastructure at Sayphouthong or Sethamouak will create open pools of water or generate any stagnant water. As such, there is no discernable risk of increased vector-borne disease.</p> <p><b><u>Physical and Cultural Heritage</u></b> - No risks to physical and cultural heritage were identified. The proposed infrastructure is on public land, that is not currently used for residential, livelihood or cultural activities. The amount of water being extracted from the river is so small that there will be no downstream impacts that could affect sites of cultural interest, and the consultations did not reveal any sites of intangible cultural heritage.</p> <p><b><u>Lands and Soil Conservation</u></b> – See protection of natural habitats</p>	<p>None</p> <p>None</p>	<p><u>See also Protection of Natural Habitats</u></p> <p><u>Incorporating public health considerations (Especially relating to water contamination) into training under Component 2.</u></p> <p><u>The proposed infrastructure will include a public space on the reinforced embankment that people can use for recreation</u></p> <p><u>See protection of natural habitats</u></p>
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2.2	Construct a water infrastructure climate resilient with 1,200 m <sup>3</sup> /day WTP that serves 24/7 of 8,956 residents in Sethamouak Town	Sethamouak	8,956	<p><b><u>Compliance with the Law</u></b></p> <p><u>The project has assessed that there is no realistic risk under any of the project's proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section E of this proposal.</u></p> <p><u>The main water supply facilities such as the intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way.</u></p> <p><b><u>Access and Equity</u></b></p> <p><u>That certain groups are denied access to infrastructure, or that preferential access is given to others.</u></p> <p><u>This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people (see below)</u></p> <p><b><u>Marginalised and Vulnerable Groups</u></b></p>	<p><u>None</u></p> <p><u>Low</u></p>	<p><u>Relevant national, local authorities and engineers were consulted during the project design phase to ensure compliance with all relevant laws and technical standards.</u></p> <p><u>It will be ensured that each person associated with the subproject is aware of domestic and international laws and compliance needs to 8<sup>th</sup> NSEDP, SDG and Lao technical standards requirements.</u></p> <p><u>Engagement with Department of Land Management under the Provincial Department of Natural Resources and the Environment, Urban Planning and Construction under PWT at the provincial level</u></p> <p><u>Integrating legal compliance into all training and awareness. Continued monitoring throughout the project</u></p> <p><u>Consultations have and will continue to capture all needs of the target communities/households and investments have been designed according to their 'access and equity' needs. A pro-poor tariff will be implemented to reduce the possibility that people can't access the services.</u></p> <p><u>Mapping all the groups and their needs, planning/management and monitoring process for implementing all components and community management with rules ensuring that equal 'access and equity' is guaranteed</u></p> <p><u>Community management with rules ensuring</u></p>
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			<p><u>According to the feasibility study and IEE in the preparation of the proposal, 62 per cent of the residents of Sethamouak Town are indigenous people. They come from the Phoutong, Katang and Mangkone ethnic groups (all of which have languages from the Thai-Kadai ethnolinguistic family. Across the whole project area, 27,649 (49.8 per cent) of the beneficiaries are indigenous people.</u></p> <p><u>In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 30,567 will be women, meaning that 53.5% of the project's beneficiaries are women. Further information can be found in Annex 2</u></p> <p><u>Approximately 30% of households are considered poor throughout the project area. There are higher rates of poverty in Sethamouak than in Sayphouthong</u></p> <p><u>Illiteracy rates are also high, especially in Sethamouak Town. Without mitigation measures there is a risk that the illiterate may be marginalised or disenfranchised if written information is the primary mode of communication between the project and beneficiary communities. Illiteracy is thought to be a more significant problem for women.</u></p> <p><u>Without mitigation measures each of the above could marginalise people</u></p> <p><u><b>Human Rights</b> - Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example.</u></p> <p><u>However, the risk of this is very low, under the proposed activities under component 2, as the project (and its supporting structures) are being</u></p>	<p><u>Medium</u></p> <p><u>that equal access is guaranteed, including for indigenous populations. This means that all consultations and meetings should be made accessible in indigenous languages, where people cannot, or do not wish to communicate in the Lao Language.</u></p> <p><u>Consultations have and will continue to capture all issues and needs of “<b>marginalized and vulnerable groups</b>” and particular impacts on- and needs of marginalized and vulnerable groups will be assessed throughout the project, as part of M&amp;E.</u></p> <p><u>The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water supply, despite their low incomes (see also – access and equity) Female headed households will be prioritised to receive connections first.</u></p> <p><u>Because of high rates of illiteracy (especially among women and indigenous people) information generated by the project will never be presented solely in writing. Village chiefs and other local elders will be responsible for providing information orally to people, if this is more suitable for them.</u></p> <p><u>See measures of other risk categories, particularly marginalised and vulnerable groups. The specific Human rights risks are negligible.</u></p>
			<p><u>None</u></p>	

			<p><u>created to provide continuity of clean water supply to people. All construction works are taking pace on public land, and water supplies will be provided to all people in the target towns.</u></p> <p><b><u>Gender Equality and Women's Empowerment -</u></b>  <u>Women could be denied access to infrastructure or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2.</u></p> <p><u>Further assessment of the risks to women arising from the project, as well as underlying vulnerabilities existing in the target area, are analysed further in Annex 2.</u></p>	<p><u>Low</u></p>	<p><u>Quotas for female participation in decision making at all levels. Engagement throughout the project with the Lao Women's Union and the Women's representative which exists in every village.</u></p> <p><u>The project will actively pursue of <b>Gender Equity and Women's Empowerment</b> participation in project activities and stakeholder consultation, e.g. through quota systems and /or organization of separate working groups during Components 1&amp;2.</u></p> <p><u>A comprehensive action plan has been presented in Annex 2. Further information can be found there.</u></p>
			<p><b><u>Core Labour Rights</u></b></p> <p><u>The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.</u></p>	<p><u>Low</u></p>	<p><u>All community contracts must be scrutinised to ensure they comply with both national law and international standards.</u></p> <p><u>The project will monitor that international and national labour laws are respected, for any work that may be carried out in relation to the project.</u></p> <p><u>AoCs stipulate the need to respect core labour rights in line with international norms/ILO standards.</u></p>
			<p><b><u>Indigenous People – See marginalised and</u></b></p>	<p><u>Low</u></p>	<p><u>The State pursues the policy of promoting Unity and Equality among all ethnic groups. All ethnic</u></p>



			<p><u>vulnerable groups, above</u></p> <p><b><u>Involuntary Resettlement</u></b> - Eviction arising from conflicts over land ownership is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project. There is currently no one living on or immediately adjacent to the project's construction sites, and the sites are not being used for livelihood activities like agriculture or informal markets.</p> <p><b><u>Protection of Natural Habitats</u></b> There is a low risk of damage to local ecosystems, including forests and rivers from infrastructure construction under Component 2.</p> <p>On the Sethamouak River, the embankment is about 65 metres in total, while the check dam structure is about 42 metres across the river. Without specific design provisions this</p>	<p><u>groups have the rights to protect, preserve and promote the fine customs and cultures of their own tribes and the nation. All Acts of creating Division and Discrimination among ethnic groups are forbidden. The State implements every measure to gradually develop and upgrade the economic and social level of all ethnic groups".</u></p> <p><u>Consultations have and will continue to capture all issues and needs of all communities (as the indigenous people, make up the majority of the population nationwide and in the target areas) and particular impacts on- and needs of indigenous people and other communities will be monitored throughout the project</u></p> <p><u>No activity will be implemented where there is the possibility, however small, of forced eviction. AoCs and contracts will include standard clauses stating that target communities will not be 'involuntary resettled', also after the project.</u></p> <p><u>The status of the land will be checked again before the start of construction. Land ownership and occupation can change quickly in growing settlements. Construction can only begin once it is clear that no one is living on or adjacent to the land, or dependent on it for their livelihood.</u></p> <p><u>The investment also includes bank protection and stabilisation works to ensure that the riverbank is not damaged, doesn't collapse and is not prone to erosion.</u></p> <p><u>The check dam structure spans the width of the Sethamouak river, but is only 1.5m high. As shown in Annex 4, the water will therefore flow</u></p>
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			<p><u>could cause risk to downstream water flow, affecting downstream livelihoods and water access, fish and causing upstream flooding.</u></p> <p><u>See right-hand column and table 13, below, for further information on design measures.</u></p> <p><b><u>Conservation of Biological Diversity – See protection of natural habitats. No additional risk, beyond that described above</u></b></p> <p><b><u>Climate Change –</u></b></p> <p><u>The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal.</u></p> <p><u>The construction activities are not anticipated to generate large scale emissions. Where possible, materials will be sourced locally (and where this is not possible, nationally) to avoid emissions arising from unnecessary transportation. The operation of the equipment does not involve fossil fuel burning or any other activity that generates emissions.</u></p>	<p><u>over the check dam structure during the rainy season and the early months of the dry season, when the water level is high. Accordingly, there is no disruption to the water flow in the rainy season as the water flows over the dam, while the intake only takes a small proportion – estimated at less than 0.1% of the water flow.</u></p> <p><u>In the dry season, the water level can drop below the height of the check dam. To ensure continued water flow during the dry season, a 1.5m wide weir has been added to the dam design to ensure continuity of water flow downstream and to prevent flooding upstream. The weir will remain open for at least 16 hours per day, and will only be closed at night when the system is drawing water. Nam Papa staff will be responsible for opening and closing the weir. The IEE assesses that there is no risk of upstream flooding, or downstream lack of water, affects to livelihoods, river ecology of the ability of fish to traverse the river with the addition of the weir.</u></p> <p>None</p> <p>Low</p> <p><u>The infrastructure has been designed to avoid ‘maladaptation’ by ensuring that hazards are not shifted onto other locations not covered by the project. The IEE determines that the check dam structure will not affect the ability of people downstream to access water and will not increase the likelihood of upstream flooding.</u></p> <p><u>Climate Change policies and guidelines to be</u></p>
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			<p><u>In Sethamouak the estimated lowest point of the river is between 60-90cm, so there is a risk from further decreases in the river flow. However, this structure also requires surface water</u></p> <p><b><u>Pollution prevention and resource efficiency -</u></b>  <u>Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance</u></p> <p><b><u>Public Health -</u></b> <u>Water infrastructure could be open to contamination, spreading water-borne diseases. River water may not be clean because of upstream pollutants, beyond the control of project staff of NPSE Savannakhet.</u></p> <p><u>Neither the infrastructure at Sayphouthong or Sethamouak will create open pools of water or generate any stagnant water. As such, there is no discernable risk of increased vector-borne disease.</u></p> <p><b><u>Physical and Cultural Heritage -</u></b> <u>No risks to physical</u></p>	<p><u>explained to understood by project personnel prior to implementation and monitored by implementing partners.</u></p> <p><u>The infrastructure at Sethamouak is designed to continue functioning at 30cm river depth. This is less than half the estimated known lowest point of the river during the dry season, meaning the infrastructure can continue functioning, even if the trend of a prolonged dry season continues – unlike ground water systems that are already becoming inviable in the area.</u></p> <p><u>Incorporating waste management and disposal into design and operating procedures for the construction. The project will use local materials for construction where possible. The project will ensure that all waste materials generated in the course of construction are recycled where possible, and where this is not possible, they are disposed of in proper facilities according to the law and in compliance with guidance from the Ministry of Natural Resources and the Environment.</u></p> <p><u>Incorporating public health considerations (Especially relating to water contamination) into training under Component 2</u></p> <p><u>The project includes an advanced filtration system that will ensure the water provided is of high quality, and in line with WHO standards.</u></p> <p><u>The area surrounding the check dam will be a public space</u></p>
				<p><u>Low</u></p> <p><u>Low</u></p> <p><u>None</u></p>

			<p><u>and cultural heritage were identified. The proposed infrastructure is on public land, that is not currently used for residential, livelihood or cultural activities.</u></p> <p><u>The amount of water being extracted from the river is negligible and no downstream impacts that could affect sites of cultural interest were found. The consultations undertaken in the preparation of this proposal didn't reveal any sites of intangible cultural heritage.</u></p> <p><b><u>Lands and Soil Conservation - No risk beyond those identified for protection of natural habitats</u></b></p>	<p><u>None</u></p>	
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**Table 11 - Potential risks, mitigation measures and monitoring for investments under Component 2**

Output	AF triggered, risk of potential impact and significance score	Measure to avoid or mitigate potential risks	Monitoring indicator	Frequency and responsibility monitoring
<p>2.1 Construct a water infrastructure climate resilient with 3,600 m3/day WTP that serves 24/7 of 48,188 residents in Sayphouthong Town</p>	<ul style="list-style-type: none"> <li>The project has assessed that there is no realistic risk under any of the project's proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section 5 of this proposal;</li> <li>That certain groups are denied access to infrastructure, or that preferential access is given to others. This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people;</li> <li>According to the Feasibilities study conducted in the preparation of this proposal, in total, 27,649 (49.8 per cent) of the beneficiaries are indigenous people. In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 29,669 will be women, meaning that 53.5% of the project's beneficiaries are women;</li> <li>Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example;</li> <li>However, the risk of this is very low, under the proposed activities under component 2, as the project (and its supporting structures) are being created to provide continuity of clean water supply to people.</li> <li>Women could be denied access to infrastructure, or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases;</li> <li>The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2;</li> <li>Possible eviction arising from conflicts over land ownership. However, this is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project;</li> <li>Damage to local ecosystems, including forests, and rivers from infrastructure construction. This risk is low significance, under the proposed activities under component 2, but not impossible, considering that water be supplied will be sourced from the river in both towns;</li> </ul>	<ul style="list-style-type: none"> <li>The main water supply facilities such as <u>intake, water treatment plant</u>, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way;</li> <li>Consultations have and will continue to capture all issues and needs of "marginalized and vulnerable groups" and particular impacts on- and needs of marginalized and vulnerable groups will be assessed throughout the project</li> <li>The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water supply, despite their low incomes;</li> <li>The project will actively pursue of Gender Equity and Women's Empowerment participation in project activities and stakeholder consultation, e.g. through quota systems and /or organization of separate working groups during the implementation of Components 1&amp;2 of the project.</li> <li>The project will monitor that international and national labour laws are respected, for any work that may be carried out in relation to the project;</li> <li>Consultations have and will continue to capture all issues and needs of all communities (as the indigenous people, make up the majority of the population nationwide and in the target areas) and particular impacts on- and needs of indigenous people and other communities will be monitored throughout the project;</li> <li>No unidentified subproject will be approved where there is the possibility, however small, of forced eviction. AoCs and contracts will include standard clauses stating that target communities will not be 'involuntary resettled', also after the project;</li> <li>Maladaptation 'triggers' have been mitigated in the infrastructure design by ensuring, for example, that resources will not be diverted away from other areas not in the project.</li> <li>Climate Change policies and guidelines to be explained to understood by project personnel prior to implementation and monitored by implementing partners;</li> <li>The project will use local materials for construction where possible.</li> </ul>	<ul style="list-style-type: none"> <li>Number of AoCs that fully incorporate the 15 ESP principles;</li> <li>Number of project partners trained in planning</li> <li>Percentage of women, men, youth, elderly, people with disabilities, varying ethnic groups participating in planning and construction activities;</li> <li>Number of participatory workshops held in each community; and</li> <li>Number of target population benefiting from provided services water infrastructure</li> </ul>	<p>Baseline, mid-term and end</p>

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	<ul style="list-style-type: none"> <li>• Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance;</li> <li>• Water infrastructure could be open to contamination, spreading water-borne diseases;</li> <li>• Women could be denied access to infrastructure, or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2;</li> <li>• The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.</li> </ul>			
<p>2.2 Construct a water infrastructure climate resilient with 1,200 m<sup>3</sup>/day WTP that serves 24/7 of 8,956 residents in Sethamouak Town</p>	<ul style="list-style-type: none"> <li>• The project has assessed that there is no realistic risk under any of the project's proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section 5 of this proposal;</li> <li>• That certain groups are denied access to infrastructure, or that preferential access is given to others. This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people;</li> <li>• According to the Feasibilities study conducted in the preparation of this proposal, in total, 27,649 (49.8 per cent) of the beneficiaries are indigenous people. In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 29,669 will be women, meaning that 53.5% of the project's beneficiaries are women;</li> <li>• Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example;</li> <li>• However, the risk of this is very low, under the proposed activities under component 2, as the project (and its supporting structures) are being created to provide continuity of clean water supply to people.</li> <li>• Women could be denied access to infrastructure, or prevented from making critical decisions. Women</li> </ul>	<ul style="list-style-type: none"> <li>• The main water supply facilities such as the <u>check a dam</u>, intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way;</li> <li>• Consultations have and will continue to capture all issues and needs of "marginalized and vulnerable groups" and particular impacts on- and needs of marginalized and vulnerable groups will be monitored throughout the project.</li> <li>• The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water supply, despite their low incomes;</li> <li>• The project will actively pursue of Gender Equity and Women's Empowerment participation in project activities and stakeholder consultation, e.g. through quota systems and/or organization of separate working groups during the implementation of Components 1&amp;2;</li> <li>• The project will monitor that international and national labour laws are respected, for any work that may be carried out in relation to the project;</li> <li>• Consultations have and will continue to capture all issues and needs of all communities (as the indigenous people, make up the majority of the population nationwide and in the target areas) and particular impacts on- and needs of indigenous people and other communities will be monitored throughout the project.</li> <li>• No activity will be implemented where there is the possibility, however small, of forced eviction. AOCs and contracts will include standard clauses stating that target communities will not be 'involuntary resettled', also after the project;</li> <li>• Maladaptation 'triggers' have been mitigated in the</li> </ul>	<ul style="list-style-type: none"> <li>• Incorporate the 15 ESP principles;</li> <li>• Number of project partners trained in planning</li> <li>• Percentage of women, men, youth, elderly, people with disabilities, varying ethnic groups participating in planning and construction activities;</li> <li>• Number of participatory workshops held in each community; and</li> <li>• Number of target population benefiting from provided services water infrastructure</li> </ul>	<p>Baseline, mid-term and end</p>

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	<p>outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases;</p> <ul style="list-style-type: none"> <li>• The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2;</li> <li>• Possible eviction arising from conflicts over land ownership. However, this is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project;</li> <li>• Damage to local ecosystems, including forests, and rivers from infrastructure construction. This risk is low significance, under the proposed activities under component 2, but not impossible, considering that water be supplied will be sourced from the river in both towns;</li> <li>• Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance;</li> <li>• Water infrastructure could be open to contamination, spreading water-borne diseases;</li> <li>• Women could be denied access to infrastructure, or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2;</li> <li>• The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.</li> </ul>	<p>infrastructure design by ensuring, for example, that resources will not be diverted away from other areas not in the project. Climate Change policies and guidelines to be explained to understood by project personnel prior to implementation and monitored by implementing partners;</p> <p>The project will use local materials for construction where possible.</p>		
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ນະໂນກ ໄຊທາທິການ ແລະ ສົນສິງ  
ລັດດິນສະຫວັດ ວິສະວະກຳ ແລະ ສິ່ງແວດລ້ອມ  
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ເລກທີ: 499/ອສສ  
ວັນທີ: 02.11.2017

**INITIAL ENVIRONMENTAL EXAMINATION**  
**ໂຄງການກໍ່ສ້າງ ລະບົບນໍ້າປະປາ ເມືອງ ໄຊທາທອງ**  
**ແຂວງ ສະຫວັນນະເຂດ ດ້ວຍກຳລັງການຜະລິດ 3,600 ມ<sup>3</sup>/ມື້**



ຖະໜົນ ໄຊທາທອງທິວາດ, ບ້ານ ດົງຍອດ  
ເມືອງ ສີສັດຕະນາກາ, ນະຄອນຫຼວງວຽງຈັນ, ສປປ ລາວ  
ໄປສະນີ: 4041

ວັນທີ 2017

ສາທາລະນະລິດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ  
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ  
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ນະໂນກ ໄຊທາທິການ ແລະ ສົນສິງ  
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ເລກທີ: 2930/ອສສ  
ວັນທີ: 07.DEC.2018

**IEE SETHAMOUAK TOWN**

**ການປະເມີນ ຜົນກະທົບສິ່ງແວດລ້ອມ ເບື້ອງຕົ້ນ**  
**ໂຄງການກໍ່ສ້າງ ລະບົບນໍ້າປະປາ ເມືອງ ເຊທາມອກ**  
**ແຂວງ ສະຫວັນນະເຂດ ດ້ວຍກຳລັງການຜະລິດ 1,200 ມ<sup>3</sup>/ມື້**



ຖະໜົນ ລາດຊະເວີເສີນ, ບ້ານ ນາເຫລົ້າ  
ເມືອງ ນະຄອນຫ້າສອນພົມວິຫານ, ສປປ ລາວ

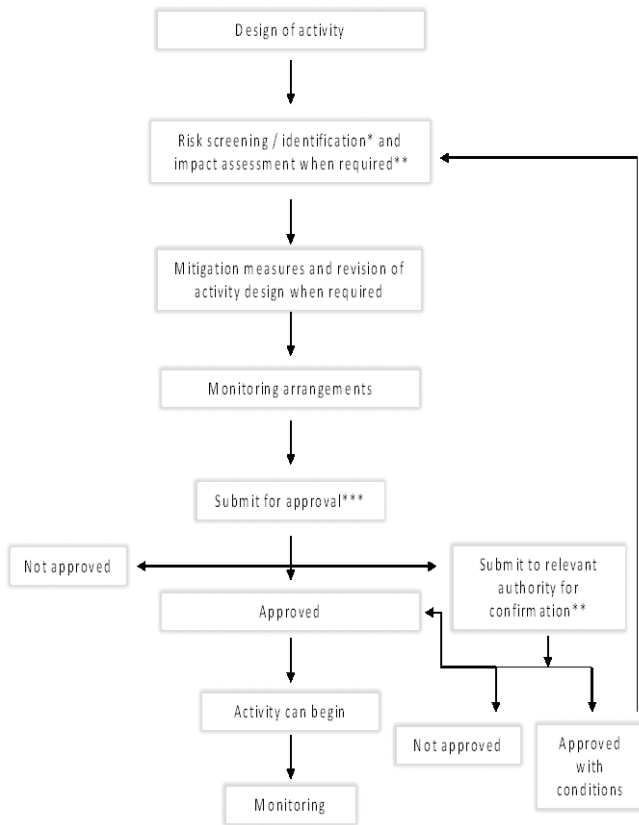
ວັນທີ 2018

Front covers of the Initial Environmental Examinations for Sayphothong and Sethamouak, which were conducted in support of the formulation of this proposal and inform the risk assessment in this Annex. The full documents are available on request

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## Screening Process



\* For all activities against the 15 ESP principles.  
Use of Risk Assessment Sheet where necessary

\*\* In consultation with Technical Advisory Group

\*\*\* All after activities to be approved by Project Management Committee

## Environmental and social management plan

### 1. Introduction

The ESMP is designed to list the risks and preventative/mitigation measures outlined above in table 5 and outline how they will be monitored and managed, and by whom, throughout the project.

### 2. Risks management arrangements

- (i) Responsibilities: direct management responsibility of the ESMP will be under the project Team Leader. The team leader will have oversight/final compliance responsibility. Any changes or additional activities that are required during the project implementation, and that fall within allowable limits set by the Adaptation Fund, will need to be approved by the project team leader and presented to the PSC, depending on the scale of the activity. This plan, as well as any changes in the risk landscape, will also be presented to the PSC.
- (ii) Management and implementation of the investments: All project activities have been screened against the 15 environmental and social risks areas during project preparation phase (See above). Outcomes will be presented during the project inception to all stakeholders to confirm the management and monitoring arrangements and to agree on the detailed steps required to develop management plans for each activity covering detailed engineering studies, but also risks mitigation measures to comply to national technical standards in line with [Part II, Section E](#)

Budget: there are no specific budget requirements for project compliance to the ESP and GP.

### 3. General environmental and social risks management reduction measures

In addition to the risk management measures identified above, the following elements will be put in place to ensure the compliance with the ESP:

- (i) The project MoU and the three Agreements of Cooperation with the Executing Entities will include a detailed reference to the ESMP and the necessary safeguarding measures, particularly Compliance with the Law, Indigenous People, Gender Issues and Labour and Safety Standards (Principles, 1, 5, 6 and 7).
- (ii)
  - Principle 1: References to standards and laws to which the activity will need to comply will be included in all legal agreements with all sub-contractors, including steps and responsibilities for compliance.
  - Principle 4: References to relevant Human rights declarations will be included in all legal agreements with all sub-contractors.
  - Principle 6: Employment and working conditions following ILO standards will be included in legal agreements with all sub-contractors.
  - Principle 7 Indigenous people's rights must be safeguarded by ensuring equal access to resultant services and ensuring that all dialogue is accessible
  - Principle 13: Ensure that ICSC international health and safety standards are clearly accessible and understood. e.g. by putting clearly visible signs detailing health and safety standards to be located at projects sites and by supplying protective equipment.
- (iii) UN-Habitat's Project Review Committee will check the compliance of the project with the ESP on inception and the gender focal point at UN-Habitat headquarters can check compliance throughout the project's implementation

(iv) Continuous coordination will take place with focal points in MoNRE, MPWT and NPSE Savannakhet to ensure compliance with the ESP and national laws, standards and policy priorities.

(v) Capacity building and awareness raising; the project team leader, executing entity partners and target communities, will receive training / capacity development to understand and manage the 15 Principles, the ESMP and in particular their responsibilities. This will be done during inception.

#### 4. Risks monitoring arrangements:

(i) This monitoring program commensurate with actions identified above and will report on the monitoring results to the Fund in the mid-term, annual, and terminal performance reports. Monitoring will be done to ensure that actions are taken in a timely manner and to determine if actions are appropriately mitigating the risk / impact or if they need to be modified in order to achieve the intended outcome.

(ii) Annual reporting will include information about the status of implementation of this ESMP, including those measures required to avoid, minimize, or mitigate environmental and social risks. The reports shall also include, if necessary, a description of any corrective actions that are deemed necessary.

(iii) Direct monitoring responsibilities will be under the project team leader. The team leader will have oversight / final compliance responsibility. When changes or additional activities are required, monitoring indicators will be changed or added as well.

#### 5. Grievance mechanism

(i) UN-Habitat will implement a grievance mechanism in the target areas, which will allow an accessible, transparent, fair and effective means of communicating if there are any concerns regarding project design and implementation. Employees, and people benefitting / affected by the project will be made aware of the grievance mechanism for any criticism or complaint of an activity.

(ii) This mechanism considers the special needs of different groups as well as gender considerations and potential environmental and social risks. A combination of mailboxes (at community level), confidential persons in the community and telephoning options offer an immediate way for employees and people affected by the project to safely express their concerns. The options will allow local languages and offer the opportunity for and people affected by the project to complain or provide suggestions on how to improve project design and implementation, which will be reviewed and taken up by the project implementation team.

(iii) Project staff will be trained in procedures for receiving messages and on the reporting of any grievances. Community chiefs will also be briefed how to obtain feedback from community members on a regular basis. In addition, monitoring activities allow project participants to voice their opinions or complaints as they may see fit.

(iv) The address and e-mail address of the Adaptation Fund will also be made public (i.e. project website, Facebook and mailbox) for anyone to raise concerns regarding the project:

Adaptation Fund Board secretariat  
Mail stop: MSN P-4-400  
1818 H Street NW  
Washington DC



ADAPTATION FUND

REQUEST FOR PROJECT/PROGRAMME  
FUNDING FROM THE ADAPTATION FUND



To:

The Adaptation Fund Board Secretariat  
1818 H Street NW  
MSN P4-400  
Washington, D.C., 20433  
U.S.A  
Fax: +1 (202) 522-3240/5  
Email: [afbsec@adaptation-fund.org](mailto:afbsec@adaptation-fund.org)



## PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

## PART I: PROJECT/PROGRAMME INFORMATION

Project Category:	Regular
Country:	Lao PDR
Title of Project:	Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR
Type of Implementing Entity:	Multilateral Implementing Entity
Implementing Entity:	United Nations Human Settlements Programme (UN-Habitat)
Executing Entities:	Ministry of Public Works and Transport, Ministry of Natural Resources and Environment, Provincial Department of Public Works and Transport in Savannakhet Province, and Department of Natural Resources and Environment in Savannakhet Province
Amount of Financing Requested:	US\$5,500,000

**Project Background and Context:****The Problem****Climate change is a major impediment to the attainment of national development goals.**

Lao People's Democratic Republic (PDR) has been increasingly affected by extreme weather events. This is particularly problematic due to its high sensitivity, resulting from dependence on climate-sensitive natural resources and its low adaptive capacity. The impacts of extreme weather events have been severe to the point that in 2013 Lao PDR was named the 7<sup>th</sup> most severely affected country in the world by climate change, with 23 deaths and absolute losses of US\$ PPP 263,510,000<sup>1</sup>. Irregularity in rainfall has led to both floods and droughts, with a variation in severity from year to year. Not only does Lao PDR have a high exposure to extreme weather events, particularly floods, but recent reports by the INFORM Global Risk Index show a low ability to cope with these events<sup>2</sup>. In addition to extreme events, variation in the seasons has disrupted cropping, causing food insecurity.

The high degree of climate change vulnerability in Lao PDR is due to several factors including the physical geography, low coping capacity and reliance on the agriculture sector. Geographically, the country can be separated into several regions, each of which is susceptible to different hazards. A trend of increasing rainfall is especially apparent in the south and central

<sup>1</sup> Global Climate Risk Index, 2015, p.7. Online at <https://germanwatch.org/en/download/10333.pdf>

<sup>2</sup> Index for Risk Management (INFORM) Country Risk Profile for Lao PDR, 2018. Online through <http://www.inform-index.org/Countries/Country-Profile-Map>

regions, leading to widespread flooding<sup>3</sup>. In rural areas, this damages or destroys food crops. In the rapidly growing small and emerging towns, there is significant damage to physical infrastructure, hindering economic development and disrupting livelihoods. Low coping capacity is a result of both the low institutional capability and the infrastructure. Currently, Lao PDR is showing a lower coping capacity than neighboring countries and also of countries which are at a similar income level<sup>4</sup>.

As this proposal was being prepared, unusually heavy rains and flooding caused a dam to break in nearby Attapeu Province, leading to dozens of deaths and thousands of people displaced. Meanwhile, roads, bridges and other critical infrastructure throughout the country has been severely impacted by heavy rainfall which is, in turn, caused by the early onset of tropical storms in the South China Sea. Such infrastructure damage has affected the provision of basic services such as water supplies. These events have once again heightened the focus in Laos of the impacts of climate change and the serious risks they pose to life, livelihoods, infrastructure and sustainable development.

Looking forward, there is an increasing risk of severe weather events. There is a need for adaptive actions to be taken to mitigate the effects of these events which have the potential to severely derail the Government's development agenda. There has been a long-term goal of graduating from Least Developed Country (LDC) status by 2020 with a vision of achieving upper-middle income status by 2030<sup>5</sup>. To achieve this, the 8<sup>th</sup> National Socioeconomic Development Plan has focuses on economic growth, sustainable development and strengthened human resource capacity. Recent indications suggest that Laos will probably miss the 2020 graduation target. It is imperative, therefore, that steps are taken to ensure the predicted climatic changes do not prevent Lao PDR from moving forward according to its development aims. UN-Habitat is already working with the government to this end on the Adaptation Fund funded project entitled, "Enhancing the climate and disaster resilience of the most vulnerable rural and emerging urban human settlements in Lao PDR." The National Designated Authority has requested UN-Habitat to build on this initial project with a continued focus on small and emerging towns in highly vulnerable provinces. This proposed project is in different provinces than the initial project but caters to the government's ongoing need to build resilience in these small urban settlements.

## Economic Context

**Climate change is already causing economic losses, but the government does not have the financial resources and technical capacity to respond.**

At the macroeconomic level, the Lao economy is characterised by strong growth, but it has the widest forecast current account deficit in Southeast Asia for 2017, at 17.5% of GDP<sup>6</sup>. As one of the least developed countries in the world, Lao PDR has one of the lowest annual incomes with

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<sup>3</sup> CLEAR: Consolidated Livelihood Exercise for Analysing Resilience. A special report prepared by the Ministry of Natural Resources and Environment's Department for Disaster Management and Climate Change (DDMCC) and the World Food Programme with technical support from the USAID Mekong ARCC project.

<sup>4</sup> INFORM Country Risk Profile for Lao PDR, 2018. Online through <http://www.inform-index.org/Countries/Country-Profile-Map>

<sup>5</sup> 8th Five-Year National Socioeconomic Development Plan (2016–2020). Online at [http://www.la.one.un.org/images/publications/8th\\_NSEDP\\_2016-2020.pdf](http://www.la.one.un.org/images/publications/8th_NSEDP_2016-2020.pdf)

<sup>6</sup> Asian Development Outlook 2017 Update- Sustaining Development through Public-Private Partnership. Asian Development Bank, 2017. Available from <https://www.adb.org/publications/asian-development-outlook-2017-update>

GDP at US\$14.36 billion in 2015 and GDP per capita at US\$2,212 in 2015<sup>7</sup>. Despite its low level of development, the Lao economy is growing rapidly, with GDP growth hovering around 7% per year in recent years<sup>8</sup>. Economic growth is fuelled in a large part by large projects in the natural resources and extractive sectors, particularly hydropower projects. It has been estimated that 10 - 15% of the land area has been allocated for economic development purposes, including for mining, hydropower and plantations to foreign or joint venture investors for periods of up to 70 years<sup>9</sup>. However, these projects do not generate significant employment opportunities, and their benefits are not evenly distributed throughout the population, causing increased inequality<sup>10</sup>.

The greatest number of workers in Lao PDR is employed in the agricultural sector. A 2014 World Bank report calculated that, of the number of hours worked in 2013, 61% were in the agriculture sector, 30% were in the construction and services sector, 8% were in manufacturing and 1% were in mining, electricity, water and gas<sup>11</sup>. The report estimated that 70% of workers were in low-productivity agricultural jobs. The low output produced by the agricultural sector in comparison to its number of workers is shown by the percentage of output produced by each sector where 44% of output is from the construction and services sector, 27% from agriculture, 18 percent from mining, electricity, water & gas and 11 percent from manufacturing.

A high proportion of the workforce dependent on agriculture and livestock increases overall vulnerability to climate change, as work in this sector tends to lead to low incomes and is directly dependent on a conducive climate. In the event of extremes and long-term changes in the climate, low incomes in the agriculture sector are highly threatened. Meanwhile, people who work in the construction sector, are often in unsecure employment, meaning they have irregular incomes, and/or minimal opportunities to save. This also limits their ability to invest in adaptation measures at the household level, or to respond after extreme events.

Hydropower is a key contributor to the Lao economy, both by providing a reliable and affordable domestic power supply and by earning foreign exchange from electricity exports to neighbouring countries. In the first half of 2017, electricity generation increased by 34.8% year on year<sup>12</sup>. According to the Ministry of Energy and Mines, electricity has accounted for 30% of Lao exports since 2008<sup>13</sup>. This is a significant part of the revenue coming into the country. Major projects such as hydropower and construction are responsible therefore for significant growth in the economy. However, these sectors do not generate employment for a large number of people. There is therefore, a need to diversify the economy from a reliance on natural resources.

Outside of these major projects, much of the economic activity occurs in Vientiane and in some of the provincial capitals. After Vientiane and the secondary towns of Luang Prabang, Thakek, Savannakhet and Pakse, small and emerging towns are playing an increasingly important role in economic growth. These settlements are experiencing a higher growth rate of population than

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<sup>7</sup> International Monetary Fund. Report for selected countries and subjects. World economic outlook database. Report requested from <https://www.imf.org/external/pubs/ft/weo/2017/02/weodata/weoselgr.aspx>

<sup>8</sup> <https://www.adb.org/countries/lao-pdr/economy#tabs-0-3>

<sup>9</sup> Background notice for ADB Governance and Capacity Development in Public Sector Management Program. Online at <https://www.adb.org/sites/default/files/linked-documents/46059-001-lao-oth-02.pdf>

<sup>10</sup> See for example the Lao Economic Monitor May 2016, which states on p.10 that "The pace of poverty reduction and inclusiveness was less commensurate to the rate economic growth." Online at <http://documents.worldbank.org/curated/en/515521468197368035/pdf/AUS17628-WP-OUO-9-Lao-Economic-Monitor-May-2016-has-been-approved-P157829.pdf>

<sup>11</sup> Lao Development Report 2014. Expanding productive employment for broad-based growth. World Bank. Online at [http://www.worldbank.org/content/dam/Worldbank/document/EAP/lao-pdr/LDR\\_2014\\_Eng.pdf](http://www.worldbank.org/content/dam/Worldbank/document/EAP/lao-pdr/LDR_2014_Eng.pdf)

<sup>12</sup> Asian Development Outlook 2017 Update

<sup>13</sup> <http://www.poweringprogress.org/new/2-uncategorised/3-hydropower-in-lao-pdr>

the national average of 1.45% per annum<sup>14</sup>, mainly due to rural-urban migration. However, the government does not have the resources to provide the needed infrastructure for these growing towns. There is, therefore, a significant need for investment in these settlements. This is because in the absence of investment, it is likely that unplanned development will occur, resulting in low quality developments and infrastructure which is both inadequate and prevents people from being resilient to floods, storms, landslides and droughts. Furthermore, it is far more desirable to integrate climate change adaptation measures into infrastructure when it is being newly built in emerging towns, rather than trying to retrofit it. Climate-resilient infrastructure also contributes to economic growth in the towns and contribute to achievement of the government’s development goals.

### Social context

Despite realising the necessity to build resilience in the poor communities which will be most severely impacted by climate change related disasters the government is challenged to respond to the need by a lack of finance and both human and technical capacity.

The 2015 census found there were 3,237,458 females in Lao PDR and 3,254,770 males, making a total population of 6,492,228<sup>15</sup>. Since the first census in 1985, the population has grown by about a million every decade and it has grown by 1.45% since 2005. It is expected to reach 8.8 million by 2030, with 96,000 more people reaching working age every year<sup>16</sup>.

Ethnicities are classified into 49 different groups, with the main groups shown below. There is a diversity of languages, cultures and lifestyles amongst the ethnic groups. The main religion is Buddhism, practised by 65% of the population. The census recorded 2% of the population as practising Christianity, while 31% stated that they had no religion. There are many people, however, with animist beliefs. Some ethnic groups are marginalised, with limited access to education, health and other services, partly because they often live in remote areas with little access to infrastructure.

	Population	% to total Population
Lao	3,427,665	53.2
Khmou	708,412	11.0
Hmong	595,028	9.2
Phouthay	218,108	3.4
Tai	201,576	3.1
Makong	163,285	2.5
Katang	144,255	2.2
Lue	126,229	2.0
Akha	112,979	1.8
Others	749,153	11.6

*Source: Table P2.7 (2015 PHC, Appendix 1)*

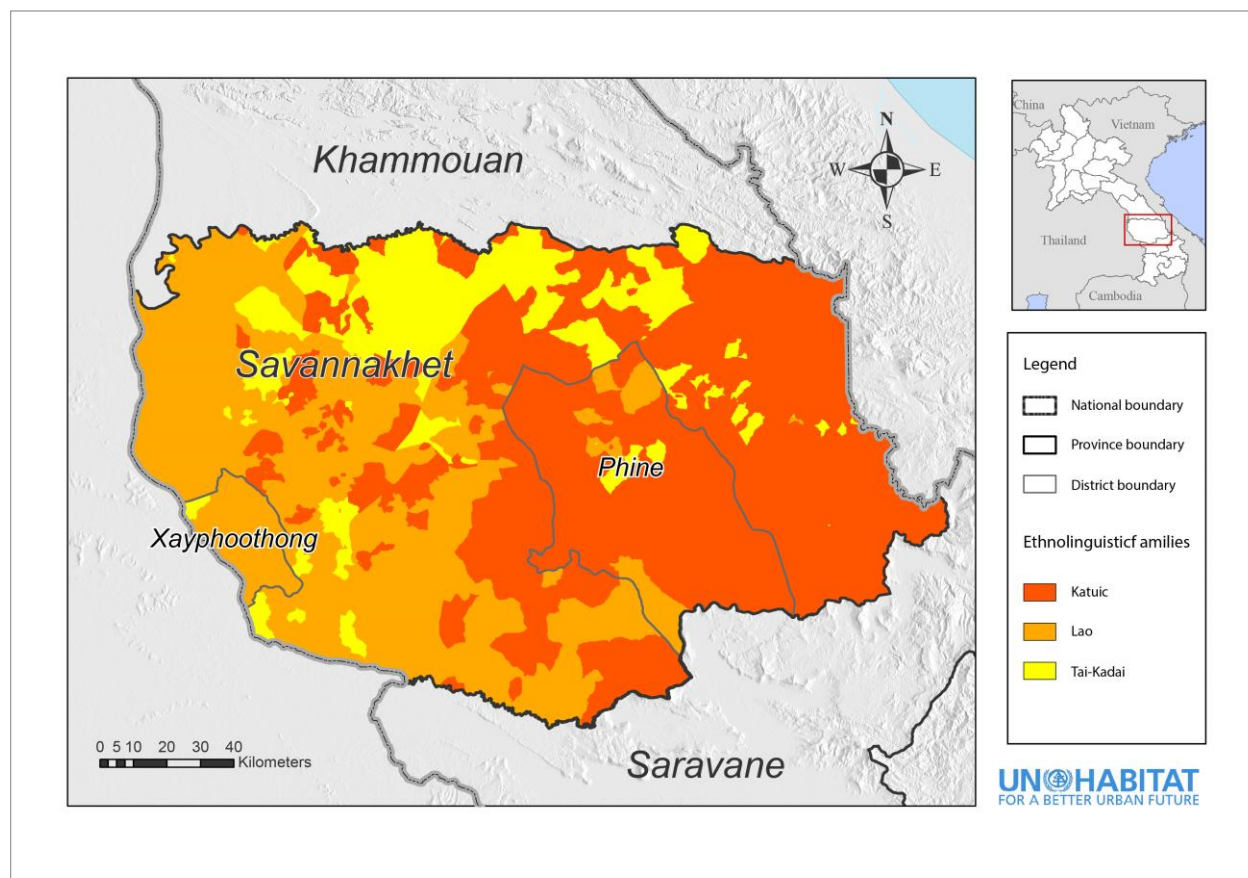
<sup>14</sup> Population growth rate 2005 – 2015 according to the 2015 census, available online at [http://lao.unfpa.org/sites/default/files/pub-pdf/PHC-ENG-FNAL-WEB\\_0.pdf](http://lao.unfpa.org/sites/default/files/pub-pdf/PHC-ENG-FNAL-WEB_0.pdf). The growth in small and emerging towns is commonly twice that of the national average.

<sup>15</sup> Census report online at [http://lao.unfpa.org/sites/default/files/pub-pdf/PHC-ENG-FNAL-WEB\\_0.pdf](http://lao.unfpa.org/sites/default/files/pub-pdf/PHC-ENG-FNAL-WEB_0.pdf)

<sup>16</sup> Lao Development Report 2014. Expanding productive employment for broad-based growth. World Bank.



While the majority of Lao PDR's population lives in rural areas, there is rapid urbanisation. It was estimated that 37.6 percent of the population were urban dwellers in 2014, up from only 15.4 percent in 1990<sup>17</sup>. In terms of rural and urban characteristics, most towns in Lao PDR have a small population, and in 2012 there were only 10 towns with a population greater than 20,000<sup>18</sup>. It is in the small towns (with a population of at least 4,000) and emerging towns (many with a population under 4,000) that much of the urban growth is occurring. Many of these towns are in locations which are exposed to climate change related hazards and there is a need to build resilience as they are developed. Table 1: Population by Figure 1 - Location of the Two Target Districts in Lao PDR



**Ethnicities in Savannakhet Province**

<sup>17</sup> Key Indicators for Asia and the Pacific, 2015. Asian Development Bank. Online at <https://www.adb.org/sites/default/files/publication/175162/ki2015.pdf>

<sup>18</sup> Lao People's Democratic Republic: urban development sector assessment, strategy, and road map, 2012. Asian Development Bank. Online at <https://www.adb.org/sites/default/files/institutional-document/33722/files/lao-pdr-urban-sector-assessment.pdf>

Poverty declined from 33.5% in 2002/3 to 23.2% in 2012/3<sup>19</sup>. However, the decrease in poverty was not evenly spread throughout the population, meaning some areas remain extremely poor. The uneven distribution is shown by the fact that the cumulative growth in average consumption was 25 percent over 10 years, but the cumulative growth for the bottom 40 percent was only 14%<sup>20</sup>. People living on less than \$1.25 (2005 PPP) a day made up 30% of the population in 1998 - 2012<sup>21</sup>. Poverty is more pronounced in some regions than others. Poverty is particularly concentrated in areas with high concentrations of ethnic minority groups, and remoteness, exclusion, and lack of education are all associated with extreme poverty<sup>22</sup>.

**Gender Context** The 2013 Millennium Development Progress Report also showed a link between gender and poverty, with women finding it more difficult to escape poverty because of social norms and values that govern the gender division of labour. Female-maintained households have been over-represented amongst the poor<sup>23</sup>. Gender disparities in education are more pronounced amongst the poor. In employment, although men and women are equally represented in the workforce, there are more women than men working in vulnerable employment. Women are well represented in the National Assembly, making up 25% of its members. However, there is very low representation of women in other decision-making positions, and especially in provincial and district level governments.

According to the 2015 population and housing census, Savannakhet, Laos's most populous province, had just under 1 million people, 15 percent of the country's population<sup>24</sup>. The East West Economic Corridor (EWEC), where the two towns in Savannakhet are situated, has been developed targeting poverty alleviation, and over the past 15 years the region and the country as a whole has seen decline in poverty. However, the high rates of urbanisation apparent in the province also have the potential to exacerbate disparities between the genders.

Key socio-economic characteristics within Savannakhet follow trends of the country as a whole. Recent data has shown that women in most areas of Lao PDR face a lack of awareness about maternal health and malnutrition, and education inequality. Low-quality education and consistent dropout rates among girls have ranked Lao PDR as one of the lowest performers in the East Asia Pacific region in girls' education<sup>25</sup>. In Savannakhet Province, only 24.7 per cent of young people aged 14-17 are enrolled in school, though the girl to boy ratio is even. In Sayphouthong District, the rates of enrolment are similar to the provincial level – 28.4 per cent enrolment with an even girl to boy ratio. However, in Phine District, only 9 per cent of 14-17 year olds are going to high school, with a 0.84:1 girl to boy ratio. In some cases, girls drop out of school in order to marry; 16 per cent of girls in Sayphouthong and 26 per cent in Phine District are married, and in many other cases it is because families do not think it is safe for girls to travel long distances from rural locations to high schools, which are almost always located in district towns.

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<sup>19</sup> Drivers of Poverty Reduction in Lao PDR, World Bank, 2015. Online at <http://documents.worldbank.org/curated/en/590861467722637341/pdf/101567-REPLACEMENT-PUBLIC-Lao-PDR-Poverty-Policy-Notes-Drivers-of-Poverty-Reduction-in-Lao-PDR.pdf>

<sup>20</sup> Ibid

<sup>21</sup> Key Indicators for Asia and the Pacific, 2015. Asian Development Bank. Online at <https://www.adb.org/sites/default/files/publication/175162/ki2015.pdf>

<sup>22</sup> MDG progress in Lao PDR Online at [http://www.la.one.un.org/images/publications/MDGR\\_2013.pdf](http://www.la.one.un.org/images/publications/MDGR_2013.pdf)

<sup>23</sup> MDG progress in Lao PDR Online at [http://www.la.one.un.org/images/publications/MDGR\\_2013.pdf](http://www.la.one.un.org/images/publications/MDGR_2013.pdf)

<sup>24</sup> UNFPA. 2015. "Lao Population and Housing Census 2015". Retrieved from [https://lao.unfpa.org/sites/default/files/pub-pdf/PHC-ENG-FNAL-WEB\\_0.pdf](https://lao.unfpa.org/sites/default/files/pub-pdf/PHC-ENG-FNAL-WEB_0.pdf)

<sup>25</sup> Japan International Cooperation Agency (JICA). 2013. "Profile on Environmental and Social Considerations in Lao P.D.R". Retrieved from [http://open\\_jicareport.jica.go.jp/pdf/12144762.pdf](http://open_jicareport.jica.go.jp/pdf/12144762.pdf)

From the data collected by the Lao Social Indicator Survey II 2017-18, only 6.7 per cent of women are considered literate and have attempted some form of higher education (beyond the basic 9-year education). The equivalent figure for men is 6.2 per cent. About 56 per cent of women in Savanakheth province self-report as literate, compared to 71 per cent of men. These figures are also consistent with the Lao Population and Housing Census (2015)<sup>26</sup>. In addition to this, violence against women is widespread further aggravating the already significant vulnerability gap.<sup>27</sup>

Lao women play critical roles in agriculture and other economic activities, and are primarily responsible for maintaining their families' food security and health. Women do much of the farm work (planting, weeding and harvesting crops), tend livestock, and also spend long hours performing off-farm and household chores such as collecting water, firewood, preparing meals and caring for children. Traditionally, men plough, make bunds and prepare seedbeds however as many men migrate to seek jobs in the urban areas, women's work burden is increasing.<sup>28</sup>

During the stakeholder consultations, involving Lao Women's Union representatives in Savannakhet province, it was identified that mostly women and girls are responsible for the task of collecting water in the target settlements of the project (as in many other places), which poses a serious burden, especially if they have to walk considerable distances while combining other chores such as caring for young children. Women lose out on other income opportunities while there are instances of girls dropping out of schools to attend to such domestic errands.

Unfortunately women may face added reliance on male family members as challenges of not having steady employment and income are relevant issues for women in target settlements in Savannakhet. This is because of having heavy reliance on agriculture, losing productive time collecting water and lacking education. This problem is also worsening with natural disasters threatening the livelihoods of many women.

The Government recognises that it will not be able to realise the goals of reducing poverty and improving national education, health and population indicators without the active participation of all women, particularly poor and ethnic minority women. There have been significant achievements, such as completing the development of the 8th Five-Year National Strategic Plan on the Advancement of Women (2011–2015) and integrating this strategy into sector and local strategies. Various campaigns and awareness-raising activities have been implemented to advocate and raise awareness of government officials and people in general on understanding of gender, promoting advancement of women, the Convention on Eliminating All Forms of Discrimination Against Women (CEDAW), acting against all forms of violence against women, and increasing gender equality, enabling the country to graduate from least-developed country (LDC) status gradually<sup>29</sup>.

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<sup>26</sup> UNFPA. 2017. "Lao Social Indicator Survey II (2017-2018)". Retrieved from <https://lao.unfpa.org/en/publications/lao-social-indicator-survey-ii-2017-18-0>

<sup>27</sup> Japan International Cooperation Agency (JICA). 2013. "Profile on Environmental and Social Considerations in Lao P.D.R.". Retrieved from [http://open\\_jicareport.jica.go.jp/pdf/12144762.pdf](http://open_jicareport.jica.go.jp/pdf/12144762.pdf)

<sup>28</sup> Khamphoui, Phanlany. 2012. "SCOPING STUDY ON WOMEN'S LEADERSHIP IN THE AGRICULTURE SECTOR IN LAO PDR: Capacity Building for Women's Leadership in Farmer Producer Organizations in Asia and the Pacific Region Project". Women Organising for Change in Agriculture and NRM (WOCAN).

<sup>29</sup> Ministry of Planning and Investment. 2016. "8 th FIVE-YEAR NATIONAL SOCIOECONOMIC DEVELOPMENT PLAN (2016–2020)". Retrieved from [http://www.la.one.un.org/images/publications/8th\\_NSEDP\\_2016-2020.pdf](http://www.la.one.un.org/images/publications/8th_NSEDP_2016-2020.pdf)

The World Bank Group. 2017. "Country Gender Action Plan for the Lao People's Democratic Republic (2017-2021)". Retrieved from <http://documents.worldbank.org/curated/en/824181495177203647/pdf/115142-WP-LaoPDRGAPFINAL-PUBLIC.pdf>

Recognising that collecting water represents a greater burden for women, this project provides inherent adaptation benefits for them. The proposal contains various provisions that will specifically benefit women, detailed throughout the proposal.

Please see [Annex 2](#) for further background information pertaining to the comprehensive gender assessment undertaken in the formulation of this proposal.

## Development Context

### **The government has plans and strategies to bring development but does not have the financial resources or human capacity to implement its plans.**

Lao PDR's development has been consistent over the years as measured by the Human Development Index, for which it scored 0.340 in 1980, rising to 0.586 in 2015. In 2015 it was ranked 138 of the 188 ranked countries, placing it in the lowest quartile of medium developed countries. The government has had a policy of promoting foreign direct investment into natural resources such as land, mining and hydropower and these have driven rapid economic growth.<sup>30</sup>

To date, social progress has not kept up with the rapid economic growth experienced in Lao PDR. Despite the economy's growth, Lao PDR is still classed as an agrarian society, with over 80% of the rural population still subsistence farmers. Lao PDR has had varying success with achieving MDG targets. For MDG 1, the national poverty rate was halved from 46% in 1992/93 to 23% by 2012/13. However, inequalities have increased, particularly between the main cities and rural areas, and there is an uneven distribution of health services and financing. In 2015 there was still widespread food insecurity, with 20% of the population consuming less than the minimum dietary energy requirements. Some key recent human development indicators are shown in Table 2.

**Table 2: Key Human development indicators for Lao PDR**

Life expectancy at birth (years)	66.6
Stunting (moderate or severe) (% under age 5)	43.8
Adult literacy rate (% ages 15 and older)	79.9
Mean years of schooling (years)	5.2
Primary school dropout rate (% of primary school cohort)	22.4
Maternal mortality ratio (deaths per 100,000 live births)	197
Vulnerable employment (% of total employment)	83.9

In 2010 the government identified six focus areas to accelerate the

achievement of MDG targets. One of the six areas concerned the expansion of safe water supply and improved sanitation for all rural areas and small towns. The government is aiming for an equitable provision of services to all geographic areas and social groups. This is part of a strategy to achieve SDGs and those MDGs for which the targets were not achieved. Proposed activities include coping with climate/weather changes and reducing the damages caused by natural hazards that could occur, transforming villages into developed units, designing good village planning, constructing necessary basic infrastructure and providing clean water and latrines<sup>31</sup>. A major need for physical infrastructure is found in the fast growing emerging and

<sup>30</sup> [http://www.fao.org/Lao\\_PDR/fao-in-Lao\\_PDR/Lao\\_PDR-at-a-glance/en/](http://www.fao.org/Lao_PDR/fao-in-Lao_PDR/Lao_PDR-at-a-glance/en/)

<sup>31</sup> See outcome 2 of The 8th Five Year National Socio-economic Plan. Online at [http://www.la.one.un.org/images/publications/8th\\_NSEDP\\_2016-2020.pdf](http://www.la.one.un.org/images/publications/8th_NSEDP_2016-2020.pdf)

small towns. Growth in these towns is due to rural –urban migration and is aided by government policy and projects such as the Greater Mekong Region (GMS) economic corridors, designed to attract investment to the major transport routes across the region, with spinoffs of economic growth through green growth and climate resilience<sup>32</sup>. In the past, the focus of the government’s investment has been Vientiane capital and the four secondary towns, followed by provincial capitals and district capitals. However, in 2016 there were approximately 130 small and emerging towns in Lao PDR, as well as 1,070 officially designated “village clusters”, many of which are developing into urban areas<sup>33</sup>. There is a window of opportunity to build resilience into these smaller towns now, as they are experiencing rapid development. Planned development can ensure that climate change resilience is built into the design of the towns, rather than having them develop in an ad hoc manner, thereby damaging ecosystems and exacerbating the effects of climate change and extreme weather events.

## **Environmental context**

### **Land degradation and damage to ecosystems exacerbate the impacts of extreme weather events such as floods and storms and reduce climate change resilience.**

The development – environment nexus has been one of tension in Lao PDR, where unregulated development has damaged previously well-functioning ecosystems. The state of the forests is a concern. Although there are different statistics for the area of forest, based on varying conditions of forest cover, it is clear that forest cover has declined gradually in recent years, but it declined sharply in previous decades; one estimate suggests a decline from 70% to 43% of the country over the last 50 years<sup>34</sup>. There has also been a deterioration in the quality of forests, with dense forests declining from 29% in 1992 to 8.2% in 2002 and a corresponding increase in open forests from 16% to 24.5%. Forest loss in Lao PDR has numerous drivers, many of which are related to development activities including agricultural expansion, small-scale cutting for fuel and construction materials, forestry plantations, mining, hydropower and infrastructure and urban development<sup>35</sup>. Lao PDR is being supported by external organisations to improve its forests through REDD+.

As it has become more industrialised, Lao PDR’s greenhouse gas emissions have increased and, combined with the decline in forest cover, Lao PDR became a net emitter of CO<sub>2</sub> for the first time in 2000.’ With its economic focus on extractive activities, deforestation is an ongoing challenge in Lao PDR. It is increasing the risk of flooding, a risk which will be exacerbated by climate change as wet seasons become wetter and more intense and dry seasons become drier.

Another environmental issue of concern is water quality. While in the past the water quality of Lao PDR’s numerous rivers has been good, it is increasingly deteriorating in the context of rapid demographic growth, socio-economic development and urbanisation<sup>36</sup>. Poor sanitation and a

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<sup>32</sup> Lao People’s Democratic Republic: Second Greater Mekong Subregion Corridor Towns Development Project. 2015. ADB.

<sup>33</sup> The process of developing the water supply and sanitation strategy for emerging towns in Lao PDR. Water Governance Facility report, 2016. Online through [http://watergovernance.org/resources/wgf-report-7-process-developing-water-supply-sanitation-strategy-emerging-towns-Lao PDR/](http://watergovernance.org/resources/wgf-report-7-process-developing-water-supply-sanitation-strategy-emerging-towns-Lao-PDR/)

<sup>34</sup> Profile on Environmental and Social Considerations in Lao P.D.R., JICA, 2013. Online at [http://open\\_jicareport.jica.go.jp/pdf/12144762.pdf](http://open_jicareport.jica.go.jp/pdf/12144762.pdf)

<sup>35</sup> [https://theredddesk.org/countries/Lao PDR/statistics](https://theredddesk.org/countries/Lao-PDR/statistics)

<sup>36</sup> Profile on Environmental and Social Considerations in Lao P.D.R., JICA, 2013. Online at [http://open\\_jicareport.jica.go.jp/pdf/12144762.pdf](http://open_jicareport.jica.go.jp/pdf/12144762.pdf)

lack of sewerage facilities are key causes of the deterioration in quality. There is therefore, an urgent need to continue to provide infrastructure for both the supply of safe water and for sanitation, to protect the water sources and to improve public health.

Environmental concerns are a key focus in the 8<sup>th</sup> National Socioeconomic Development Plan, with one of three outcomes being that “Natural resources and the environment are effectively protected and utilized according to green-growth and sustainable principles; there is readiness to cope with natural disasters and the effects of climate change and for reconstruction following natural disasters<sup>37</sup>.” Under this outcome, the three outputs are (1) Environmental Protection and Sustainable Natural Resources Management; (2) Preparedness for Natural Disasters and Risk Mitigation; and (3) Reduced Instability of Agricultural Production. The government has prioritised activities to be carried out in order to achieve these outputs. However, it lacks the financial resources for implementation and is dependent on overseas assistance for many projects. In addition, the technical and administrative capacity is very limited, particularly at district and local levels. Thus, while the government is supportive of a way forward which is environmentally sustainable, it requires assistance to achieve this goal.

### **Climate change projections and expected impacts**

#### **Climate change trends and projections**

Lao PDR’s climate has two distinct seasons: a dry season from mid-October to April and a rainy season characterised by the south-west monsoon which brings high rainfall, high humidity, and high temperature between May and mid-October<sup>38</sup>. The country can be divided into three climatic zones:

1. The northern zone is a mountainous area with average temperatures below the other regions in Lao PDR. Average rainfall is from 1,500 – 2000 mm.
2. The central zone has higher average temperatures and the average annual rainfall is from 2,500 – 3,500mm, the highest of the three zones. The rainy season in the central region occurs from June - August while the driest months are from January – March. There is a risk of drought during these dry months.
3. The southern region consists of lowland plains which have an average annual rainfall of 1,500 – 2,000mm. Both floods and droughts occur in the lowland plains, including in the Mekong River Basin. In the southern region the wettest months are September and October.

As part of the project formulation historical climate trends including temperature and rainfall were analysed. UN-Habitat worked with MoNRE to get 30-year weather station data from Savannakhet (the closest weather station with available historical data) and analysed the evidence.

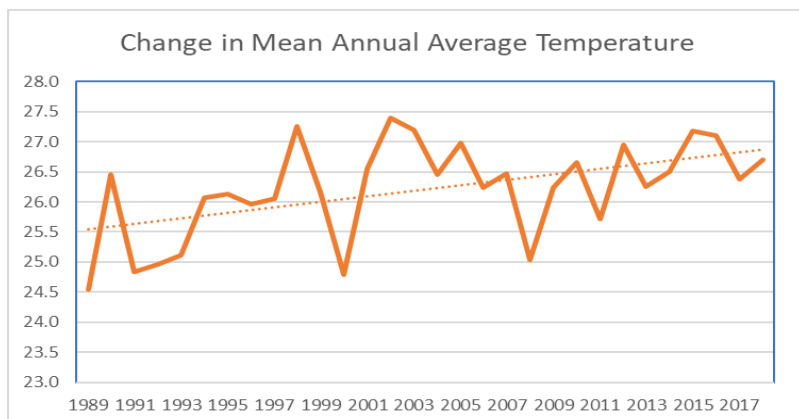
Extreme temperature increase has been observed in Savannakhet. The mean annual average temperature has increased by almost 1.4°C in the last 30 years. The monthly average maximum temperatures are very high, with the highest recorded temperature in April, the hottest month of 42°C. 9 years out of the dataset, including three of the last four, show an average maximum temperature of at least 40°C. The mean annual minimum temperature shows the greatest rise,

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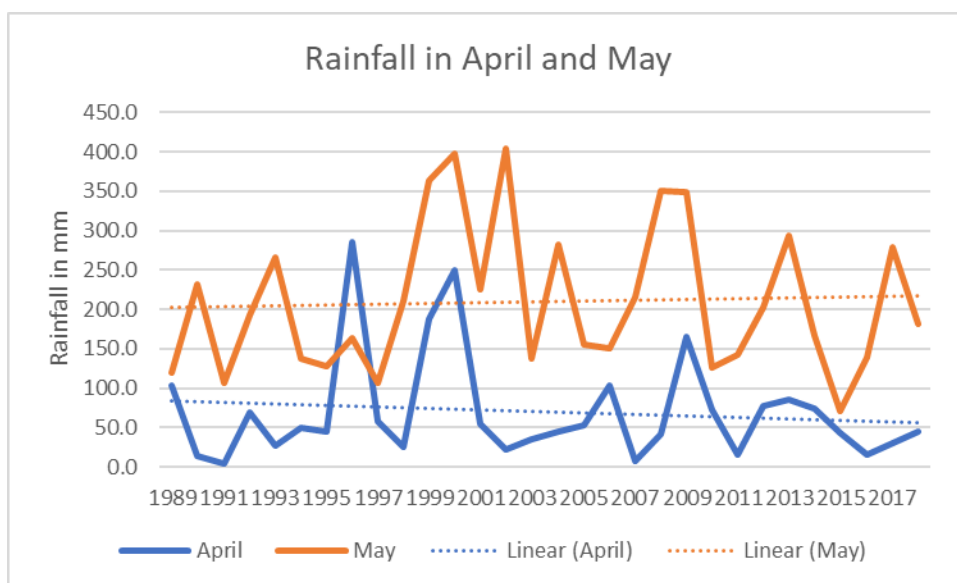
<sup>37</sup> 8<sup>th</sup> NSEDP, p.89.

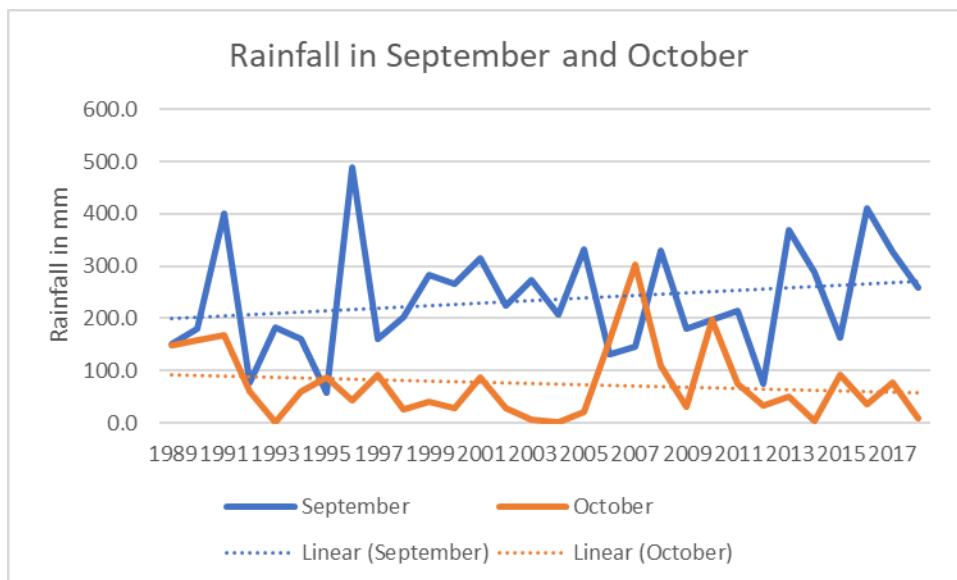
<sup>38</sup> Vulnerability, Risk Reduction, and Adaptation to Climate Change, Lao PDR. World Bank, 2011.

however. Mean annual minimum temperatures are now 1.6°C higher, on average, compared to 1989, a very rapid change.



Annual average rainfall is 1531 millimetres per year, and has shown a very small increase over the dataset, with the annual average now being around 4% higher than in 1989. 85% of rain falls during the 5 months from May to September (inclusive). However, there is evidence that variability is increasing. The driest and wettest years in the dataset, which recorded 1030 millimetres and 2059 millimetres of rain, occurred in 2015 and 2017 respectively. Rainfall in April, the last month of the dry season, almost halved over the period of the dataset, while rainfall in May increased by almost 10%, supporting a broader regional trend of the rainy season starting later and becoming more concentrated. Similarly, rainfall in September increased, but declined dramatically in October, the last month of the rainy season. This means that, while there was overall a small increase in rainfall in Savannakhet, there is evidence that this is more concentrated over a shorter rainy season, meaning people who rely on open water sources or ground water are likely to face increased water shortages in the dry season, exacerbated by higher temperatures that increase evaporation. Finally, in further support of a shortening of the rainy season, the number of rainy days has declined sharply. Savannakhet now gets 101 rainy days per year, 20 fewer than it would have expected at the start of the dataset in 1989.





### Expected impacts

In recent years floods and droughts have caused substantial loss of life, economic loss and damage to infrastructure in Lao PDR. In 2008, more than 200,000 people and 75,000 hectares of agricultural land was affected by floods. In 2010, severe drought during the normal rainy months between May and October severely affected the year’s harvest and created extreme food shortages in southern Lao PDR, affecting around 85,000 people. This drought followed Typhoon Ketsana, which damaged agricultural land, housing and infrastructure especially in the southern provinces and was responsible for 28 deaths and an economic loss of US\$58 million<sup>39</sup>. Floods in 2011 caused a loss of US\$200 million. In 2013 a series of flood events caused by different weather systems occurred in different locations from July through till October. Twelve of the seventeen provinces were affected with an estimated 395,000 people affected and the reported loss of over 20 lives<sup>40</sup>.

It is not only the projected increase in rainfall that is of concern in Lao PDR, but the projected increase in intensity of rainfall whereby more rain is expected to fall over a shorter time period, leading to an increased risk of flooding. The Fifth IPCC Assessment Report identifies future risks for Asia as “increased flood damage to infrastructure, livelihoods and settlements, heat-related human mortality, and increased drought-related water and food shortage”.

The increased intensity in rainfall is also resulting in long, dry spells and this is predicted to result in increased droughts. As shown above, there is evidence of a shortening of the rainy season with more intense rainfall and an increasingly intense dry season in Savannakhet. Drought-prone areas have already suffered severe impacts such as the unavailability of water and loss of crops leading to widespread food insecurity. External assistance has been required to distribute emergency food aid during severe droughts.

<sup>39</sup> [http://www.un-spider.org/sites/default/files/41.%20UN-SPIDER\\_Lao\\_PDR%20rev1-ilovepdf-compressed.pdf](http://www.un-spider.org/sites/default/files/41.%20UN-SPIDER_Lao_PDR%20rev1-ilovepdf-compressed.pdf)

<sup>40</sup> <https://www.reuters.com/article/us-Lao-PDR-floods/floods-in-Lao-PDR-kill-20-damage-rice-crops-idUSBRE97R0BB20130828>



The most severe secondary hazard associated with extreme weather events is epidemics. In a study of natural disasters from 1970 to 2009, it was shown that the type of disaster causing the greatest loss of life was epidemics<sup>41</sup>. It has been shown that the transmission of communicable diseases, particularly faecal-oral diseases, increases in flooded conditions<sup>42</sup>. The decline in sanitary conditions and lack of access to safe drinking water, which commonly occur in a flood event, contribute significantly to the spread of disease. In Lao PDR, the link between floods and disease is commonly observed, and there is also a marked rise in skin infections and diarrhoea<sup>43</sup>. Health concerns are a major issue associated with the projected increase in flooding.

A further key impact from climate change related flooding concerns land use. Although the Government aims to “ensure sustainable development with harmonization among the economic development and socio-cultural development and environmental protection<sup>44</sup>”, there has already been major alteration to eco-systems which have aggravated the impacts of extreme weather. With rapid population growth and urbanisation, there is pressure on the land which is near urban settlements, many of which are close to rivers, deforested areas and degraded catchment areas. Without a strengthening of land use planning, it is likely that there will be both increased flooding because of eco-system changes, and more severe human and economic impacts from the flooding.

Projected increases in flooding and droughts are expected to impact livelihoods, health, physical infrastructure and the economy in general. It is imperative that Lao PDR builds resilience to natural disasters so that it can protect its people and environment and continue on its development trajectory.

### **Focus of the Proposal**

As described below, the main objective of the proposed project is to build resilience to climate change in communities along the east-west economic corridor in the central region of Lao PDR. This will be achieved by the provision of climate resilient infrastructure and the mainstreaming of climate action into urban planning. To achieve this objective, the project focuses its actions on highly vulnerable settlements along the east-west economic corridor in the province of Savannakhet. Two towns, Sayphouthong, in the district of the same name and Sethamouak (in Phine District), with respective populations of 48,188 and 8,956 will be targeted by the project. All residents of the towns are expected to benefit from the project, so in total the project will have 57,144 direct beneficiaries from its infrastructure component, 29,669 of whom are women.

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<sup>41</sup> Synthesis Report on Ten ASEAN Countries Disaster Risks Assessment, December 2010, ASEAN Disaster Risk Management Initiative. Online at [http://www.unisdr.org/files/18872\\_asean.pdf](http://www.unisdr.org/files/18872_asean.pdf)

<sup>42</sup> Mike Ahern, R. Sari Kovats, Paul Wilkinson, Roger Few, Franziska Matthies; Global Health Impacts of Floods: Epidemiologic Evidence, *Epidemiologic Reviews*, Volume 27, Issue 1, 1 July 2005, Pages 36–46, <https://doi.org/10.1093/epirev/mxi004>

<sup>43</sup> For example, see [http://www.wpro.who.int/Lao\\_PDR/mediacentre/releases/2015/20150816/en/](http://www.wpro.who.int/Lao_PDR/mediacentre/releases/2015/20150816/en/)

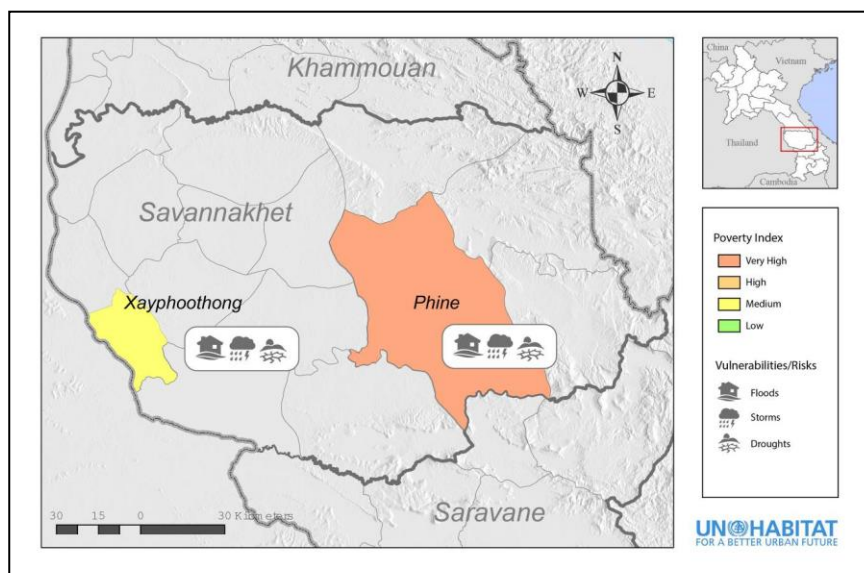
<sup>44</sup> A Key Government Direction for the 8th NSEDP, see 8th Five-Year National Socioeconomic Development Plan (2016–2020)

**Table 3: Population details of target towns**

District	Population of District (2017)	Population of target settlement (2017)	No. of Women in the target settlements	Population growth rate (% per annum)	Projected population of settlement in 2025	Ethnic minorities (%)
<b>Phine (Sethamouak Town)</b>	64,184	8,956	4,868	2.5	11,358	62%
<b>Sayphouthong</b>	48,188	48,188	25,699	1.65	61,596	48%
<b>TOTAL</b>	<b>109,907</b>	<b>57,144</b>	<b>30,567</b>		<b>72,954</b>	

The target settlements have been selected due to their low level of resilience based on high levels of poverty, high exposure to severe climatic events and low institutional capacity and preparation.

As shown in Table 4, below, both towns have recently been exposed to storms, floods and droughts. The poverty headcount remains high in both districts, at 17.1 per cent below the poverty line in Sayphouthong and over 42.4 per cent in Phine District (including Sethamouak Town). A high percentage of the population – 48 per cent in Sayphouthong and 62 per cent in Phine District – are ethnic minorities. See Table 1, above, for a breakdown of the ethnic minority groups in Laos, and Table 3 for a breakdown of the population in the target towns. Other indicators on social development are also very weak in the two target districts. Net high school enrolment, for example, was 6.2 per cent in Phine District and 17.6 per cent in Sayphouthong District in 2015, according to the census<sup>45</sup>. Figure 1 shows the poverty rate and climate hazards of the two target districts and their locations within Lao PDR.



**Figure 2 - Location of the Two Target Districts in Lao PDR**

Table 4 shows recent extreme weather events in the target districts, where flooding is the most common event. Floods commonly destroy houses and infrastructure such as roads, bridges, water and sanitation facilities, and public buildings including health centres and schools. Common health problems

resulting from the consumption of contaminated water include diarrhoea, Dengue Fever and skin conditions. There is a greater risk of epidemics following floods or in times of drought when access to usual water supplies is denied through flooding, damaged infrastructure or through

<sup>45</sup> MPI (2016) Where are the Poor, Lao PDR 2015 Census-Based Poverty Map: Province and District level Results, p.105

water sources drying up. With few resources for rebuilding and rehabilitation, the damage and destruction of infrastructure can severely affect livelihoods and health for extended periods of time. A slower building hazard is the droughts which are increasingly occurring in some districts. These lead to crop failure, food insecurity and a lack of safe water sources, compelling people to source water from contaminated sources.

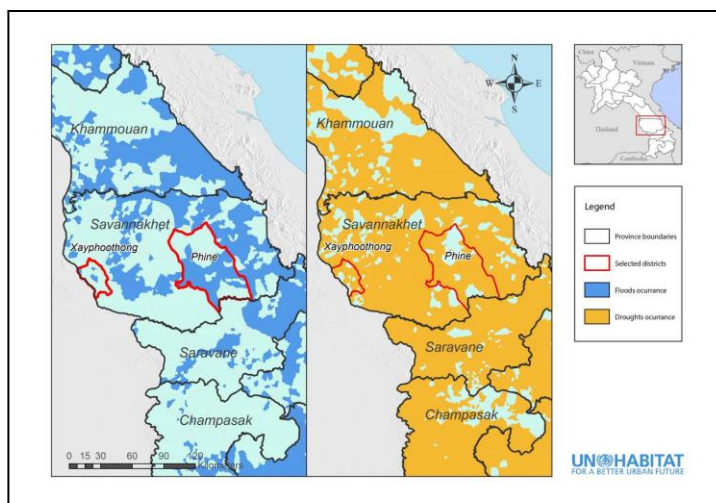
Table 5 summarises the hazards and underlying vulnerabilities in the target towns. These underlying vulnerabilities exacerbate the impacts of climate change hazards. As mentioned above, poverty is high in both districts, especially in Phine District. High school enrolment rates are among the lowest in the country, which is a proxy indicator of limited adaptive capacity and suggests people depend on climate sensitive livelihoods. More critically, however, both districts lack a water supply or sanitation system. This means people are highly sensitive to changes in water availability and water quality, driven by climate change; they suffer insufficient water access during the dry season, and especially in drought periods, and from poor quality water during the rainy season, as rivers and wells can become contaminated. Inadequate sanitation is also a year-round problem, heightened during severe weather events, which in turn causes significant public health problems.

**Table 4: Recorded extreme weather events in targeted districts**

District	Flood	Storm	Drought	Landslide
Phine	Years: 2005/2009/2011/2012/2017	Hima/Ketsana/Nokten/Doksuri	Years: 2013/2014/2015	
Sayphouthong	Years: 2005/2009/2011/2012/2017	Hima/Ketsana/Nokten/Doksuri	2014	

**Table 5: Vulnerability in target towns**

Province	District of target settlement	Hazards	Underlying vulnerability
Savannakhet	Phine District	Floods, storms, droughts	Very high poverty levels (42.4%), low literacy and very low high school attendance rates (47.6% and 6.2%, respectively), lack of water supply system, drainage and wastewater disposal, low (43%) sanitation coverage, low institutional capacity of local authorities regarding disaster resilience.
	Xayphoothong	Floods, storms	High poverty levels (17.6%), very low high school enrolment rates (17.6%) unexploded ordinance, displacement due to mining, dependence on agriculture, no safe water supply system, no drainage, wastewater or solid waste disposal system, 51% sanitation coverage, low understanding of disaster risk reduction.



**Figure 3 - Flood and Drought Locations**

The consultations carried out in the development of the concept note and the full proposal revealed increasing issues with sourcing safe water. This is due to a range of factors including climate change and hazards, poverty and the increasing population in urbanising areas. It has been shown in other areas that the provision of uninterrupted, clean water brings health benefits and both direct and indirect economic benefits through enabling the operation of businesses such as restaurants and guesthouses, as well

as improving productivity through improved health and fewer sick days.

Of concern in the target areas is the low level of understanding by authorities of climate change, related weather events and disaster risk reduction. It is also imperative that local authorities understand and implement best practices in terms of urban planning. The time for this to happen is now, since urbanisation is occurring and there is a need to act quickly before unplanned development destroys protective ecosystems and exacerbates the effect of extreme weather events. It is also considerably more difficult and expensive to ‘retrofit’ existing, poorly planned urban areas with climate-resilient infrastructure than it is to build it as these settlements grow. Capacity building in local authorities and water utilities is therefore of prime importance.

## 2. Project Objectives

### Main objective

The proposed project’s main objective is to build climate resilience in small towns along the east-west economic corridor in the central region of Lao PDR. This will be achieved through the provision of climate resilient water infrastructure and the mainstreaming of climate change into urban planning. The targeted towns align with the government strategy to promote economic growth and build infrastructure in emerging and small towns.

To achieve the objective, a rapid vulnerability assessment has been carried out in each of the target settlements. This has formed the basis of an action plan. The vulnerability assessment will also feed into master plans which will be developed for each of the two towns. The master plans will demonstrate how to mainstream climate action into urban planning.

The planning and design of resilient systems will be carried out in a participatory manner, with input from all sectors of the community from government officials to marginalised groups such as women and minority ethnic groups. The process will include capacity building for authorities in working in a participatory and inclusive manner. A key component of the project is the construction of climate and disaster

resilient infrastructure systems. An additional focus is climate action mainstreamed urban planning.

Specific objectives (also 'project components' in the following table):

**Component 1:**

Town level master plans developed which integrate climate change adaptation into socially inclusive infrastructure development, spatial planning and land-use, with capacity built at District, Provincial and National level to plan for climate resilient infrastructure development and to maintain and manage infrastructure.

*This aligns with the following AF outcomes:*

*Outcome 1: Reduced exposure to climate-related hazards and threats*

*Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses*

*Outcome 3: Strengthen awareness and ownership of adaptation and climate risk reduction processes at local level.*

**Component 2:**

Socially inclusive infrastructure built in target towns that protects people from climate change related impacts and provides continuous services despite current and anticipated future changes in the climate

*This aligns with the following AF outcomes:*

*Outcome 4: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability*

*Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas*

**Component 3:**

Knowledge and awareness enhanced from national to local economic corridor wide levels, ensuring sustainability and influencing policy changes at the national level. This knowledge and awareness targets both local people and national level policy makers

*This aligns with the following AF outcomes:*

*Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level*

*Outcome 7: Improved policies and regulations that promote and enforce resilience measures*

### 3. Project Components and Financing

Project Components	Expected Concrete Outputs	Expected Concrete Outcomes	Amount (US\$)
<p><b>Component 1</b></p> <p>Develop town level master plans which integrate climate change adaptation into socially inclusive infrastructure, spatial planning and land-use management in and beyond the project area.</p> <p>Capacity built at District, Provincial and National level to plan for climate-resilient infrastructure development and to maintain and manage infrastructure</p>	<p><b>Output 1.1.1.</b></p> <p>Training provided to district, provincial and national government staff on resilient infrastructure design. Female government staff must be represented</p>	<p><b>Outcome 1.1.</b></p> <p>40 government staff, at least 15 of whom female, have increased capacity to design climate resilient urban infrastructure in small towns</p>	<p><b>350,000</b></p>
	<p><b>Output 1.2.1.</b></p> <p>Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented</p>	<p><b>Outcome 1.2.</b></p> <p>60 government staff, at least 20 of whom female have capacity to develop climate resilient town master plans and two master plans approved, that support the development of resilient infrastructure, serving 57,144 people.</p>	
	<p><b>Output 1.3.1.</b></p> <p>Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the project area. The master plans will include specific provisions for the development and climate change resilience of women.</p>		
<p><b>Component 2</b></p> <p>Socially inclusive infrastructure built in target towns that protects people from climate change related impacts and</p>	<p><b>Output 2.1.1.</b></p> <p>New resilient infrastructure constructed in response to climate change impacts, including variability</p>	<p><b>Outcome 2.1</b></p> <p>57,144, people, 53.5% of whom are women, who currently have inadequate water and/or protective infrastructure, have access to year-round, clean water and protective infrastructure despite current climate hazards and future</p>	<p><b>4,000,000</b></p>

provides continuous services despite current and anticipated future changes in the climate		changes in climate	
<b>Component 3</b>  Knowledge and awareness enhanced from national to local levels along the economic corridor, ensuring sustainability and potentially leading to policy changes at the national level	<b>Output 3.1.1.</b>  Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.  <b>Output 3.2.1.</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure, including the provision of infrastructure in a way that benefits women	<b>Outcome 3.1.</b>  Project implementation is fully transparent. All stakeholders, including women are informed of products and results and have access to these for replication.	<b>237,557</b>
6. Project Execution cost			<b>US\$481,567</b>
7. Total Project Cost			<b>US\$5,069,124</b>
8. Project Cycle Management Fee charged by the Implementing Entity (if applicable)			<b>US\$430,876</b>
Amount of Financing Requested			<b>US\$ 5,500,000</b>

#### 4. Projected Calendar:

Milestones	Expected Dates
Start of Project/Programme Implementation	06-2019
Project/Programme Closing	06-2023
Terminal Evaluation	12-2023

## PART II: PROJECT / PROGRAMME JUSTIFICATION

### A. Project components

The proposed project originated as a request from the government of Lao PDR, articulated through MoNRE, for further support based on the ongoing implementation of the Enhancing the Climate and Disaster Resilience of Rural and Emerging Human Settlements in Southern Lao PDR project, funded by the Adaptation Fund and implemented by UN-Habitat. In particular, the government of Lao PDR and UN-Habitat propose to build on the innovations of the first project to bring additional resilience benefits to other settlements in climate-vulnerable areas.

The project takes a long-term view on developing climate resilient infrastructure that will build climate and disaster resilience in two towns in southern-central Lao PDR. To this end, soft measures including capacity development, urban planning and knowledge management are integrated with hard measures wherein physical infrastructure will be constructed in line with the specific needs identified in the vulnerability assessment of each town (see [Annex 1](#)).

As shown in Part 1, the target towns have high levels of vulnerability due to their exposure to floods, droughts, and storms and resultant water and vector borne disease. This, combined with high levels of poverty, rapid urbanisation, almost no access to basic services, particularly continuous, clean water supply, limited knowledge of how climate change interplays with these issues, high numbers of indigenous people, and gender inequality. These factors combine to give a low adaptive capacity. The construction of infrastructure which is resilient to floods, droughts, landslides and storms will enable the target communities to have continued access to basic services, thereby mitigating the negative impacts which have been described in the section on expected impacts.

Consultations and vulnerability assessments were conducted in the preparation of the concept note and full proposal. Based on the findings from these assessments a menu of physical infrastructure interventions was presented. Authorities and communities were unanimous in their prioritising of water treatment plants in the two towns, an action which aligns strongly with government policy. It is proposed, therefore, to construct a water treatment plant in each of the two towns to serve the surrounding communities.

At present, people in the two towns source their water primarily from open river sources or self-dug wells and boreholes. As a result, they are not guaranteed water year-round, and the quality of water they use is often poor because of turbidity and other forms of contamination. Women, who are often responsible for collecting and managing water, can be required to travel further to collect water during the dry season, where open water sources are presently used. Water treatment is therefore an adaptation action because it will increase the ability of people to access clean water year-round, and the treatment plants will be designed to offer continued functionality despite storms, floods and droughts. When water is supplied directly to homes, it specifically benefits women who are often required to collect water from distant water sources.

In alignment with the political structure in Lao PDR, capacity building will take place from the national level to the community level. At the national level, there is a need to increase capacity in planning for and implementing climate change adaptation actions in sectors outside the Ministry of Natural Resources and Environment (MoNRE) and integrate climate change planning into sectoral policies and plans. This then needs to be carried to provincial, district and



community levels. It is important that all levels of government are in alignment with goals relating to climate change adaptation and disaster risk reduction so that adaptation actions are understood and funded. Capacity building will be carried out by national and provincial authorities at a district level and they will also oversee workshops at a community level. The two targeted sectors will be public works and urban planning.

UN-Habitat is currently implementing capacity building at the provincial and district level under its first Adaptation Fund proposal in Laos and will use the experience and lessons learned to strengthen capacity building proposed under this project. This will include further refining the Planning for Climate Change methodology, which is being used in Laos currently and has previously been used in the Philippines, Cambodia, Myanmar and elsewhere.

Inclusivity is a key factor in the project. 27,649 of the project's 57,144 beneficiaries – almost 50% - are indigenous people, and 53.5% of beneficiaries are women. Amongst some ethnic groups, women are particularly marginalised and so it is important that representation of groups is inclusive of women and other marginalised groups such as the elderly, youth or the disabled. Quasi-governmental institutions such as the Lao National Front for Construction, the Lao Women's Union and the Lao Youth Union all have representatives at the village level and these representatives will be actively engaged in the project.

The project will draw from the People's Process approach, which sees people as active participants and the key resource rather than as objects of development. UN-Habitat has extensive experience of working in a participatory manner at the community level. Social mobilisation is a key step whereby communities organise to make decisions regarding their resilience, with technical and financial support from the project. This will occur in the context of the government's Samsang decentralisation policy, which sees provincial administration as a strategic unit, district administration as an integrated implementation unit and the village as a development activity unit. Samsang is in the process of being rolled out throughout the country, with support needed in its interpretation and implementation. It provides an avenue for local government institutions to take a lead in working with communities and other stakeholders in decision-making. UN-Habitat's current AF funded project is providing experience of implementing under Samsang and there is an opportunity now to build on the learning provided through the current project.

## **Innovation**

The following aspects of the project show innovation.

1. Climate action will be mainstreamed into town level master plans. Urban planning in Lao PDR has a history of fragmentation and overlapping mandates amongst different authorities. Currently, there is a focus on economic development in urban planning, and there is scope to mainstream climate change action as well. Integrating climate action into town level master plans will ensure that adaptation is anchored in local policy and is prioritised in ongoing development actions. These town level master plans will make specific provisions for the development and climate resilience of women, a first in Lao PDR.
2. Capacity building will be carried out in an area wider than the two towns targeted for infrastructure development and will be on towns along the economic corridor. Until the present time, the focus along the economic corridors has been on large-scale infrastructure development but a critical issue for sustainability is access to basic services, recognising that climate change will severely impact these services. Capacity building in urban planning throughout the economic corridor will enhance resilience and

will complement Greater Mekong Sub-region infrastructure development measures so that Laos can derive more sustainable development benefits from the economic corridor.

3. a). Technically, the project will make use of pumps which have a dual power system, utilising solar power as their primary energy source with a backup of electricity from the grid (the initial assessment that grid electricity coverage is 95%, including in the areas the pumps would be located). The solar system will contribute to economic and environmental sustainability while the electric component will ensure that there is an alternative source of power, ensuring continued functionality.  
b). Sustainability will also be promoted through water source protection. This will include encouraging the local government to plan for the future construction of riverside embankments, while all infrastructure built by the project (which will be close to the river) will be protected from flooding. UN-Habitat has an extensive knowledge of water supply projects in Laos. Through its previous work in compiling a database of projects, there is no evidence of a project which has constructed an embankment to protect the water source. The embankments will lead to selected river front development initiatives as per discussion with local authorities and communities. These may include such land uses as public spaces or small businesses.
4. It is proposed to gather together all relevant stakeholders at the local level to contribute to the master planning process. In Laos, agencies normally operate independently of one another and so the involvement of all concerned agencies is a new idea. The Department of Public Works and Transport will lead the master planning exercise under their mandate for urban planning. These local government stakeholders will include female representatives. This is an innovation because it is unusual in Laos for such initiatives to make specific provisions to include women.

The project comprises three components:

### **Component 1. Developing plans and capacity building**

Capacity built at District, Provincial and National level to plan for climate-resilient, socially inclusive infrastructure development and to maintain and manage infrastructure.

Develop two town level master plans which integrate climate change adaptation into infrastructure, spatial planning and land-use management in and beyond the project area.

The following activities will be included in Component 1:

- Developing two town level master plans integrating climate resilience building into land-use, water management and infrastructure. These masterplans will include specific provisions for the development and climate change adaptation needs of women.
- Developing a project tool specifically for use in urbanising areas (with guidelines for assessment and planning, resilient infrastructure, technical standards, environmental and social safeguards and community participatory planning tools.) This will be partly based on the first Adaptation Fund project in Laos, but with greater focus on rapidly growing urban areas.
- Training at the Provincial and district level on building climate resilience by developing action plans and utilising Vulnerability Assessments, using tailored guidelines.

## Revised Annex 4 to OPG Amended in October 2016

- Developing guidelines for land-use planning and planning, constructing, operating and maintaining climate and disaster resilient infrastructure systems which are appropriate for growing towns.
- Providing a national stakeholder workshop on resilience building in urbanising areas.
- Providing a national training of trainers' workshop. At least a third of the trainers to be trained should be women.
- Providing district level workshops for roll out of the project, to prepare district level stakeholders for the implementation of the project (including hard activities under Component 2 and the Environmental and Social Management Plan.)
- Community-level workshops to raise awareness and mobilise support and ownership of the vulnerability assessment and planning process, including decision making and prioritising interventions. There will also be at least 1 provincial/district level training.

While the increase in extreme weather such as floods and tropical storms is visible to people already, long term changes in rainfall and increases in temperature are not so obvious in all districts.

The basic vulnerability assessment data gathered so far in the development of this proposal (and which will be elaborated further when the full proposal is developed) will inform the town-level master plans and will be used as a basis for training government officials at the sub-national level. This will contribute to building their capacity to incorporate current and future climate information into sub-national infrastructure and urban planning.

Capacity building will ensure that all stakeholders gain an understanding of the short term and long-term needs associated with climate change threats and that they are able to plan for the severest potential scenarios and prioritise adaptive actions including land-use planning, and the provision of basic services infrastructure. Community members will be mobilised to work alongside the local authorities in building resilience, thereby strengthening the partnership between local authorities and their communities.

In line with Adaptation Fund Outcome 3 and ongoing priorities under Lao PDR planning (See Section D), Component 1 will increase understanding and ownership of the climate change adaptation process in local government (district and town level) and communities, with a view to strengthening capacity in infrastructure planning, construction and maintenance as well as land use.

Building capacity in climate-resilient infrastructure development and maintenance will involve a range of stakeholders, from local government authorities, especially the Department of Public Works and Transport, water utilities, and the Department of Planning and Investment to community members. The capacity building work will respect and strengthen the existing government agencies and structure. However, these agencies will increasingly work together under the project. The proposed hard infrastructure investments in Component 2 will also feature in the master plans, and the capacity building activities will ensure that the provincial and district government officials have the capacity to perform ongoing maintenance, as well as planning for additional actions to be implemented in the future to adapt to climate change.

Sustainability is critical to the infrastructure design. Water utilities will be particularly involved in the operation of the water treatment plants and piped water supply, which require a different approach from rural water supply infrastructure. To enhance the financial sustainability of the infrastructure, and to increase ownership, a pro-poor tariff will be levied on users. This tariff will be set in consultation with government partners and communities, including women and

indigenous people, but in UN-Habitat's experience such a tariff could be set as low as 2,500 kip per cubic metre. The project will develop comprehensive implementation guidelines that will be aimed specifically at emerging and small towns to take account of the particular issues which they encounter. They will cover not only the technical aspects of planning, constructing and maintaining infrastructure but also management and financial skills.

In all training and capacity building activities, women will be included as outlined in the Project Components and Finance table in Section 1 of this proposal. Future development and climate change adaptation that includes women and as well as marginalised people such as the numerous indigenous groups that live in the project's target area is critical. Women and indigenous groups have particular and unique vulnerabilities that require care and sensitivity in the way they are addressed.

## **Component 2: Physical infrastructure**

Socially inclusive infrastructure built in towns that protects people from climate change related impacts and provides continuous services despite current and anticipated future changes in the climate.

In line with AF outcomes 4, 5 and 6 and Lao PDR priorities (see policy section), this component will focus on providing access for 57,144 people to climate and disaster resilient water treatment plants and piped water supply services, in addition to protecting and/or enhancing local natural assets through effective land-use planning. Considerable consultation has taken place in the preparation of the concept note and full proposal; prioritisations have been made in each of the target towns. Component 2 will include:

- Ensuring the environmental and social management plan is in full compliance with the Environmental and Social and Gender Policy of the Adaptation Fund, by conducting awareness campaigns (sensitive to the needs and local language of indigenous people, and recognising that literacy rates are low for men and women in the target area, requiring a reduced dependence on communication materials in writing and increased use of oral communication), establishing the grievance and disclosure mechanism, and capacity building for project staff and those involved in maintenance and construction of infrastructure to be built under the project.
- Develop and construct a climate resilient water supply system that serves all 48,188 residents of Sayphouthong and 8,956 residents of Sethamouak Towns. 53.5% of beneficiaries across the two towns are women. This includes the following actions:
  - Build a water treatment plant in each town, capable of treating up to 3,600 cubic metres of water per day and associated river bank protection/stabilisation.
  - As part of the design, include pre-sedimentation, flocculation, sedimentation, rapid gravity filtration, a backwash tank and chlorination facilities, 200 m<sup>3</sup> clear water reservoir, detention ponds, plant office, workshop, store and a small water testing laboratory.
  - Construct the distribution network with up to 60 kilometres of pipelines
  - Construct a pumping station.
- Develop management systems for the new infrastructure:
  - Set up a district coordination unit to oversee and implement the construction of the project

- Establish a Nam Papa State Enterprise (NPSE)<sup>46</sup> in Sayphouthong and Sethamouak Towns (one in each town) to manage the completed infrastructure in each district. NPSE will oversee tariff setting, engineering and operation and maintenance (see [Part II Section E](#), National Technical Standards for an explanation of how this complies with the governance structure of water supply in Laos)
- Establish and build the capacity of village resilient water and sanitation groups to implement and monitor the project, each group should include equal representation from women. These groups will monitor use, conduct very basic repairs (such as preventing leaks) and report problems to NPSE.
- Undertake Environmental and Social Safeguarding measures, including holding specific consultations with women and indigenous people, including, where necessary, consultations in indigenous languages

Consultations conducted in the preparation of the concept note and full proposal revealed that water supply at the household level is a top priority for the target communities. There is no water treatment plant in either Sayphouthong or Phine Districts. A water treatment plant is the foundational step on which water supply and sanitation rely. It is therefore proposed to construct two water treatment plants, one in Sayphouthong and the second in Phine District, benefitting the residents of Sethamouak Town. In times of flooding and droughts, the continued functionality of water supply infrastructure plays a large role in public health as well as livelihood maintenance and so it makes a key contribution to climate change resilience. During droughts there is insufficient water to flush latrines, meaning they don't function properly and become unhygienic, while there is also inadequate water supply for people to meet their daily water needs.

The technical design of infrastructure will comply with all relevant national technical standards, as outlined in [Section II, Part E](#) and the Environmental and Social Policy of the Adaptation Fund, as discussed further in [Part II Section K](#) of this full proposal. A comprehensive risk analysis has been conducted and is presented in Annex 5 and summarised in Part II, Section K. Previous experience has built institutional knowledge within UN-Habitat regarding cost-effective infrastructure which is resilient to the weather and climate hazards experienced in Lao PDR. As much as possible, community members will be upskilled so that there is the expertise within the community to construct and maintain infrastructure. While construction work is typically a male dominated sector, local women will be given the opportunity to participate in the construction work.

A feasibility study for the proposed infrastructure in Sayphouthong Town has been included in this full proposal, and is presented in [Annex 3](#). A similar feasibility study for the smaller system (because it serves fewer people) in Sethamouak Town is presented in [Annex 4](#). A picture that gives the overview of the systems is included at the end of this section. In Sayphouthong Town, several additional climate change adaptation and environmental and social safeguard features have been incorporated into the infrastructure design. Water will be supplied from the Mekong River, which flows year-round, so water supply is guaranteed. The construction of the infrastructure in Sayphouthong will also include riverbank protection. This has three primary functions; as a safeguard measure to ensure that the infrastructure does not destabilise the riverbank, an adaptation measure to ensure that flood waters from the Mekong River do not damage the infrastructure, and a public space function so that people can benefit from urban

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<sup>46</sup> NPSEs are autonomous water utilities. See Section E, below, for a description of the role of NPSEs under Laos's legal and governance framework.

green/public space. The latter is especially important, considering the increasing propensity of the Mekong to floods during the rainy season (2018 has seen extensive flooding in areas close to the Mekong. Prior to this, floods also occurred in 2013 and 2011). The storage reservoir will also be elevated. This prevents flood waters from breaching the reservoir and affecting water quality. It also prevents illegal usage of water. The pumps used in the infrastructure will have a dual power source; primarily relying on solar power and only using electricity when solar power is not available.

Similarly, in Sethamouak Town the design includes a number of climate change adaptation and environmental and social safeguard features including a dual pumping system (solar as one option). The choice of water treatment technology for Sethamouak is dictated primarily by the raw water quality, operator's capacity and financial resources to ensure sustainability. Wet season turbidity of Sethamouak River is high, and is subjected to rapid fluctuations. Slow sand filtration system is considered for Sethamouak. Bank protection at in-take point to avoid possible damages. The risk of the check dam structure is offset by its low height, below the water level for 8-9 months per year, and by its openable weir, which allows water to flow through the system in the dry season, preventing upstream floods and any downstream loss of biodiversity, or water supply, while the bank protection will strengthen the embankments.

For both projects, these features can be seen in the figures, below.

### **Component 3: Advocacy, and Knowledge Management**

Knowledge and awareness enhanced from national to local levels, ensuring sustainability and leading to policy changes at the national level

Knowledge management will ensure that the project implementation is fully transparent, and all stakeholders are informed of outputs and results and have access to these for replication. This component will include:

- Capturing and disseminating lessons learned and best practices both within the target area and further afield, to national level. This activity targets national level policy makers and other stakeholders by providing them with evidence of 'what works', thus influencing future policy direction and guidance materials for replication.
- Advocacy carried out at the national level in partnership with other stakeholders working on local level climate change adaptation. This also targets national policy makers in the climate sphere, with a view to influencing the future direction of climate policy, as Laos continues its participation in the UNFCCC process.
- Building capacity in government authorities and other relevant stakeholders such as water utilities for monitoring, evaluation and learning, with oversight and final evaluations completed by UN-Habitat. This primarily targets government stakeholders at the subnational level. Female government staff will be included as targets for advocacy and sharing knowledge in this activity.
- Establish a database/management platform in conjunction with MoNRE to improve information on climate-related projects throughout Lao PDR. This database will include information about projects that have specific adaptation components, outputs or activities for women.

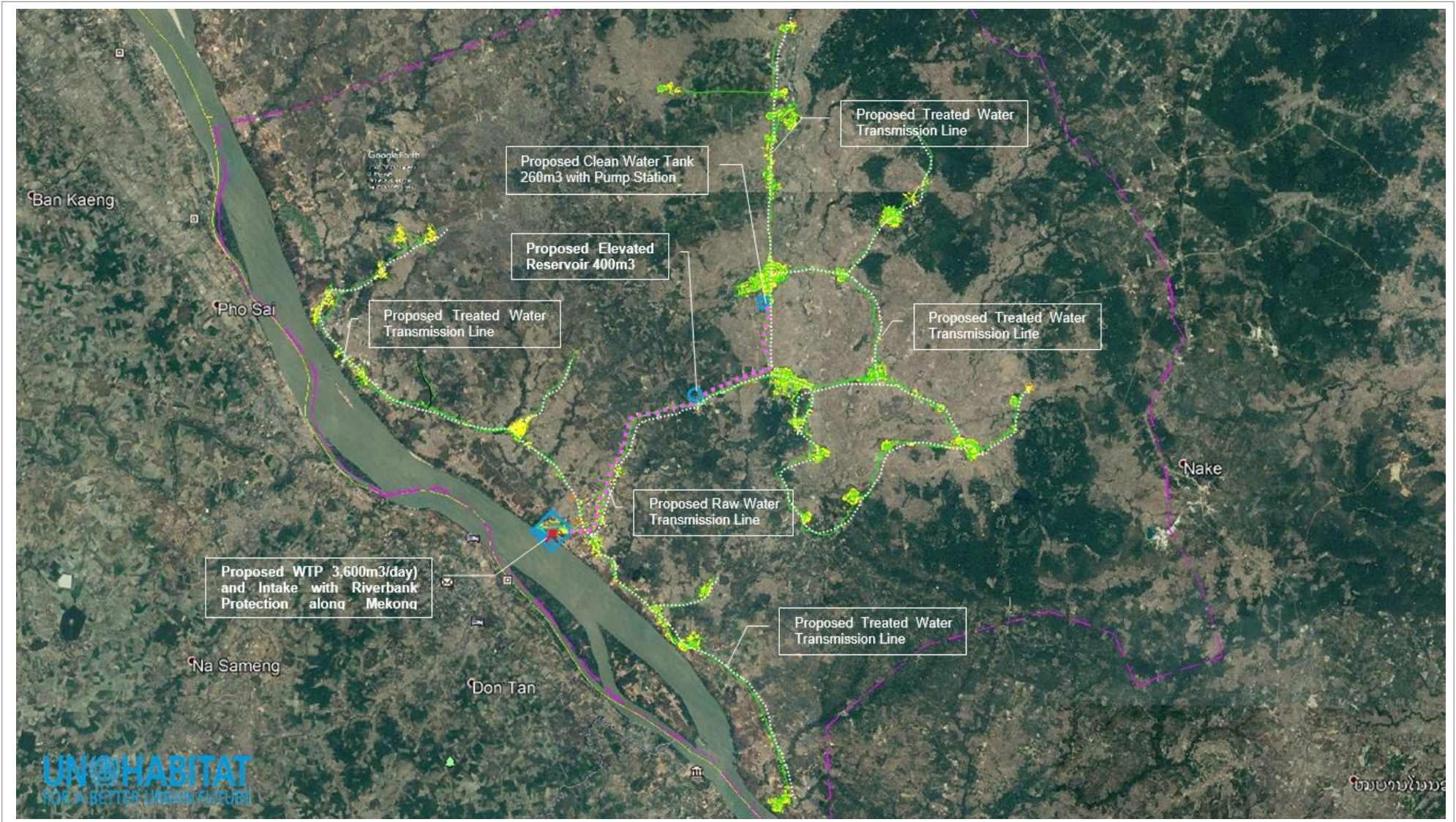
The capacity of government at all levels will be increased through training workshops and learning by doing. The project will add to the institutional knowledge of government authorities

and other relevant stakeholders concerning climate resilience at the level of small and emerging towns. Stakeholders will also gain knowledge and experience in monitoring and evaluation. This is an area in which the government has acknowledged weaknesses at all levels of government with regard to sector-level monitoring and evaluation of the National Socioeconomic Development Plan<sup>47</sup>. There is an increasing realisation of the importance of monitoring.

To further ensure that climate action knowledge is not lost, a national level platform will be developed as a repository for learning on both climate change adaptation and mitigation. The lessons from this project will be uploaded to the platform and will be accessible to all relevant stakeholders.

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<sup>47</sup> 8<sup>th</sup> National Socioeconomic Development Plan



Proposed climate resilient water supply system with capacity of 3,600m<sup>3</sup>/day in Sayphouthong Town. Further technical details in [Annex 3](#)





Proposed climate resilient water supply system with capacity of 1,200m<sup>3</sup>/day in Sethamouak Town. Further technical details in [Annex 4](#)

## **B. Economic, social and environmental benefits**

The project will have a series of related economic, social and environmental benefits. Since the target towns are developing rapidly as part of the ongoing East-west Economic Corridor development, interventions are critical now to ensure that climate change resilience is integrated into the towns' development. This will lead to multiple long-term benefits through the avoidance or lessening of impacts of climate change and extreme weather events. Capacity building in local authorities along the economic corridor will mean that the benefits are experienced in a wider area than the two towns in which the physical infrastructure will be constructed.

The key issue to be addressed by the project is the inaccessibility of clean water, especially during the dry season (due to a lack of water availability) and the rainy season (due to water quality). Neither of the target settlements has a piped water supply system and extreme weather events such as floods, landslides and droughts often render alternative water sources useless. Water infrastructure is a critical area in building resilience, both in terms of health and livelihoods. Past experience in Lao PDR has shown that a reliable safe water supply not only makes people more resilient to climate change, it also enables people to start-up businesses such as guesthouses, restaurants, ice-making factories, gas stations, laundries, car washes, concrete factories and a PVC pipe factory<sup>48</sup>, providing economic and social benefits to them. This in turn encourages more migrants to the area and a flow on effect in terms of economic activity.

The system constructed by the project will provide continuity of water supply, will result in economic and social benefits for everyone across the two towns. However, women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, which for some means walking long distances, are the primary users of water in the home, and the primary givers when people become sick with water-borne diseases.

The tools used and processes followed in implementing the project are designed to ensure that project benefits are shared by all members of communities. For example, the project will ensure that all groups are represented in consultations and decision making. This includes women and people from minority ethnic groups, many of whom do not traditionally have a major role in decision making. The inclusive nature of the consultations will ensure that the design of infrastructure meets the requirements of all groups. All financial aspects will be designed according to pro-poor principles to ensure that no people miss out on benefits through unaffordability.

The project will follow environmental safeguards in the design of water supply systems to ensure the sustainability of the source as well as the system. In addition, sanitation, wastewater and solid waste disposal systems will have an advantageous effect on local environments.

Table 6, below, provides more detail on the demographic breakdown of the settlements within the two towns.

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<sup>48</sup> Interviews carried out for the evaluation or sustainability check of UN-Habitat's MEK-WATSAN project revealed that the establishment of new businesses such as these was a common phenomenon.

**Table 6 - Population Breakdown within the Target Settlements**

<b>Sayphouthong Village cluster</b>	<b>2017 Pop'n.</b>	<b>Women</b>	<b>Men</b>	<b>No. HH</b>	<b>Persons/ HH</b>	<b>M/F Ratio</b>
Thadan	5,044	2,627	2,417	1,029	4.9	0.92
Thapo	5,573	2,980	2,593	1,102	5.2	0.87
Phoumachady	4,766	2,549	2,217	934	5.3	0.87
Mouangkay	6,796	3,634	3,162	1,296	5.3	0.87
Namphou	8,137	4,351	3,786	1,440	3.7	0.87
Nakham	7,259	3,882	3,377	1,114	4.2	0.87
Nabo	5,474	2,927	2,547	989	3.8	0.87
Vuenkheoun	5,139	2,748	2,391	1,004	3.4	0.87
<b>TOTAL</b>	<b>48,188</b>	<b>25,699</b>	<b>22,489</b>	<b>8,908</b>	<b>4.5</b>	<b>0.88</b>

**Table 7 - Population Breakdown within the Target Settlements**

<b>Sethamuok Village cluster</b>	<b>2018 Pop'n.</b>	<b>Women</b>	<b>Men</b>	<b>No. HH</b>	<b>Persons/ HH</b>	<b>M/F Ratio</b>
Oudomxay	1,201	656	545	260	4.6	0.83
Xesavang	1,447	766	681	236	6.1	0.89
Xanamixay	882	493	389	118	7.5	0.79
Xaisomboun	1,444	783	663	227	6.4	0.85
Sibounheuang	2,028	1,102	926	338	6.0	0.84
Palek	490	265	225	94	5.2	0.85
Nonxay	1,464	800	664	260	5.6	0.83
<b>TOTAL</b>	<b>8,956</b>	<b>4,868</b>	<b>4,088</b>	<b>1,533</b>	<b>5.9</b>	<b>0.84</b>

**Table 8: Town level economic, social and environmental benefits of AF interventions compared to baseline.**

Type of benefits	Baseline	With/after the project
Economic benefits	<p>Regular floods, droughts and landslides result in livelihood and economic and household losses.</p> <p>Regular droughts and floods challenge access to safe water and cause disease outbreaks. In the dry season, women often need to walk to rivers or other distant sources to collect water. During floods, open defecation practices lead to disease outbreaks, which decreases productivity. Mosquitoes also breed in and around stagnant, standing water, further damaging public health.</p> <p>Limited education and (especially in Phine District) low literacy levels means people have few specialist skills beyond subsistence agriculture and basic manual labour</p>	<p>New infrastructure in the form of water supply and treatment systems will improve public health, continuity of water supply, and therefore provide increased economic opportunities in the form of services (such as guesthouses and restaurants), agriculture, and small-scale industry, which in-turn will reduce poverty.</p> <p>Increased productivity and production and reduced health care costs benefits through improved access to safe water sources, increased hygiene and reduction of waterborne diseases.</p> <p>Increased resilience of natural livelihood capital, such as land and water, will improve the coping mechanisms of the most vulnerable people in the target area and reduce human and material losses during extreme weather events.</p> <p>Cotnined functionality of water supply and sanitation infrastructure, despite regular hazards like droughts, floods and storms, and their increasing frequency and intensity as a result of climate change means that people's incomes are less likely to be disrupted, and that household savings won't need to be invested in small scale repairs to water and santitation facilities (beyond small regular contributions to the improved infrastructure).</p>
Social benefits	<p>Lacking knowledge about climate related risks (e.g. floods, landslides, health) and resilient construction methods result in limited autonomous adaptation measures.</p> <p>Women, elderly, disabled people and ethnic groups are especially vulnerable to climate change because of dependence on climate related services (e.g. water and food), diseases, limited access to health care and information and remoteness</p> <p>Natural resources are not used and managed in a sustainable way.</p>	<p>Health benefits through improved access to safe water sources, resilient sanitation facilitations, reduction of waterborne diseases and improved hygiene standards.</p> <p>Adaptation benefits of the new infrastructure are shared equitably among women, youth, the elderly, the disabled and indigenous people. Women particularly benefit because as they are primarily responsible for providing care, which will be facilitated by having year-round access to clean water, and they will have to spend less time and money sourcing water.</p> <p>People in the two target towns are more aware of the risks of climate change impacts and the benefits of resilient infrastructure and have increased capacity to take autonomous adaptation actions.</p> <p>A planning approach sensitive to marginalized and vulnerable groups, indigenous peoples and gender will ensure sustainable access to resilient infrastructure that is ultimately replicated beyond the target area of the proposed project.</p>
Environmental		The development of environmentally sensitive and

benefits		<p>resilient land use, water resources, infrastructure and community plans will increase the sustainable use of natural resources and improve ecosystem resilience.</p> <p>The capacity development and planning process described earlier will ensure that the infrastructure provided by the project will be resilient to climate change. The ESMP will further ensure the application of resilient technologies.</p>
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### C. Cost effectiveness

This project will continue in the tradition of cost-effective project implementation that UN-Habitat has built in Lao PDR. Lessons learned from previous project implementation – especially the ongoing Enhancing the Climate and Disaster and Climate Resilience of the most Vulnerable Settlements project, funded by the Adaptation Fund will be incorporated into the project along with principles from UN-Habitat’s tools such as the People’s Process and Planning for Climate Change.

#### **Synergy with partners and communities**

A key feature of UN-Habitat’s working modality is the partnership with government agencies and sector stakeholders such as the Department of Public Works, Transport, and Water Supply and water utilities (known in Laos as ‘Nampapas’). For this proposed project, all the land for the water intakes, elevated water towers, pump houses and substations will be government land contributed to the project.

UN-Habitat will ensure that the project employs local engineers who are working with the government institutions such as provincial Departments of Public Works, Transport, and Water Supply. Working with local engineers significantly reduces the cost of projects since there is a need for far fewer international/national consultants. Partnering with local agencies produces effective working relationships that have outlasted specific projects and has enabled a synergy in terms of planning and investment. Thus, there has been significant cash support from sector budgets through the alignment of plans and budgets. In addition, working with local agencies and building their capacity leads to a longer-term cost effectiveness in management and the operation and maintenance of infrastructure systems.

#### **Community contribution**

As well as working with partner agencies, UN-Habitat works closely with communities, including through the People’s Process. Past experience has shown that the community can contribute in certain ways to construction, management and maintenance of infrastructure. This includes activities such as laying of pipes for household connections, which will save costs and enhance ownership. Their involvement not only contributes to the sustainability of the project because they are so involved during the construction period, but it also reduces project costs. This is due to community contributions, often in the form of labour. Community members contribute to tasks such as digging trenches, laying pipes and general labour with all protective gear and training provided by the project. While there are many people willing to contribute unskilled labour, certain community members are trained and contracted to provide more skilled services. This will be the case for Component 2 of the project, involving the construction and maintenance of infrastructure.

#### **Technical Know-how**

UN-Habitat has the technical know-how to be able to guide the process with in-house expertise, which it will use to pass on to and guide the executing partner. This means there is not a dependence on expensive international consultants to carry out technical aspects of the project. Of particular relevance to this proposed project is the Laos office's experience in designing climate and disaster resilient physical infrastructure which is suited to Lao conditions. All designs will thus be done in-house, by a joint team comprising UN-Habitat and its executing partner. This also ensures that the executing partner retains, improves capacity, and is more effective in capacity building than hiring external consultants, whose knowledge is often not passed on or retained in-country in the longer term.

### **Selection of cost-effective investments**

While the two primary infrastructure investments proposed by this project have a high initial financial cost, they are cost effective because they will benefit a large number of people. The total number of beneficiaries of the investments is 57,144 people, of whom 53.5% are women. That means that the cost per beneficiary of the investments is US\$72. Furthermore, the maintenance costs are relatively low at US\$5,000 per year per town. While the proposal does not complete a full cost benefit analysis at this stage, the expected benefits, in terms of public health and sustainable economic growth are likely to make the investment cost effective. Furthermore, the timing is cost effective, as the two towns are growing rapidly, and investment now will be significantly lower cost than future attempts to retrospectively design and build infrastructure.

### **Cost-effective implementation**

The People's Process implementation method has been shown to be highly cost-effective, reducing costs through community contributions and through the procurement of local materials wherever possible. UN-Habitat's past water supply systems in Lao PDR have been implemented at a cost which is 40-50% cheaper than the typical cost of a system implemented by an International Financial Institution. An example of cost-effectiveness in Lao PDR is UN-Habitat's MEK-WATSAN programme, which was demonstrated by an external evaluator to have been implemented very cost-effectively. The ongoing Enhancing the climate and disaster resilience of the most vulnerable emerging human settlements project in Laos, funded by the Adaptation Fund, is also using a 'People's Process' model to enhance cost effective delivery across 189 villages in three nearby provinces, and the implementation of the proposed project can learn from this and enhance its cost-effective approach.

### **Cost-effectiveness due to technical considerations**

There is a price to be paid for resilience and resilient forms of infrastructure come at a higher price than non-resilient forms. However, resilient infrastructure is predicted to be in use for at least twice the length of time as non-resilient infrastructure, since it will remain useable after storms, floods and droughts.

### **Contribution to productivity**

The lack of basic services infrastructure has a cost to the Lao economy. A 2009 study found the annual cost of poor sanitation and hygiene alone to be equivalent to 5.6% of GDP<sup>49</sup>. Even without damage and loss from storms, floods, landslides and droughts, there is an economic cost from the lack of water and sanitation facilities in the form of healthcare costs to treat conditions such as diarrhoea, dengue, skin infections and other water-borne

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<sup>49</sup> Economic Impacts of Sanitation in Lao PDR, Research Report May 2009, Water and Sanitation Program, World Bank.

diseases. There is also a cost due to lesser productivity because of more time spent collecting water, and more sick days taken. When the loss is multiplied in times of extreme weather events, and non-resilient infrastructure is damaged or destroyed, there is a high cost to pay. By providing resilient water and sanitation infrastructure, as proposed in the preliminary consultations, the project will eliminate these costs, thereby lifting productivity. The boost to productivity by expected new businesses opened because of the project will further boost the economy.

**Table 9: Cost effectiveness analysis of adaptation options proposed through Rapid Vulnerability Assessments**

Proposed Action	Cost effectiveness criteria		Alternative action	Cost effectiveness criteria	
Developing two town level master plans integrating climate resilience building into land-use, water management and infrastructure.	Future cost of climate change	✓	Land-use Planning without Integrating Disaster Risk Management	Future cost of climate change	✗
	Project efficiency	✓		Project efficiency	✗
	Community involvement	✓		Community involvement	✗
	Cost/Feasibility	✓		Cost/feasibility	✗
	Environmental and social safeguarding risks	✓		Environmental and social safeguarding risks	More risk
Training at the Provincial and district level on building climate resilience by conducting and utilising Vulnerability Assessments and action plans, using tailored guidelines	Future cost of climate change	✓	Conducting training or planning without considering future climate change and climate vulnerability	Future cost of climate change	✗
	Project efficiency	✓		Project efficiency	✓
	Community involvement	✓		Community involvement	✗
	Cost/feasibility	✓		Cost/feasibility	✗
	Environmental and Social Safeguard Risks	✓		Environmental and social safeguard risks	✓
Develop and construct a water climate resilient water supply system that serves all 48,188 residents of Sayphouthong and 8,956 residents of Sethamouak Towns	Future cost of climate change	✓	Extending existing systems by digging more boreholes and wells	Future Cost of Climate Change	✗
	Project efficiency	✓		Project efficiency	✗
	Community involvement	✓		Community involvement	✓
	Cost/feasibility	✓		Cost/feasibility	✓
	Environmental and social safeguarding risks	Less risk		Environmental and social safeguarding risks	More risk

	Environmental and social safeguarding risks	Less risk			
Water source management Integrating with water conservation demand management (WCDM)	Future cost of climate change	✓	Alternative livelihoods	Future cost of climate change	✗
	Project efficiency	✓		Project efficiency	✗
	Community involvement	✓		Community involvement	✓
	Cost/feasibility	✓		Cost/feasibility	✗
	Environmental and social safeguarding risks	Less risk		Environmental and social safeguarding risks	Less risk
Establishing Nam Papa State Enterprises in Sayphouthong and Sethamouak Towns to operate and maintain the infrastructure and providing training on the basic maintenance, in accordance with the Environmental, Social and Gender Management Plan	Future cost of climate change	✓	Relying on existing government structures to manage the infrastructure in the absence of an Environmental, Social and Gender Plan	Future cost of climate change	✗
	Project efficiency	✓		Project efficiency	✗
	Community involvement	✓		Community involvement	✗
	Cost/feasibility	✓		Cost/feasibility	✗
	Environmental and social safeguarding risks	Less risk		Environmental and social safeguarding risks	More risk

#### D. Consistency with national or sub-national sustainable development strategies

National and sub-national sustainable development strategies have been considered in the formulation of this project.

The pivotal development plan in Lao PDR is the 8<sup>th</sup> National Socio-economic Development Plan which covers the period 2016 – 2020. A long-term goal which is included in the 8<sup>th</sup> NSEDP is the graduation from Least Developed Country status by 2020. The plan has an emphasis on continued economic growth with harmonisation between economic development, socio-cultural development and environmental protection.

Lao PDR's First National Communication was completed in 2000. This was followed by the National Adaptation Plan of Action (NAPA) in 2009, the Second National Communication in 2013, the National Climate Change Action Plan 2013-2020 in 2013 and the Intended Nationally Determined Contribution (INDC) in 2015 (since ratified). In 2010, the National Strategy on Climate Change (NSCC) was approved. The strategy identified seven priority



areas for adaptation and mitigation of which the two most relevant to this project are urban development and public health. The priority areas in the INDC were reduced to five in number, these being agriculture, forestry & land use, water resources, transport & urban development and public health. The focus in the transport and urban development sector was to be increasing the resilience of urban development and infrastructure to climate change. The NDC identifies two focus areas for the public health sector, the first of which is increasing the resilience of public health infrastructure and water supply systems to climate change. The foci of both these sectors are directly relevant to the proposed project with its plan to provide resilient infrastructure, including water supply infrastructure. Table 10 shows national climate change and disaster management priorities, with those most relevant to this project in red.

The proposal does not assess alignment with Lao PDR's forthcoming National Adaptation Plan. At present, consultations are underway around the formulation of NAP. UN-Habitat is in regular dialogue with both the Ministry of Natural Resources and the Environment and the UN Environment, which is supporting the development of NAP in Laos. At this stage it is too early to conclude what the priority actions will be. However, as NAP is developed the project will proactively seek to align with its focus and priorities, if it begins while NAP is being formulated, influence its direction to include rapidly developing urban areas and resilient infrastructure.

The project is in alignment with provincial and district 5-year socio-economic development plans. These are due to be updated in 2019. This means that the proposed project will be able to provide input on climate change priorities in the updated plans.

For further information on how the proposed project interventions align with water supply policies and tariff regulations, please see below in Part II, Section E.

**Table 10: National socio-economic, climate change and disaster management priorities.**

Measure	8 <sup>th</sup> Five Year National Socio-economic Plan	National Strategy on Climate Change	Climate change action plan 2013-2020	National Adaptation Programme of	Nationally Determined Contribution	National Disaster Management Plan
Developing two town level master plans integrating climate resilience building into land-use, water management and infrastructure.	X	X	X	X	X	
Training at the Provincial and district level on building climate resilience by conducting and utilising Vulnerability Assessments and action plans, using tailored guidelines	X		X	X	X	X
Develop and construct a water climate resilient water supply system that serves all 48,188 residents of Sayphouthong and 8,956 residents of Sethamouak Towns	X	X	X	X	X	X
Establishing Nam Papa State Enterprises in Sayphouthong and Sethamouak Towns to operate and maintain the infrastructure and providing training on the basic maintenance, in accordance with the Environmental, Social and Gender Management Plan	X	X			X	

**E. Compliance with relevant national technical standards while maintaining compliance with the Environmental and Social Policy of the ESP**

Compliance will be ensured with all national technical standards as well as UN-Habitat and Adaptation Fund Environmental and Social, and Gender Policy requirements.

**Table 11: Compliance with relevant national technical standards and tools**

Expected Output or intervention	Relevant rules, regulations, standards and procedures	Compliance, procedure and authorities involved	Screening against AF ESP Principles
<p><b>Output 1.1.1.</b> Training provided to district, provincial and national government staff on resilient infrastructure design</p>	<p>Lao PDR Urban Planning Law. No.: 03-99/NA, dated 1999</p>	<p>The project will train government officials on climate change mainstreamed urban planning in compliance with the Urban Planning Law, which is overseen by the Ministry of Public Works and Transport, the proposed executing partner of this project.</p>	<p>All principles will be considered when providing training. In conducting consultations under Output 1.3.1, principles 2, 3, 4, 5, 7, 8, 9 and 14 will be of particular importance, as these are the most likely to be affected by investment projects. All trainees will complete a component of training on the Environmental, Social and Gender Plan of the project.</p>
<p><b>Output 1.2.1.</b> Training provided to district, provincial and national government staff on climate action mainstreamed urban planning.</p>	<p>8th National 5-year socio-economic development plan.</p>	<p>In this component, the project will work closely with, and train representatives from, the Provincial Department of the Land Management Authority, under the Ministry of Natural Resources and Environment, as this is the government body responsible for land use planning.</p>	<p>All trainees will complete a component of training on the Environmental, Social and Gender Plan of the project.</p>
<p><b>Output 1.3.1.</b> Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the project area</p>	<p>Provincial and district socio-economic development plans (which are in line with the 8th National 5-year socio-economic development plan);</p>	<p>The proposed planning will also align to the the government's 'Samsang' (or '3-build') process, particularly district and provincial development plans, in conjunction with the Department of Planning and Investment.</p>	<p>Output 2 will trigger safeguarding actions under the following principles: Principle 2, 3, 5, 6, 7, 9, 10, 12, 13, 14 and 15.</p>
<p><b>Output 2.1.1.</b> New resilient assets constructed in response to climate change impacts, including variability</p>	<p>Lao PDR Water and Resource Law. No.: 02-99/NA, dated 1996. The Water and Water Resources Law was updated and approved by the National Assembly in 2017.</p>	<p>In addition, the project will also use Participatory Land Use Planning (PLUP) principles, as well as context specific means to consult with people in the target areas, considering the high number of indigenous people.</p>	<p>Output 2 will trigger safeguarding actions under the following principles: Principle 2, 3, 5, 6, 7, 9, 10, 12, 13, 14 and 15. Further information is provided in the Environmental, Social, Gender and Youth Plan.</p>
<p><b>Output 2.1.1.</b> New resilient assets constructed in response to climate change impacts, including variability</p>	<p>Lao PDR Hygiene Law. No.: 08/NA, dated 2004</p>	<p>The project will supply water in compliance with the water supply law, the Hygiene Law, the National Standard on Quality management for drinking water and household water supply and MDG/SDG technical standards for water supply. Water supply is overseen by the executing partner of the project – the Water Supply Department of the Ministry of Public Works and Transport.</p>	<p>Output 2 will trigger safeguarding actions under the following principles: Principle 2, 3, 5, 6, 7, 9, 10, 12, 13, 14 and 15. Further information is provided in the Environmental, Social, Gender and Youth Plan.</p>
<p><b>Output 2.1.1.</b> New resilient assets constructed in response to climate change impacts, including variability</p>	<p>Lao PDR Water Supply Law. Law No.: 04/NA, dated 2009 (See further explanation of this in the text below the table)</p>	<p>The project will supply water in compliance with the water supply law, the Hygiene Law, the National Standard on Quality management for drinking water and household water supply and MDG/SDG technical standards for water supply. Water supply is overseen by the executing partner of the project – the Water Supply Department of the Ministry of Public Works and Transport.</p>	<p>Output 2 will trigger safeguarding actions under the following principles: Principle 2, 3, 5, 6, 7, 9, 10, 12, 13, 14 and 15. Further information is provided in the Environmental, Social, Gender and Youth Plan.</p>
<p><b>Output 2.1.1.</b> New resilient assets constructed in response to climate change impacts, including variability</p>	<p>National Standard on Quality management for drinking water and household water supply. Decision No. 1371/MoH, dated 2005</p>	<p>The project will supply water in compliance with the water supply law, the Hygiene Law, the National Standard on Quality management for drinking water and household water supply and MDG/SDG technical standards for water supply. Water supply is overseen by the executing partner of the project – the Water Supply Department of the Ministry of Public Works and Transport.</p>	<p>Output 2 will trigger safeguarding actions under the following principles: Principle 2, 3, 5, 6, 7, 9, 10, 12, 13, 14 and 15. Further information is provided in the Environmental, Social, Gender and Youth Plan.</p>
<p><b>Output 2.1.1.</b> New resilient assets constructed in response to climate change impacts, including variability</p>	<p>Lao PDR Construction Law. No.: 159/LPDR, dated 2009</p>	<p>The project will also ensure that its implementation is in-line with the Construction Law, Building Codes and</p>	<p>Output 2 will trigger safeguarding actions under the following principles: Principle 2, 3, 5, 6, 7, 9, 10, 12, 13, 14 and 15. Further information is provided in the Environmental, Social, Gender and Youth Plan.</p>

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<p><b>Output 3.1.1.</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure</p>	<p>The Lao National Unexploded Ordnance Programme, which follows IMAS – International Mine Action Standards, under the National Regulatory Authority (NRA) for the UXO/Mine Action and UXO Lao, which adopted SOPs – Standard Operating Procedures</p> <p>Lao PDR Initial Environmental Examination (IEE) and Environmental and Social Impact Assessment (ESIA): Article 21 of the Law on Environmental Protection (Amended) No. 29/NA, dated 18 December 2012; and the Government Decree on the Establishment and Function of the Ministry of Natural Resources and Environment No. 435/PM, dated 28 November 2011.</p> <p>Government Decree on Environmental Impact Assessment No. 112/PM, dated 16 February 2010.</p> <p>The Instruction on Initial Environmental Examination (IEE) of the Investment Projects and Activities No.8029/MONRE dated 17 December 2013, and Instruction on Environment and Social Impact Assessment of the Investment Projects and Activities No.8030/MONRE dated 17 December 2013.</p> <p>There are no laws governing these activities, <i>per se</i>. However, these activities will be in-line with updated climate change policy as it is developed. This could be NDC monitoring, the National Adaptation Plan (under formulation) or a potential third national communication</p>	<p>Building Control, the oversight for which is provided by Ministry of Public Works and Transport.</p> <p>Because the project also works in an area with risk from Unexploded Ordnance, UN-Habitat will work with UXO Lao and the National Regulatory Authority for UXO, to ascertain whether there is a risk from UXOs in the target villages. If necessary, UN-Habitat will survey the target areas and clear the risk areas.</p> <p>The project has been submitted to MoNRE for further consideration of the measures required. Under the IEE, Investment Projects and Activities that are anticipated to cause insignificant or minimal environmental and social impacts are required to conduct an Initial Environmental Examination (category: Group 1 as per the ESIA). An Environmental and Social Impact assessment is only required for projects that are anticipated to cause significant or major environmental and social Impacts (category: Group 2 as per the ESIA)</p>	<p>No environmental and social principles are expected to be triggered as a result of this action.</p>
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It should also be noted that the proposed system in Sayphouthong Town is of sufficient size that it is required to undergo an Initial Environmental Examination, according to the law, and as described above in Table 11. This examination was conducted in Lao Language (as required by the law and can be made available upon request). In summary, the IEE finds that the project's environmental impacts are insignificant, and meet the Adaptation Fund Environmental and Social Policy category **B: Medium risk.**) Therefore, the investment is deemed eligible for inclusion in the Project. No further environmental assessment is required beyond the detailed review of the ESMP during implementation of the infrastructure works.

The IEE for Sethamouak shows that the implementation of the Sethamouak subproject water treatment plan of capacity 1,200 m<sup>3</sup>/day with surface water source (river Sethamouak) will not cause any adverse permanent impacts on the environment during construction and operation in the short/medium/and long term. The minor impacts that are associated with construction and operation of the subproject's water supply system and sanitation facilities can be mitigated without difficulty through proper engineering design and incorporation or application of recommended mitigation measures and procedures at all stages in accordance with the Environmental Safeguards Management Plan (ESMP). There are no risks for human health expected during the construction and operational phases. The Sethamouak subproject's environmental impacts are insignificant, and meet the AF category B2 – Medium risk classification.

Water supply in Laos is governed by the Water Supply Law, 2009, and the Enterprise Law 2005. The former formalises several existing directives, described below, while the latter enshrines into law the system of Nam Papa State Enterprises that oversee water supply in urban areas, and that operate as autonomous provincial-level state owned companies. In effect, Nam Papas (NPSEs) are water utilities, responsible for water supply in urban areas. However, not all urban areas in Laos, including the two towns targeted by this proposal, have NPSEs yet. Establishing an NPSE is essential in effectively supplying and managing water in accordance with the law.

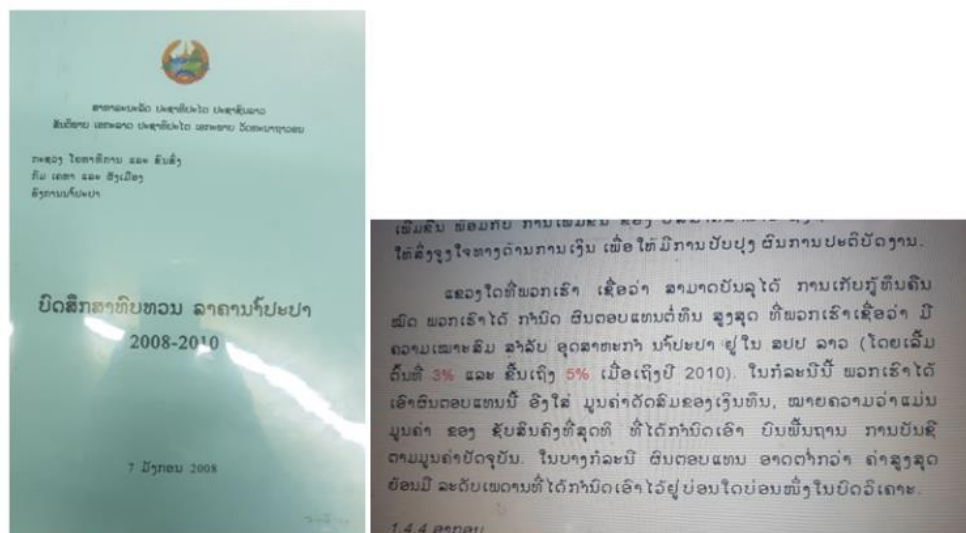
Among the previous directives formalised by the Water Supply Law 2009 is Prime Minister Decision No.37/PM on Management and Development of Water Supply and Wastewater Sector (1999), that targets providing 24-hour access to safe water for the 80% of urban population by 2020. This directive was complemented by a Sector Investment Plan (SIP), which was updated in 2004 to reflect the Government's increasing emphasis on equitable development by improving the small towns, particularly those in the poorest districts. The SIP 2004 covers the period 2005-2020 and supports the Government's policies of equitable development for all regions of the country, and poverty reduction through economic growth.

In 2017 the Department of Water Supply was established to set and re-confirm targets and directions for water supply and sanitation as follows; (i) 80% coverage of the urban population with piped water supply by 2020, climbing to 90% by 2030; (ii) promotion of public-private partnerships; (iii) improvement in the management of water supply enterprises so that they can become sustainable businesses with the capacity to sanitation services as well; (iv) effective technical and financial regulation of the water supply sector; and (v) improving the water quality and coverage of the rural population by 2020.

Water tariffs are governed by Ministerial Decision No. 5336/MPWT on Water Supply Tariff Policy, 2004. Under this decision, the Water Supply Regulatory Committee (WSRC) has a mandate to endorse the Tariff Determination Guidelines and Tariff Review prepared by Water Supply Regulatory Office (WASRO) under the Ministry of Public Works. However, any

recommended tariff must be approved by local government administration. In compliance with Prime Ministerial Decision No 37/PM, water tariffs should be set to generate sufficient revenue to meet the cost recovery for all water supply, but this tariff should be within the constraints of affordability and willingness to pay of consumers. To this end, tariffs should be set at no greater than 3% of average household income. UN-Habitat's research shows that water supply through Nam Papa (under the above rules) is a much lower cost option for households. When water supply is not available, households often buy bottled water which can be between 5-20 times more expensive than formal water supply (and quality is still not guaranteed). This means that formal, piped water, which will be provided by the project, will be a **lower cost** option for the beneficiary families, as well as guaranteeing year-round supply, irrespective of weather conditions and extreme events.

Please note that while the water law says that the water tariff should be set at 3% of average household income, updated guidance from the Department of Housing and Urban Planning, Ministry of Public Works, says that where necessary, to offset maintenance costs and depreciation, tariffs can be set at up to 5 per cent of household income<sup>50</sup> No English language reference is available, but a photograph of the Lao Language document is shown below.



However, the Ministerial Decision also states that no system shall have a tariff less than that required meeting all recurrent costs including operating and maintenance costs. Where necessary, tariffs should be set to generate surplus revenue in order to meet a proportion of depreciation or debt service and block tariffs are an option. In this regard, NPSEs supply water on a full cost recovery basis. A revenue generation model has been developed, which shows that the proposed district NPSEs can make a gross profit by supplying water to the households and charging the pro-poor tariff to households in need. This is presented in Part II, [Section J](#).

#### F. Duplication with other funding sources

The target towns for this project were selected in consultation with stakeholders. Key criteria included a high level of vulnerability and lack of infrastructure and basic services. The target sites don't have any similar activities being carried out by other development partners. UN-Habitat is in regular contact with the relatively small development partner community in Laos

<sup>50</sup> DHUP Policy Guidance, 2010

and will continue to liaise with other development partners to ensure that, if other activities are to take place in the target area, information-sharing and coordination can take place.

UN-Habitat will work with national and local government institutions who will provide in-kind contributions to the project. Alignment will be ensured between the project and other ongoing infrastructure developments in the target towns.

In terms of climate change, there are several other current projects in the country focussing on green and resilient cities, either at national level or in areas other than those targeted for this project. Lao PDR has received funding from the Green Climate Fund to strengthen the capacity of the National Designated Authority (MoNRE) and to develop a country programme. Ongoing consultations with MoNRE will ensure alignment of this project with the country programme. In another initiative, an Urban Low Emissions Development Strategy (Urban LEDS) will be developed in Lao PDR. This will deliver emissions reductions and adaptation co-benefits and is a programme of UN-Habitat and ICLEI Local Governments for Sustainability. In Oudomxay Province, the World Bank is supporting urban flood risk management, as well as more reliable hydro-meteorological services across the country. The Global Green Growth Institute (GGGI) is implementing a green city pilot study in Vientiane in collaboration with its Green Growth Planning & Implementation division. The project focuses on solid waste management in Vientiane. UN Environment has proposed a project on Ecosystems and Urban Adaptation in Vientiane and the secondary cities of Savannakhet and Luang Prabang to the Green Climate Fund. UN-Habitat is in communication with MoNRE to ensure harmonisation with all other projects.

**Table 12: Relevant major projects focused on governance and capacity building**

Implementing Agency	Project, Funding Amount and Donor (if known)	Timeline	Additional Information
ADB	Water Supply and Sanitation Sector <sup>51</sup>	2013 - 2022	
	Strengthening resilience to CC in health sector <sup>52</sup>	2015 - 2018	Complete project
World Bank	Mainstreaming disaster and climate risk management in investment decisions <sup>53</sup>	2011 - 2016	Complete project
	Building Resilience to Natural Hazards <sup>54</sup>	2013 - 2016	Complete project
UNDP	Effective Governance for Small Scale Rural Infrastructure and Disaster Preparedness in a Changing Climate, \$5.5m, GEF-LDCF	2013-2017	Complete project, worked in nearby Saravan and Sekong projects
	Building the Capacity of the Lao PDR Government to Advance the National Adaptation Planning Process, \$3.5m, GEF-LDCF	Expected to begin in 2018	Capacity building project – no hard component

<sup>51</sup> Link to project document: <http://www.adb.org/projects/45301-002/main>

<sup>52</sup> Link to project document: <http://www.adb.org/projects/47143-001/main>

<sup>53</sup> Link to project document: <http://www.worldbank.org/projects/P129182/lao-pdr-mainstreaming-disaster-climate-risk-management-investment-decisions?lang=en>

<sup>54</sup> Link to project document: <http://www.worldbank.org/projects/P144268?lang=en>

UN-Habitat	Water Governance Mekong Region Water and Sanitation Initiative (MEK-WATSAN) Water for Asian Cities (WAC)	2014 – 2017 2009 – 2017  2009 – 2017	Complete projects
UN-Habitat	Climate and Disaster Resilience in emerging human settlements project	2017 - 2021	Ongoing project funded by the Adaptation Fund in Attapeu, Sekong and Saravan Provinces
ICLEI	Urban LEDS II €6m (across 8 countries, of which Laos is 1)	2017-2021	Works in Savannakhet and Pakse cities, but not the target districts
UN-Environment	Building climate resilience of urban systems through Ecosystem-based Adaptation (EbA) in the Asia-Pacific region \$6 million (\$1.5 million in Laos), GEF	2018 – 2022	Working in Oudomxay and Phongsaly Provinces, in the north of Laos
UN-Environment	Urban Ecosystems-based Adaptation, Green Climate Fund	Unknown	This project is thought to be forthcoming. It does not work in the targeted towns of this proposal

## G. Learning and Knowledge Management

The capture of knowledge and dissemination of lessons learned is seen as a key component of the project in order to provide maximum value for the investment of time, funding and labour. This section outlines the proposed approach to disseminating knowledge and the key target groups.

UN-Habitat has built up substantial knowledge based on its long history of working in Laos, and especially on the Enhancing the climate and disaster resilience of the most vulnerable emerging human settlements project, funded by the Adaptation Fund. Based on this experience, UN-Habitat will be able to work with executing partners to build knowledge through adapting existing tools and methodologies, where possible. UN-Habitat's use of the People's Process means of implementation also build communities' knowledge of how to operate and maintain aspects of their infrastructure and develops new skills in terms of construction.

The project will build on the institutional linkages and knowledge management practices of the first Adaptation Fund project in Lao PDR, implemented by UN-Habitat. This will include, for example, utilising and refining the village-level vulnerability assessment infographics<sup>55</sup> developed to easily convey complex information at the town or settlement level and adapting and replicating guidelines produced for quick and effective use. The project will combine with the first Adaptation Fund project in Lao PDR to prepare a broader body of knowledge on climate change adaptation in rapidly growing towns, smaller towns and remote settlements.

At the national level, lessons learned will be made available in the form of tools and guidelines to provide support to other provinces in the building of resilient infrastructure in small and emerging towns. The tools and guidelines will initially be disseminated to relevant stakeholders such as line ministries at provincial and district levels, and ministries at national level, at workshops held as part of the project. The project resources will be available after the close of the project and it is expected that they will be shared at other fora involving relevant stakeholders.

<sup>55</sup> <http://www.lao-canvas.com/UNHInfographics/HTML/index.php>

There is a national database of water treatment plant designs suitable for towns of varying sizes and with different types of water source. This database was developed to support water utilities in selecting appropriate designs for particular towns, thereby reducing costs by lessening the need to employ external consultants. The project will contribute to the database by depositing the designs for the water treatment plants constructed for the project. This means that any water utility in Lao PDR can access the designs for use in their area.

UN-Habitat will take advantage of opportunities provided to share lessons learned from the project at the international level so that climate change adaptation may be supported in other vulnerable locations. A relevant platform is the Knowledge Centre on Cities and Climate Change which focuses on Climate Change and Human Settlements. This is an effective way of making lessons learned available to all. The UN-Habitat website will also share knowledge and lessons learned. UN-Habitat will use any other opportunity which presents itself to disseminate knowledge from the project, including sharing through networks and presenting at relevant workshops or conferences. In order to make knowledge accessible, the languages of resource materials in Lao PDR will be Lao. At the international level, the language used will be English. When working with indigenous communities, consultations will be held in the local, indigenous language, and in the Lao Language. It should be noted that many indigenous languages in Laos don't have a written tradition, so discussions must be held with these communities, with written documentation in Lao.

Working with indigenous communities whose native language does not have a written tradition and who do not speak the Lao language (or only have a basic grasp of Lao) presents challenges, and specific procedures are required to ensure fairness, due process and equal access and representation with these communities. Almost 50 per cent of the proposed beneficiaries of this project belong to indigenous groups, and we cannot assume that all the beneficiaries can speak, read and write the Lao Language.

The first step in consultation with indigenous people who don't speak Lao is the Village Chief. In Laos, the village is the most local level of administration (even urban areas are organised into villages, as shown above in Tables 6&7), and village chiefs in predominantly indigenous areas are usually fluent in both Lao and the indigenous language. In this case Village Chiefs can translate discussions to indigenous communities and also seek their opinions and inputs. Secondly, as beneficiaries in the proposed project are 'active' rather than 'passive' (in that they will participate in construction and basic maintenance), specific indigenous beneficiaries who are bilingual (in Lao and the ethnic language) will be identified to act as leaders who can both benefit from training and written material in the Lao Language and who can then disseminate this information orally to beneficiaries who speak only the indigenous language. If it is the case that they are unwilling or unable to act as translators, the project will hire translators to work with the communities. More broadly, the project will not depend solely on written communication with communities so as to not exclude indigenous groups who don't speak the Lao language and women, whose literacy rates are substantially lower than men.

It is important that the project works directly with the indigenous beneficiaries, in parallel with the village chiefs. While the Village Chiefs are the formal mechanism to represent **all** community members, there is a small risk that power structures may exist in the village that prevent people from airing grievances through the village chief. Therefore, identifying indigenous beneficiaries who will work directly with the project provides a complementary mechanism to ensure that the benefits of the project reach those at risk of marginalisation and that the risk of exclusion is greatly reduced. This approach will be used throughout the project, ensuring that the voices of



indigenous people and other potentially marginalised groups are heard at every stage of the project's implementation.

UN-Habitat has experience of a similar process in the ongoing Enhancing the climate and disaster resilience of the most vulnerable rural and emerging urban human settlements in Lao PDR project, also funded by the Adaptation Fund. In that project, there are 20 ethnic groups, most of which have their own language. In some areas of that project, literacy rates in the Lao language are as low as 50 per cent. That project is more logistically complex than this proposed project, because it covers 189 villages over a much larger and more remote area. That project used a more basic version of the consultation model described above; questions were posed to village chiefs and then a bi-lingual discussion was conducted where village chiefs translated questions into the indigenous language and feedback was sought in whichever language the villagers chose to speak in. This process led to the generation of 189 village level vulnerability assessments, which can be viewed in their provisional form, in English, [here](#).

In the proposed project, this approach will be augmented by working directly with the villagers. By having this parallel structure (working with village chiefs and directly with villagers), the project both respects the formal governance system in Lao PDR (where the village chief represents the people), while mitigating any risks that the Village Chief may exclude indigenous or marginalised people, or people with opposing views.

Expected Outputs	Learning Objectives (LO) and Indicators (I)	Knowledge Products
1.1.1 Training provided to district, provincial and national government staff on resilient infrastructure design. Female government staff must be represented	LO - 40 government staff (including 15 women) have the requisite knowledge to design climate resilient infrastructure  I – 40 government (including 15 women) staff have been trained	1 training manual/toolkit based on UN-Habitat's previous experience in Lao, refinement and enhancement of existing guidelines from the government of Lao PDR on designing climate resilient infrastructure
1.2.1 Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented	LO – 60 government staff, at elast 20 of whom female, can develop urban plans that mainstream climate change considerations and other critical considerations such as the adaptation needs of women and indigenous people  I – 60 staff (including 20 women) have been trained	1 training manual/toolkit based on UN-Habitat's previous experience in Lao, refinement and enhancement of existing guidelines from the government of Lao PDR and on how to identify specific local adaptation needs, as well as the needs of women, indigenous people and any other potentially mariginalised groups
1.3.1 Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the	LO – Government staff have finalised two master plans and have the required knowledge to undertake further planning processes in other areas	Concepts notes/'plans to plan' developed, outlining future masterplanning processes.

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<p>infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the project area. The master plans will include specific provisions for the development and climate change resilience of women.</p>	<p>I – Number of concepts/proposals prepared by government staff for replication elsewhere</p>	
<p>2.1.1 New resilient infrastructure constructed in response to climate change impacts, including variability</p>	<p>LO – Local engineers have greater capacity to plan and construct climate resilient infrastructure</p> <p>LO – Communities, including women and indigenous people, have increase knowledge and awareness on the management, monitoring and maintenance of climate resilient infrastructure</p> <p>I – Number of engineers with increased knowledge and capacity.</p> <p>I – Number of community members, disaggregated by sex, with increased capacity to monitor and perform basic maintenance.</p>	<p>Technical guides and brochures detailing design.</p> <p>Updates to the MPWT database of technical designs of water treatment facilities</p> <p>Information produced for communities, including material to support oral communication, on the operation, management and maintenance of infrastructure.</p>
<p>3.1.1 Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.</p>	<p>LO – National and local government stakeholders and communities have greater knowledge of climate change and successful adaptation practices</p> <p>I – Number of materials produced</p> <p>I – Estimated number of local community members reached, disaggregated by sex and indigenous group</p>	<p>Knowledge products on climate change adaptation, including brochures, news paper articles, features in broadcast media and ‘stories’ or other materials for use with indigenous and illiterate people</p>
<p>3.2.1 Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting</p>	<p>LO – National government stakeholders involved in formulation and revision of national climate policies receive</p>	<p>Briefings and technical papers designed for national policy makers</p>

<p>– influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure, including the provision of infrastructure in a way that benefits women</p>	<p>key messages from the project and have a greater understanding of the complex issues surrounding urban adaptation, as well as adaptation priorities in the project such as women and indigenous people.</p> <p>I – Number of specific materials produced</p> <p>I – Future iterations of climate policy, including revision and update of the NDC</p>	
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#### H. The Consultative Process

The consultations undertaken in the formulation of the concept note and full proposal for this project were built on the experience and relationships that UN-Habitat has built over 12 years implementing community-based interventions in Lao PDR. The interventions have focused on a range of issues including climate change, disaster response, renewable energy, land management and the decentralisation of basic services. UN-Habitat has also been involved in a supportive role with integrative urban planning and institution building for local authorities.

Through its ongoing work, UN-Habitat has developed effective working relationships with several ministries, including Public Works and Transport; Health, Planning and Investment, and Agriculture and Forestry; and Natural Resources and Environment, as well as with their respective departments in the provinces and districts in which UN-Habitat has implemented projects. UN-Habitat has built an extensive institutional knowledge of ongoing developments in basic services provision, climate change, disaster risk reduction and urban issue, and this institutional knowledge has informed this project. Similarly, informal conversations over an extended time period have contributed to the project plan.

In addition to government authorities, UN-Habitat has also worked closely with other multilateral and development partners, including sister UN organisations and non-governmental organisations. There have been several partnerships focusing on climate change issues and improving the resilience of communities through design and structural improvements to water and sanitation infrastructure, schools, health facilities and houses.

The specific consultations that took place in the formulation of the concept note and full proposal for this project were as follows:

- **7<sup>th</sup> to 10<sup>th</sup> of September 2017**, meetings at the national level with ministry officials focused primarily on alignment with national priorities, coordination with other development partner to avoiding duplication initiatives, the implementation modality and the target provinces, districts and communes;
- **9<sup>th</sup> to 14<sup>th</sup> of December 2017**, the mission visited all eight potential towns and met with the local authority in each town to carry out a rapid vulnerability assessment to determine the two priority towns;
- **15<sup>th</sup> to 19<sup>th</sup> of July 2018**, further in consultation with the local authority, and stakeholders in both proposed towns (Sayphouthong and Sethamouak) to develop

**Feasibility Studies** (presented in [Annexes 3 & 4](#)) and the environmental and social safeguards screening and management plan and met with the following people/organisations in each town:

- District Governor or Deputy District Governor in both districts
- District chief cabinet in both districts
- District Public Works and Transport office in both districts
- District Natural Resource and Environment office in both districts
- District Planning and Investment office in both districts
- District Public Health office in both districts
- District Education office in both districts
- Village chiefs
- Lao Women's Union at the Provincial level
- Lao Youth Union at the Provincial level
- Community members from throughout the target area
- **24<sup>th</sup> to 26<sup>th</sup> of November 2018**, further in-depth discussions with the local authority, and stakeholders in both towns to develop the full proposal through a robust stakeholder engagement process.

An overview of the consultations conducted is shown in Table 13.

Initial consultations with MoNRE confirmed the scope of the proposed project. In particular, discussion centred on national priorities, and the need for harmonisation by complementing rather than duplicating other initiatives. To this end, the two target locations were selected. Discussion also covered vulnerabilities in the target districts and the relevance of lessons being learned in UN-Habitat's current project on enhancing climate resilience.

Discussions with MPWT focussed on implementation arrangements. Agreements were reached with the Department of Water Supply, since water supply is a key priority to the government in climate and disaster resilience. The importance of integrating climate change adaptation into district action plans was discussed and a consensus was reached on including this in the project. It was decided to use government processes for coordinating with the state-owned enterprise water utilities, including funding local initiatives.

At the local level, consultations were held with government officials from relevant departments. Target sites were further clarified, and discussions were held on the hazards and resulting vulnerability in the target areas. Discussion with community members sought to ascertain community concerns and priorities. It was felt that a greater input is required from the community and this will be a priority during the Component 1 implementation of the project. However, it should be noted that the all consultations, and especially those around generating the information in the rapid vulnerability assessments of the two towns (presented in [Annex 1](#)) placed emphasis on understanding the needs of marginalised and potentially vulnerable groups, such as women and indigenous people, and to design infrastructure that, from the outset, could be designed and eventually constructed with as few environmental and social risks as possible. The findings of the consultations will be re-visited as further consultations are undertaken in the development of the full proposal, especially regarding minimising environmental and social risks.

**Table 13: Stakeholder consultations**

Stakeholder, including roles & functions	Consultation objective	Outcome	Remark
Ministry of Natural Resources and Environment (MoNRE)  Department of Disaster Management and Climate Change	<ul style="list-style-type: none"> <li>Re-confirm focal point willingness</li> <li>Establish preferred target areas</li> <li>Ensure coordination with other, ongoing adaptation activities and policy alignment</li> </ul>	<ul style="list-style-type: none"> <li>MoNRE has agreed to support the project formulation</li> <li>The target areas named in the proposal were agreed</li> <li>Information was exchanged on existing and planned initiatives in the target area</li> </ul>	MoNRE as the designated authority will approve the project
Ministry of Public Works and Transport (MPWT)  Department of Water Supply (DWS)  Nam Papa State-owned Enterprise (NPSEs)	<ul style="list-style-type: none"> <li>Establish DWS interest in being an executing entity</li> <li>Agree in principle the modality for channelling funds to the local level</li> <li>Gain understanding on integrating climate change adaptation into commune and district level plans</li> <li>Understanding existing technical standard, rules, and regulations</li> </ul>	<ul style="list-style-type: none"> <li>DWS agrees to be an executing entity</li> <li>Funding for local investments would be channelled through the NPSEs mechanism</li> <li>The project contains provisions to mainstream climate change into district action plan</li> <li>The project follows DWS's Technical Guidelines</li> </ul>	DWS will also provide written agreement to be an executing entity
Local districts officials in 8 small towns in Bolikhamsay/Khammouane/Savan nakhet/ Champassack Provinces	<ul style="list-style-type: none"> <li>Agree on target sites, including narrowing the focus down from 8 towns to the 2 selected towns presented in this proposal.</li> <li>Understand climate change vulnerability and highlight possible adaptation investments</li> </ul>	<ul style="list-style-type: none"> <li>Target sites agreed</li> <li>A clear picture of vulnerability and proposed actions established</li> <li>Particularly vulnerable groups and specific local vulnerabilities discussed.</li> </ul>	Rapid vulnerability assessment (RVA) conducted with the proposal of the intervention of the project (see in <a href="#">Annex 1</a> )
Communities consultations	<ul style="list-style-type: none"> <li>Understand the local climate change impacts/ effects per community and (the lack of) community coping mechanisms/barriers to building resilience</li> <li>Understand specific resilience building needs and interest as well as concerns</li> </ul>	<ul style="list-style-type: none"> <li>Greater understanding of community perspectives regarding water shortages</li> </ul>	Rapid vulnerability assessment (RVA) conducted with the proposal of the intervention of the project (see in <a href="#">Annex 1</a> )

[Annex 1](#) contains the rapid vulnerability assessments which were produced as a result of the formulation mission. In each target town, the following data was collected:

- ❖ Contextual data
  - Current and projected populations
  - Number of households

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- Poverty rates
- Sources of income
- Ethnicity distribution
- Medical facilities
- Educational institutions
- Water sources
- Sanitation coverage
- Water and vector-borne diseases
  
- ❖ Climate change and disaster risks
  - Temperature change
  - Rainfall change
  - Floods
  - Storms
  - Droughts
  - Landslides
  
- ❖ Environmental risks
  - Deforestation
  - Hydropower activity
  - Mining
  - UXOs

On the basis of the data, stakeholders then prioritised the town's needs and interventions were proposed to meet the needs. These interventions were later costed for budgeting purposes.

The rapid vulnerability assessments confirm and support the secondary information presented in Part I of this proposal. In Sethamouak Town (Phine District), the vulnerability assessment confirms a high level of vulnerability. Floods affected the town in 2005, 2009, 2011, 2012 and 2017, while droughts occurred in each of 2013, 2014, and 2015. It was hit by Tropical Storms Hima, Ketsana, Nokten and Doksuri in 2005, 2009, 2013 and 2017, respectively.

Adding to this high exposure, people primarily on self-dug wells or the river for their water source (depending on their exact location), while only 43% of households have a latrine. Water and vector borne diseases were highlighted by stakeholders as being problematic. Agriculture, livestock and casual labour provide the main sources of income.

Consistent, year-round climate resilient water supply was the most commonly requested action, according to the vulnerability assessment. This is because there are no water treatment facilities in the Sethamouak Township. Wealthier households buy bottled water at US\$15/m<sup>3</sup> about 100 times higher than the average tariff for formalized system. Secondary requests from people included improved sanitation and access to healthcare facilities. The activities designed however, to be implemented in Sethamouak Town will also improve the sanitation outcomes of the population.

In Sayphouthong District, where 100% of the 48,188 inhabitants live in the urban area, exposure to hazards is very high. Residents report annual flooding, and more than one flood per year in many cases. Meanwhile, drought occurs approximately once every three years. Moreover, residents perceived that rainfall has significantly decreased in recent years, which, in line with projections for Laos that suggest a longer, drier dry season, will heighten the risk of severe droughts occurring more frequently in the future. In both districts, the feasibility study indicated

that women are likely to experience a greater benefit, as they will have to spend less time and energy to source water, and the burden of care would be reduced because of fewer incidences to water-borne disease.

Sensitivity is also high. There is no water treatment, of formalised water supply system in Sayphouthong. Wealthier households also buy bottled water at US\$15/m<sup>3</sup>. The rest of the population relies on various means of sourcing water from the river, or from self-dug wells, in areas further away. Meanwhile, according to the rapid vulnerability assessment, about 65 per cent of households use some form of 'improved sanitation'.

Health and education outcomes are poor, though not as critical as in Sethamouak Town. Dengue Fever and water borne diseases remain common, especially in the rainy season, while participation in the formal education system is still low, with 17.6% of children attending high school. Poverty is high, at 27 per cent.

As in Sethamouak, the stakeholders consulted prioritised a regular, year-round supply of clean water that is resilient to climate hazards and future changes in climate as the first level priority. As second level priorities, the stakeholders proposed 700-800 metres of riverbank protection and improved, year-round sanitation.

## **I. Justification for funding requested**

The proposed project contributes significantly to meeting the needs for building resilience in very vulnerable communities in Lao PDR, as prioritised in the national and provincial development and climate change policies, strategies and plans. The project aligns with six of the Adaptation Fund's outcomes as stated in the Adaptation Fund results framework. The project's hard component will result in 57,144 people, 53.5% of whom are women being provided with physical infrastructure that is resilient to floods, storms, droughts and their knock-on effects, such as disease outbreaks. The infrastructure will be designed to accommodate rapid future population growth, which the towns are likely to continue experiencing, so that the number of beneficiaries will increase in the coming years. The soft components complement the hard component through building the capacity of at least 100 government officials, of whom 35 will be women, from the district, provincial and national level, as well as raising the awareness of thousands, and ensuring the continued functionality of the infrastructure in the future.

It is significant that the target towns are evolving into urban landscapes. This presents new challenges to many of the local officials who do not have a knowledge of urbanisation issues. Different ministries have responsibility for land management depending on the classification of the land. As urban areas grow, the need for capacity in land use planning in urban areas is crucial. It is also critical that action is taken now to climate-proof infrastructure. The alternative is that, through lack of knowledge and resources, unplanned infrastructural development will occur which will not be resilient to climate related hazards.

The project is designed to instil ownership in the beneficiary communities so that they play an active role in ensuring the sustainability of the infrastructure and the planning processes which the project will set up. The table below provides a justification for funding requested, focusing on the full cost of adaptation reasoning, by showing the impact of AF funding compared to no funding (baseline) related to expected project outcomes.

**Table 14: Impact of Adaptation Fund funding compared to no funding**

Activity	Vulnerability Baseline	Adaptation Benefit Resulting from the Project	Alternative Scenario
<p>Developing two town level master plans integrating climate resilience building into land-use, water management and infrastructure.</p>	<p>There are currently no coherent master plans and no plans that mainstream climate change. The lack of planning for climate change increases the long-run vulnerability of people living in the two target towns.</p>	<p>National and sub-national government has the capacity and master plans are in place that will guide infrastructure planning and investment in a way that makes it and people who benefit from it more resilient to climate change. Plans will also support the towns to cope with the rapid population increases they are expected to see in the coming years. This will also reduce vulnerability as rapid population growth without supporting infrastructure will make a greater number of people more vulnerable. Plans will consider the unique and specific needs of women and indigenous people.</p>	<p>National and local government develops plans, but they do not consider climate change and they do not take into account expected rapid changes in population. The vulnerability 'gap' between men and women could widen</p>
<p>Training at the Provincial and district level on building climate resilience by conducting and utilising Vulnerability Assessments and action plans, using tailored guidelines</p>	<p>National and sub-national governments and other organisations in Laos have very limited capacity to assess future vulnerability to climate change or make decisions based on climate change information</p>	<p>By having the necessary skills to gather and analyse climate data and related socio-economic and infrastructure information, national and sub-national government officials are better able to plan infrastructure and services that are resilient to climate</p>	<p>Local officials continue to plan in a way that does not consider climate change, future population growth, women or indigenous people.</p>



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		change in a way that is inclusive of the specific needs of women and indigenous people.	
Planning, construction and maintenance of resilient water treatment plants and piped water supply systems	<p>People do not have access to year-round, clean water supply. In the dry season, people suffer from water shortages of water, while in the rainy season water is often turbid or unfit for drinking with other contaminants. In some cases women have to walk great distances to get water. Climate change is enhancing the risks in the future as the dry season is projected to become longer and dryer, while the rainy season is projected to become shorter and more severe.</p> <p>Some of the poorest and most vulnerable people in Lao PDR will continue to suffer (health issues/mortality; costs caused by health issues and loss of assets) due to climate change impacts, also negatively affecting national development goals.</p>	57,144 people, of whom 53.5% are women have year-round clean water supply with continued functionality irrespective of extreme events, future climate change and continued population growth.	Water supply facilities are eventually constructed that do not consider climate change or future population growth. These facilities then do not function properly, or not provide service to the entire population through times of drought, floods and storms, and their sustainability is not guaranteed.
Water source management Integrating with water conservation demand management (WCDM)	People in the two target towns have limited capacity to manage water, resulting in water shortages during the dry season. As mentioned above,	People have greater adaptive capacity to cope with lower levels of water availability which could occur in the future if, as projected, Laos's dry season becomes	Water facilities are constructed but people are not made aware of how to manage water, and pressure on water sources grows as the dry season becomes

	women have to walk great distances during the dry season to get water.	longer and dryer. Women particularly benefit by not having to walk to collect water	dryer.
Establishing Nam Papa State Enterprises in Sayphothong and Sethamouak Towns to operate and maintain the infrastructure and providing training on the basic maintenance, in accordance with the Environmental, Social and Gender Management Plan	There are currently no water management structures in place and no means to ensure that women, indigenous people or any potentially marginalised groups have equitable access to water	The project will ensure equity for all in continued supply of clean water	Water facilities are constructed but are not accompanied by management systems that consider the needs of women, indigenous people or other potentially marginalised groups, potentially leading to inequity in access to water

## J. Sustainability of the project

The project has been designed to be embedded into the fabric of governance and operations in the towns in which it is implemented. Sustainability is seen as a crucial factor and, as such, is built into the project design in terms of technical, financial, institutional, social and environmental sustainability.

### Institutional sustainability

The philosophy throughout all phases of the project will be one of partnership with government mandated agencies, from the national to the community level. This will involve capacity building with the aim of increasing the relevant entities' capacity to independently operate and sustain services. Capacity includes planning, management, financial literacy and customer service as well as technical knowledge. A key organisation will be the Lao Women's Union, whose goals align with those of the project and who are expected to play a key role in mobilising women to participate in the project. The aim of the capacity building is not to just implement this project but to provide the skills so that agencies can continue to plan for climate change and build resilience in their communities. The project design also enables for scaling up and replication in other vulnerable provinces.

### Social sustainability

The People's Process methodology has been shown to bring together different groups at the local level, building trust and relationships between government authorities, water utilities, women's and youth organisations and community members. As a community, ownership in the project is engendered and this unity of purpose plays a large role in social sustainability. The inclusive nature of the project, whereby all groups, including marginalised groups such as some ethnic minority groups, participate, contributes further to social sustainability.

### Environmental sustainability

The development of plans and maps will provide local governments with data and direction on how to go about planning resilience building measures that will protect the environment. Training in land-use planning will also play a key part in ensuring that there is not further

degradation of local environments. The project’s safeguarding procedures will emphasise the protection of water resources and other natural assets.

**Financial sustainability**

Financial sustainability is most relevant to the ongoing operation of the hard component of the project. In particular, the operation of water supply systems will incur the greatest expense. In terms of finance, the sustainability of the water utilities will be considered as well as affordability of the services provided for beneficiaries. Experience has shown that beneficiaries are able to afford to pay for services when a well-designed, pro-poor tariff system is in place. The financial benefits of having access to safe, piped water contribute to a household’s ability to pay. The design of an appropriate tariff will be carried out as part of the project, with community participation.

In UN-Habitat’s experience, pro-poor tariffs can be levied as low as 2,500 Lao Kip (about US\$0.30) per cubic metre. This means that poor households are not excluded from service as ‘willingness to pay’ data will be generated, ensuring that a balance is found between setting a tariff that is affordable to all households, and full cost-recovery of the infrastructure. Initial willingness to pay data has been generated in the preparation of this project proposal and can be found [in Annex 3](#) and [4](#). This indicates that many families could feasibly pay up to 20,000 kip per month (about US\$2.40).

Overall, both the water infrastructure and the water supply will be managed by Nam Papa State Enterprise (NPSE). There is currently an NPSE in Savannakhet Province, but not in either Sayphouthong District or Phine District (including in Sethamouak Town). As such, new branches of NPSE will be established by the project to manage the infrastructure, water supply, and to oversee tariffs.

UN-Habitat and NPSE Savannakhet have jointly developed a revenue forecast model to demonstrate the financial sustainability of the proposed project. This model is based on the demand forecasts (using projected 2020 population figures) as presented in [Annex 3](#) (for Sayphouthong) and [Annex 4](#) (for Sethamouak). It then assumes an average cubic metre fee of 3,000kip (which allows for a mix of the pro-poor, regular and commercial tariff, but with a greater number of pro-poor tariffs. It bases the expense estimates on three other district level Nam Papas, all in Savannakhet Province (Phine District (for the 7 villages with water supply outside Sethamouak), Atsaphangthong District and Vilabouli District. The revenue model also factors in depreciation, but does not inflate the tariff in the future (i.e. assumes that the tariff remains the same. Under this revenue model (presented below) both proposed systems (and the Nam Papas that would operate them) would make a small, pre-tax gross profit that would generate funds to reinvest. The calculation takes into consideration all costs, including, but not limited to, depreciation, maintenance, external contractors and staffing costs.

<b>Cost/Revenue Item</b>	<b>Sayphouthong</b>	<b>Sethamouak</b>
Staff salaries	180,000,000	100,000,000
Service costs	60,000,000	40,000,000
Electricity	60,000,000	30,000,000
Running repairs	5,000,000	3,000,000
Other operational costs	680,000,000	297,500,000
Transportation, water testing and other regular procurement costs	14,500,000	6,750,000

Allowances for staff (such as pensions, healthcare and allowances for dependent family members)	12,000,000	6,600,000
Major repairs and depreciation	853,000,000	274,000,000
<b>Total Expenses</b>	<b>1,864,500,000</b>	<b>757,850,000</b>
Daily water demand (CM <sup>3</sup> )	2,120	716
Average fee per CM <sup>3</sup>	3,000	3,000
Annual revenue	2,321,400,000	784,020,000
Other ancillary revenue	15,000,000	5,500,000
<b>Gross Profit (Revenue – total expenses)</b>	<b>471,900,000</b>	<b>26,170,000</b>

All figures in the above table are shown in Lao Kip. Approximately, US\$1 = 8,500 Lao Kip, meaning Sayphouthong would show an annual gross profit of about US\$55,500 and Sethamouak US\$3,078, based on these estimates.

### Technical sustainability

The project will utilise UN-Habitat’s technical know-how in designing climate-resilient infrastructure for Lao conditions to ensure that infrastructure withstands floods, storms, landslides and droughts. Capacity building will take place in local communities and government institutions to provide them with the knowledge and skills for planning, construction and maintenance, thereby ensuring technical sustainability. The rapid growth of the project towns has been considered and infrastructure will be designed accordingly to serve increasing numbers of people. Water user groups will be established to deal with maintenance and call the water utility if there is an operational issue. The water user groups will comprise at least 40% women to ensure that women have a voice.

## K. Environmental and social impacts and risks

The proposed project seeks full alignment with the Adaptation Fund’s Environmental and Social Policy (ESP) and has been screened according to UN-Habitat’s Environmental and Social Policy. This section briefly describes the initial analysis of environmental and social impacts of the project based on the Environmental, Social and Gender Plan.

Components 1 and 3 of the project, around capacity building and planning, and knowledge management, respectively, consist of soft activities, and have therefore been classified as Category C’ activities which will not cause direct, indirect, transboundary or cumulative impacts to environment or society, as defined by the Adaptation Fund Environmental and Social Policy.

The activities under Component 2 of the project are hard activities which, without adequate safeguarding, have the potential to impact negatively on the environment or on society. The construction of water treatment and supply systems in both towns, both carry some risks. Although these systems are each to serve a town, they are nevertheless not likely to cause “significant adverse environmental or social impacts that are for example diverse, widespread, and irreversible<sup>56</sup>”. In addition, the water supply systems will be managed by local people, insofar as possible, by forming resilient WATSAN groups at the community level who report quality issues, maintenance problems and can even conduct very basic repairs. Communities

<sup>56</sup> AF ESP Policy, p.3, this defines projects which should be categorised as Category A.

are therefore incentivised to take greater interest in protecting their local environment and society. The capacity building will highlight environmental and social safeguards. In our assessment therefore, the project is extremely unlikely to cause transboundary or cumulative impacts. The potential for direct impact is small and localised. Due to the reasons outlined above regarding Component 2, the project should be considered a Category B project for environmental and safeguards purposes.

The checklist shown below has been prepared based on preliminary consultations. In accordance with the Adaptation Fund Environmental and Social Policy, and UN-Habitat's Environmental and Social Standards, an environmental and social management plan will be prepared as part of the full proposal. Table 16 identifies risks and potential mitigation measures associated with AF Social and Environmental Principles.

**Table 15: Checklist of environmental and social principles**

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	X	
Access and Equity		X
Marginalized and Vulnerable Groups		X
Human Rights	X	
Gender Equality and Women's Empowerment		X
Core Labour Rights		X
Indigenous Peoples		X
Involuntary Resettlement	X	
Protection of Natural Habitats		X
Conservation of Biological Diversity	X	
Climate Change		X
Pollution Prevention and Resource Efficiency		X
Public Health		X
Physical and Cultural Heritage	X	
Lands and Soil Conservation	X	

**Table 16: ESP risks and possible mitigation measures**

Adaptation Fund Environmental and Social Principle	Possible Risks AND Significance	(Further) assessment procedure and preventive and mitigation measures
Compliance with the Law	The project has assessed that there is no realistic risk under any of the project's proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section E of this proposal.	The main water supply facilities such as the check dam, intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way.

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		<p>Engagement with Department of Land Management under the Provincial Department of Natural Resources and the Environment, Urban Planning and Construction under PWT at the provincial level</p> <p>Integrating legal compliance into all training and awareness. Continued monitoring throughout the project</p>
Access and Equity	<p>That certain groups are denied access to infrastructure, or that preferential access is given to others.</p> <p>This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people (see below)</p>	<p>Community management with rules ensuring that equal access is guaranteed. These rules will make clear the equitable access for women and indigenous people to water connections. Further discussion of indigenous people is below, in Marginalised and Vulnerable Groups. The project will seek to prioritise connections to female headed households first, in accordance with the Gender Action Plan in Annex 2</p>
Marginalised and Vulnerable Groups	<p>According to the feasibility study and IEE in the preparation of the proposal, 62 per cent of the residents of Sethamouak Town and 49 per cent of Sayphouthong District are indigenous people. In each case, they come from the Phoutong, Katang and Mangkone ethnic groups (all of which have languages from the Thai-Kadai ethnolinguistic family. In total, 27,649 (49.8 per cent) of the beneficiaries are indigenous people.</p> <p>In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 30,567 will be women, meaning that 53.5% of the project's beneficiaries are women.</p> <p>Approximately 30% of households are considered poor throughout the project area. Given the presence of marginalised and vulnerable groups, there is medium risk under the proposed activities under component 2 to them as a result of the project, however, they are the intended beneficiaries.</p> <p>The illiteracy rate is high, especially in Sethamouak Town. Without mitigation measures there is a risk that people who are illiterate may be marginalised or disenfranchised if written information is the primary mode of communication between the project and beneficiary communities. Illiteracy is thought to be a more significant problem for women.</p> <p>Without mitigation measures each of the above could marginalise people</p>	<p>Community management with rules ensuring that equal access is guaranteed, including for women and indigenous people. This means that all consultations and meetings should be made accessible in indigenous languages, where people cannot, or do not wish to communicate in the Lao Language. This includes providing all information orally to people, as literacy rates are low throughout the project area. The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor households have continued access to water supply, despite their low incomes.</p> <p>See <a href="#">Section G</a>, Learning and Knowledge Management for more information on how the project proposes to engage with indigenous people – especially those who do not speak the Lao Language (as a significant minority is unlikely to be literate in Lao).</p>
Human Rights	<p>Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example. However, the risk of this is very low, under</p>	<p>There are no anticipated human rights issues. The project seeks to enhance people's access to water supplies, year round. All investments are on public land.</p>

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	<p>the proposed activities under component 2, as the project (and its supporting structures) are being created to provide continuity of clean water supply to people. All construction works are taking pace on public land, and water supplies will be provided to all people in the target towns.</p>	<p>See respective sections below for issues relating to gender equality and labour rights.</p>
<p>Gender Equality and Women's Empowerment</p>	<p>Women could be denied access to infrastructure or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2.</p> <p>Further assessment of the risks to women arising from the project, as well as underlying vulnerabilities existing in the target area, are analysed further in Annex 2.</p>	<p>The project has set quotas for female participation and benefit in Components 1 and 2. Engagement will take place throughout the project with the Lao Women's Union and the Women's representative which exists in every village.</p>
<p>Core Labour Rights</p>	<p>The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.</p>	<p>All community contracts must be scrutinised to ensure they comply with both national law and international standards.</p> <p>Where community members provide their labour to the project, they will be paid above minimum wage, the right to organise, and access to all required safety and protective equipment. Women will be provided with access to separate bathrooms and sanitation facilities.</p>
<p>Involuntary Resettlement</p>	<p>Eviction arising from conflicts over land ownership is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project. There is currently no one living on or immediately adjacent to any of the project's construction sites, and the sites are not being used for livelihood activities like agriculture or informal markets. This includes the check dam structure and surrounding embankment on the Sethamouak River, as well as the structures in Sayphouthong</p>	<p>See above for compliance with the law. All investments take place on state owned land. There are no people living, formally or informally, on the land being used for the proposed investments.</p>
<p>Indigenous People</p>	<p>See 'Marginalised and Vulnerable Groups, above'</p>	<p>See 'Marginalised and Vulnerable Groups, above'</p>
<p>Protection of Natural Habitats</p>	<p>There is a low risk of damage to local ecosystems, including forests and rivers from infrastructure construction under Component 2.</p>	<p>Incorporating protection of habitats and ecosystems into action planning. Designing infrastructure so that it complements nature</p>

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	<p>There is no risk to the river ecology or downstream livelihoods for the investment at Sayphouthong because of the very small amount of water being extracted from the river at that point. At Sayphouthong the Mekong river never goes below 6.5m deep in the dry season (and can be over 13m in the rainy season) and is about 1.16km wide at that point, from bank to bank. Minimum river flow around Sayphouthong is about 2,000m<sup>3</sup> per second in the dry season (and as much as 7 times this in the rainy season), meaning the maximum daily usage of river water for the system is equal to less than 2 seconds of river flow – a miniscule amount that will not have effects on the downstream hydrology or ecology of the river.</p> <p>On the Sethamouak River, the embankment is about 65 metres in total, while the check dam structure is about 42 metres across the river. Without specific design provisions this could cause risk to downstream water flow, affecting downstream livelihoods and water access, fish and causing upstream flooding.</p>	<p>Specific design provisions have been made in both cases to minimise the risks. In the case of Sethamouak, the dam is only 1.5m high, meaning that in the rainy and early part of the dry season (up to 9 months in total), the water will flow over the dam, while the strengthened embankment will prevent any flooding and/or erosion in the area around the dam. The dam has been designed with a 1.5m wide weir so that water still flows unimpeded. The IEE finds that this will not affect the availability of water downstream or the ability of fish to swim up and down the river, as the water can pass through the weir for 16-18 hours per day in the dry season. Further information on the design of the weir is provided in Annex 4</p>
<p>Conservation of Biological Diversity</p>	<p>See Protection of Natural Habitats</p>	<p>See Protection of Natural Habitats</p>
<p>Climate Change</p>	<p>The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal.</p> <p>The construction activities are not anticipated to generate large scale emissions. Where possible, materials will be sourced locally (and where this is not possible, nationally) to avoid emissions arising from unnecessary transportation. The operation of the equipment does not involve fossil fuel burning or any other activity that generates emissions.</p> <p>Long-term changes in the climate, as discussed on Part I and Annex 1 of this proposal, pose a risk – particularly if the dry season continues to become longer and dryer and temperatures increase further. In Sayphouthong, future declines in rain or an increasingly prolonged dry seasons will not diminish the water level in the Mekong to such a level that the infrastructure doesn't function. The structure requires surface water and the Mekong – Asia's 4<sup>th</sup> largest river by water volume – doesn't dry out at Sayphouthong.</p>	<p>Climate Change policies and guidelines to be explained to understood by project personnel prior to implementation and monitored by implementing partners.</p> <p>The infrastructure at Sethamouak is designed to continue functioning at 30cm river depth. This is less than half the estimated known lowest point of the river during the dry season, meaning the infrastructure can continue functioning, even if the trend of a prolonged dry season continues – unlike ground water systems that are already becoming inviable in the area.</p>



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	<p>In Sethamouak the estimated lowest point of the river is between 60-90cm, so there is a risk from further decreases in the river flow. However, this structure also requires surface water</p> <p>See Pollution prevention and resource efficiency for provisions regarding waste</p>	
Pollution Prevention and Resource Efficiency	<p>Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance</p>	<p>Incorporating waste management and disposal into design and operating procedures for the construction</p>
Public Health	<p>Water infrastructure could be open to contamination, spreading water-borne diseases. River water may not be clean because of upstream pollutants, beyond the control of project staff of NPSE Savannakhet</p> <p>Neither the infrastructure at Sayphouthong or Sethamouak will create open pools of water or generate any stagnant water. As such, there is no discernable risk of increased vector-borne disease.</p>	<p>Incorporating public health considerations (Especially relating to water contamination) into training under Component 2.</p> <p>Please see the technical designs for Sayphouthong (Annex 3) and Sethamouak (Annex 4) for further information on how the designs incorporate and minimise risks to public health from unclean water and upstream pollutants.</p>
Physical and Cultural Heritage	<p>No risks to physical and cultural heritage were identified. The proposed infrastructure is on public land, which is not currently used for residential, livelihood or cultural activities. The amount of water being extracted from the river is so small that there will be no downstream impacts that could affect sites of cultural interest, and the consultations did not reveal any sites of intangible cultural heritage.</p>	<p>The proposed infrastructure will include a public space on the reinforced embankment that people can use for recreation</p>
Lands and Soil Conservation	<p>See Protection of Natural Habitats</p>	<p>See Protection of Natural Habitats. While the construction will disturb the soil in the location</p>

## **PART III: Implementation Arrangements**

### **A. Arrangements for project management**

The following mechanisms for project execution, coordination and oversight have been agreed in close consultation with the Ministry of Natural Resources and the Environment (MoNRE), as the national designated authority to the Adaptation Fund, the Ministry of Public Works and Provincial Stakeholders in Savannakhet Province, including the Nam Papa State Enterprise (NPSE).

The Ministry of Public Works and Transport (MPWT) at the national level and the Provincial Department of Public Works and Transport at the Provincial Level will be responsible for executing Component 1. The NPSE for Savannakhet Province will be responsible for executing Component 2. MoNRE, at the national level and the Provincial Department of Natural Resources and Environment at the Provincial Level will be responsible for executing Component 3. MoNRE will also have a responsibility, as the focal point Ministry for the UNFCCC, for coordination across the government system. Meanwhile, MoNRE and MPWT will help to coordinate the overall project by co-chairing the Project Management Committee, as detailed below.

Meanwhile, In the Laos government system, under the 'samsang' or 3-build decentralisation process, provincial level units of government are responsible for managing implementation at the sub-national level. In accordance with Samsang, NPSE will execute the physical works under Component 2 of the project. NPSEs are autonomous enterprises, but are under the overall responsibility of MPWT. Therefore, MPWT will provide guidance and oversight to ensure that the project is implemented in accordance with Laos' laws, the Environmental and Social Management Plan of the Project and according to the specifications laid down in this project document.

UN-Habitat is the multilateral implementing entity of the project and will then provide project management support, oversight, management of fund flow and executing partners' delivery, and secretariat of the Project Management Committee. UN-Habitat will have three Agreements of Cooperation (AoCs); one each to execute Components 1, 2 and 3 respectively. The AoCs will create accountability with the executing entities, requiring them to deliver their activities in accordance with the project budget, workplan and in compliance with the Project's Environmental and Social Management Plan (see [Annex 5](#)).

#### **Legal and Financial Arrangements**

UN-Habitat and MoNRE will sign a joint Memorandum of Understanding as a legal commitment to implement the project.

As above, UN-Habitat will sign three Agreements of Cooperation for US\$350,000 with MPWT to execute Component 1 in its entirety, US\$4,000,000 with NPSE Savannakhet to execute Component 2 in its entirety and US\$237,557 with MoNRE to execute Component 3 in its entirety. AoCs are the legal basis to transfer funds from the multilateral implementing entity (UN-Habitat) to the executing entities. They also provide the contractual basis to ensure timely delivery, compliance with the designs specified in this project document and the Environmental and Social Management Plan.

The respective Directors General of MPWT and MoNRE will work closely with their provincial counterparts and NPSE Savannakhet to oversee the contractual agreements and authorize payments under Components 1&3 respectively, while the Provincial Director of NPSE will authorize payments under Component 2, upon recommendation from the Project Manager. The UN-Habitat country office for Laos will provide an oversight function, as well as guidance upon request from the executing entities.

### **Project Governance**

At the national level, the Project will be supported by a **Project Management Committee** (PMC). The PMC will be formed to oversee and keep abreast of project progress and facilitate the implementation of the project, including overseeing and cooperating with the project team, the technical advisory group, the local steering committees and the project oversight group.

The PMC will be co-chaired by Directors General, MoNRE and MPWT, with the Director, NPSE Savannakhet as vice-chair. UN-Habitat will provide the secretariat function of the PMC. A representative of the UN-Habitat Regional Office for Asia and the Pacific will also be a member of the PMC. Other members of the PMC are as follows: a technical level representative of MoNRE and MPWT, a technical level representative of Ministry of Planning and Investment, provincial level representatives of these three ministries and Lao Women's Union – ensuring that a representative of women's interests will always participate in the highest management body of the project.

The PMC will: (1) approve annual work plans and review key project periodical reports; (2) will review and approve the contractual agreements, including workplans, with a particular emphasis on environmental and social safeguards, budgets and payment schedules; (3) review any deviations and consider amendments to workplans and contractual arrangements.

The PMC will meet at least once per year throughout the project implementation and whenever needed to fulfil the above functions. The PMC will also convene *ad hoc* meetings to address serious Environmental and Social safeguard risks, if these arise.

### **Project Oversight**

Project oversight lies with the PMC in-country and ultimately with UN-Habitat as the Multilateral Implementing Entity. This function is led by the responsible officer in UN-Habitat's Regional Office for Asia and the Pacific and supported by Project Management Officers (financial management and administration) and UN-Habitat's headquarters' Monitoring and Evaluation Unit, the Programme Division, including the Climate Change Planning Unit and the External Relations Division (particularly with regard to advocacy, outreach and communications), will ensure project management compliance in accordance with UN-Habitat standards and requirements, particularly with regard to financial management, timely delivery and the Environmental and Social Management Plan.

### **Project Execution**

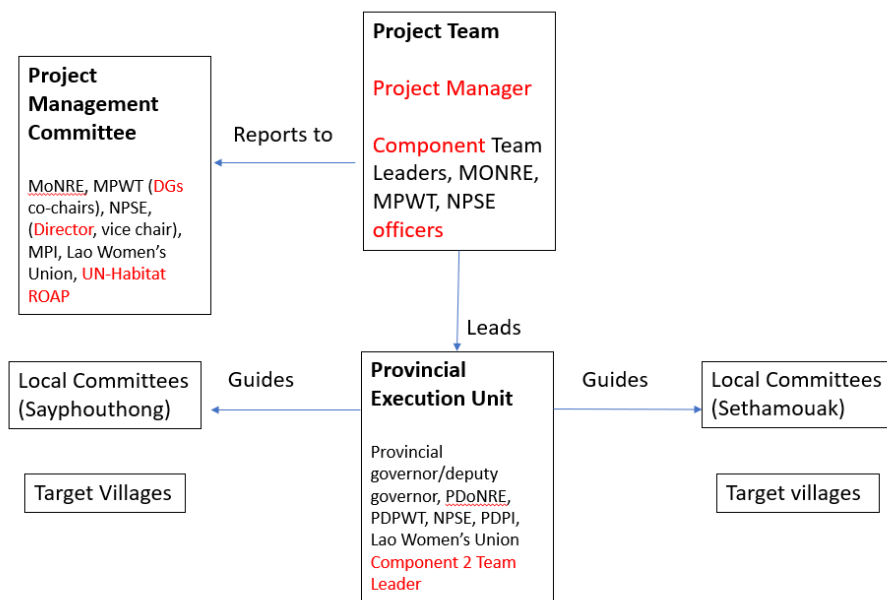
The National level **Project Team** will be comprised of a Project Manager who will be recruited in compliance with UN rules and regulations and approved by the PMC, the component Team Leaders (who will be contracted by MoNRE/MPWT/NPSE Savannakhet – as the component

leaders), and technical level staff from MoNRE and MPWT. There will also be an engineer based in Savannakhet who will oversee works under Component 2. The project team will be responsible for managing project activities and ensuring compliance with all commitments contained in the project document, particularly the ESMP and compliance with the 15 principles of the Adaptation Fund Environmental and Social Policy and the Gender Policy of the Adaptation Fund, as well as providing day-to-day support to the executing entities. The project team will also take the lead in monitoring through periodic visits to the intervention sites in Sayphouthong and Sethamouak Districts and generating learning from the project. The Project Team will develop a Monitoring and Evaluation Plan during the project’s inception phase, which will be distributed to target stakeholders and reported to the PMC.

There will then be a local **Project Execution Unit** to manage day-to-day execution of activities in the field sites. This unit will be especially active in implementing the activities under Component 2 of the Project. This unit will include a provincial level coordinator who will oversee the day-to-day running of activities underway in each district. The Project Execution Unit will count on support from technical level representatives of NPSE Savannakhet, The Provincial Departments of Public Works and Transport; Natural Resources and Environment, Planning and Investment and Lao Women’s Union.

At the community level, an equally gender balanced selection of village representatives will form a **Local Oversight Committee**. This will also include village chiefs from the target villages and district level NPSE representatives.

### Organigram of the Project



## B. Measures for financial and project risk management

The status of financial and project risks, including those measures required to avoid, minimize, or mitigate these risks, will be monitored throughout the project (as discussed in [Section D](#): arrangements for monitoring, reporting and evaluation).

**Table 17 - Financial and project management risks, significance of risks and measures to manage/mitigate risks.**

	Category and risk	Rating: Impact/ Probability 1: Low 5: High	Management/mitigation Measure
1.	Environmental/social: Current climate and seasonal variability and/or hazard events result in infrastructure construction delays or undermine confidence in adaptation measures by local communities	Impact: 3 Prob: 2	<ul style="list-style-type: none"> <li><input type="checkbox"/> Current climatic variability has been taken into account in the planning and design of project activities, particularly in the designs of the infrastructure to be built under Component 2: The detailed project designs provided in <a href="#">Annexes 3 &amp; 4</a> provide evidence of considering climate change, variability and possible future extremes</li> <li><input type="checkbox"/> Both investments under Component 2 have been extensively consulted with communities, local officials, government staff at the sub-national and national level. Indeed, NPSE Savannakhet especially has been closely involved</li> </ul>
2.	Institutional: Loss of government support (at all levels) for the project (activities and outputs) may result in lack of prioritization of AF project activities.	Impact: 4 Prob: 1	<ul style="list-style-type: none"> <li><input type="checkbox"/> Establishment of a project management committee and the overall participatory and inclusive project design will improve national, provincial and beneficiary level ownership throughout and thus enhance government support for project implementation.</li> <li><input type="checkbox"/> UN-Habitat will enter into legal agreements (MoUs and AoCs) with the MoNRE (MoU and AoC), MPWT (AoC) NPSE Savankhet (AoC) to ensure that the executing entities will deliver all project activities and outputs in a timely manner and in accordance with the project's ESMP.</li> <li><input type="checkbox"/> Government staff working on climate change, environment, disaster management, infrastructure and provision of water supply will be strongly integrated into the project's structure (<a href="#">See Part III, Section A</a>)</li> <li><input type="checkbox"/> The formulation of The Local Level Committee will ensure that there is strong institutional support for the project at the grassroots/implementation level, and will also ensure that local level stakeholders have a means to raise any grievances or problems.</li> </ul>
3.	Institutional: Capacity constraints of local institutions may limit the effective implementation of interventions	Impact: 2 Prob: 1	<ul style="list-style-type: none"> <li><input type="checkbox"/> The project has a strong capacity building and training component, particularly under Output 1.1.1 and 1.2.1, which will promote effectiveness and sustainability at the district, provincial and national levels. The project also has a policy component under Output 3.2.1 that will strengthen the national government.</li> </ul>

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4.	Institutional/social Lack of commitment/buy-in from local communities may result in delay at intervention sites.	Impact: 2 Prob: 1	<ul style="list-style-type: none"> <li><input type="checkbox"/> Community stakeholders have been consulted extensively during both the concept note and full project development phase to ensure their buy-in into this project</li> <li><input type="checkbox"/> A bottom-up approach integrating the community into the AF project's implementation phases – including community contracting in line with the <a href="#">People's Process</a> - will be followed.</li> <li><input type="checkbox"/> Where possible, the community will have an active role through the 'People's Process' that ensures ownership of the project particularly through community participation in project implementation and monitoring</li> </ul>
5.	Institutional/social: Disagreement amongst stakeholders with regards to adaptation measures (infrastructure) and site selection.	Impact: 3 Prob: 2	<ul style="list-style-type: none"> <li><input type="checkbox"/> The adaptation measures proposed in Component 2 of the project and their selected locations have been decided using extensive and detailed criteria, and through several rounds of in-depth consultation with communities and local and national government stakeholders.</li> <li><input type="checkbox"/> There will be a participatory approach to the construction of the infrastructure to be built under Component 2, through the <a href="#">People's Process</a>, which employs the beneficiaries directly in the construction of their infrastructure</li> </ul>
6.	Institutional: Communities may not adopt activities during or after the AF project, including infrastructure maintenance	Impact: 2 Prob: 2	<ul style="list-style-type: none"> <li><input type="checkbox"/> The interventions will be institutionalized MoNRE and MPWT, their line departments at provincial level, NPSE Savannakhet and the target communities in Sayphouthong and Sethamouak, to ensure sustainable delivery of (post-) project implementation, including formal agreements for infrastructure maintenance (at national level) and O&amp;M structures at the sub-national level with NPSE Savannakhet. Given the commitment of the national government and the policy alignment of this project, and the direct reporting mechanisms of local government to national government, it can be assumed that such agreements will be honoured.</li> <li><input type="checkbox"/> Officials at the sub-national (provincial, district and village level) will support the participating communities beyond the project implementation ensuring community level governance support as well as support for maintenance.</li> <li><input type="checkbox"/> Capacity building and training of communities will be undertaken to improve their awareness and understanding of the benefits of the activities, including infrastructure maintenance (Component 1).</li> <li><input type="checkbox"/> Communities will be involved in project implementation/decision making throughout the project. In particular, they will take ownership of the construction of the infrastructure where unskilled labour is required.</li> </ul>
7.	Financial: Complexity of	Impact: 3 Prob: 2	<ul style="list-style-type: none"> <li><input type="checkbox"/> Financial management arrangements have been defined during project preparation. The detailed budget is provided in <a href="#">Part III, Section G</a>, The payment schedule is</li> </ul>

	financial management and procurement. Certain administrative processes could delay the project execution or could lack integrity		<p>provided in <a href="#">Part III, Section H</a>, while the management arrangements are outlined in <a href="#">Part III, Section A</a>.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> UN-Habitat's control framework, under the financial rules and regulations of the UN secretariat, ensure documentation of clearly defined roles and responsibilities for management, internal auditors, the governing body, other personnel and demonstrates prove of payment / disbursement. These rules are Annexed to AoC agreements</li> <li><input type="checkbox"/> Procurement will be done by the executing entities as agreed through Agreements of Cooperation. The project manager and the project team have a certifying role (for key procurements / expenditures). All expenditures/costs/payments will be documented in USD. In Laos, procurement of high-value good often takes place in USD rather than Lao Kip (the local currency)</li> </ul>
8.	<p>Institutional:</p> <p>Delays in project implementation, and particularly in the development of infrastructure interventions</p>	Impact: 1 Prob: 2	<ul style="list-style-type: none"> <li><input type="checkbox"/> The ownership by the Government has been high during the project preparation phase which will reduce this risk.</li> <li><input type="checkbox"/> The project includes extensive planning and capacity building under Component 1. While the investments under Component 2 have been fully identified, improved planning capacity will help to make the implementation smoother and reduce the risk of delays.</li> <li><input type="checkbox"/> Lessons learned from other relevant projects under multilateral climate finance institutions, UN agencies, and involving the three key government partners are described in <a href="#">Part II, Section F</a>.</li> </ul>
9.	<p>Institutional:</p> <p>A lack of coordination between and within national government Ministries and Departments.</p>	Impact: 1, Prob:2	<ul style="list-style-type: none"> <li><input type="checkbox"/> The Project Management Committee under the joint leadership of MPWT and MoNRE is to ensure coordination. Should UN-Habitat observe coordination problems, the agency will try to resolve issues directly with concerned parties and or the PMC.</li> </ul>
10.	<p>Legal</p> <p>Delays or barriers in gaining approval for infrastructure and housing due to delays in the development process or due to land tenure issues.</p>	Impact 4 Prob 1	<ul style="list-style-type: none"> <li><input type="checkbox"/> No legal issues are foreseen. See <a href="#">Part II, Section E</a> and the ESMP for further evidencing of the legal compliance of the project.</li> <li><input type="checkbox"/> The PMC and the LCC are tasked to ensure close collaboration with the provincial line departments of Public Works and Transport, Natural Resources and the Environment, NPSE Savannakhet and Planning and Investment.</li> </ul>

### C. Measures for the management of environmental and social risks and complinace with the gender policy of the Adaptation Fund

[Part II, Section E](#) and [Section K](#) outline the screening and assessment process that has been done based on analysis of the law and consultations to identify the project's potential for risks. [Part II, Section H](#) describes the consultation process that has been undertaken to ensure *inter alia* inclusion of potentially marginalised groups, including women and indigenous people. These consultations and analysis are reflected throughout the project design.

Based on a screening against the principles environmental and social policy of the Adaptation Fund, the project has been categorised as a “B” category project in terms of the environmental and social risks it poses. Further information on the risk screening is provided in Part II, Section K, and in Annex 5.

An Environmental and Social Risk Management Plan (ESMP) has been developed (See [Annex 5](#) to ensure that risks are avoided and that, where this is not the case, they are identified and mitigated in a timely manner. The ESMP identifies all the potential risks and the preventative and mitigation measures that the project proposes to take to reduce potentially adverse environmental and social risks to acceptable levels. The plan also identifies roles and responsibilities for monitoring risks. The ESMP also covers risk management arrangements, risk reduction and the project's grievance mechanism.

#### **D. Arrangements for monitoring, reporting and evaluation in compliance with the environmental and social and gender policies of the Adaptation Fund**

The proposed project will comply with formal guidelines, protocols and tools issued by the Adaptation Fund and UN-Habitat and all legal requirements of the government of Laos. A Monitoring and Evaluation Framework, based on the targets and indicators outlined in the Project Results Framework will be developed before implementation commences (see below, [Part III, Section E](#)).

In addition, the status of identified environmental and social risks and the project's ESMP, including those measures required to avoid, minimize, or mitigate environmental and social risks, will be monitored throughout the project (at the activity level and through annual project performance, mid-term and terminal reports). The same applies to financial and project management risks and mitigation measures.

#### **Monitoring and Evaluation Framework**

UN-Habitat will ensure the timeliness and quality of project implementation. The oversight and general guidance of the project will be provided by the Project Management Committee. UN-Habitat will ensure that the project team and the key national executing partners are fully briefed on the M&E requirements.

The monitoring and evaluation framework prepared by the project will be a key tool to ensure that the project is being implemented in compliance with its ESMP (as detailed in [Annex 5](#)). The project's monitoring framework will also ensure that sex disaggregated data is collected throughout the implementation, and that indigenous people have been included in project's execution.

The audit of the project's financial management will follow UN finance regulations and rules and



applicable audit policies.

The M&E plan will be implemented as outlined in the Table 18 below.

**Table 18 - Outline Monitoring and Evaluation Plan.**

Type of M&E Activities	Responsible Parties	Time Frame	Reporting
Inception Workshop and Report	National Project Manager Project Management Committee UN-Habitat ROAP	Workshop: within first two months of start Report: within first quarter	Inception Report
Periodic status/ progress reports	National Project Manager	Annual, mid term	Annual report, Mid-term review/report
Final Evaluation	National Project Manager UN-Habitat ROAP Project Management Committee External Consultants	Final: At least three months before the end of project implementation	Final Evaluation Report
Project Terminal Report	National Project Manager UN-Habitat ROAP Local consultant	At least three months before the end of the project	Terminal Report
Community consultations / workshops / training	National Project Manager	Within one week after each event	Documentation
Visits to field sites	UN-Habitat ROAP Project Management Committee Government representatives	At least every six months	Field Report

For the M&E budget and a breakdown of how implementing entity fees will be utilized in supervision of M&E tasks, please see the detailed budget in [Part III, Section G](#). For related data, targets and indicators, please see the project proposal results framework in [Part III, Section E](#).

**Participatory monitoring** mechanisms (involving different levels of government and communes) will be put in place for the collection and recording of data to support the M&E of indicators. The project proposal formulation has gathered demographic data, vulnerability assessment and climate data, as well as maps and infrastructure designs. All of this information will be made available to the PMC for use in the project, including its monitoring.

The target villages will be involved in further data collection. This will allow beneficiary communes to work directly with the project's M&E mechanism, to highlight issues in project delivery and to strengthen adaptation benefits, including in replication and sustaining the project's gains. All data collected will be disaggregated by sex and data gathering will be designed to include indigenous people at all stages. Project site visits will be jointly conducted based on an agreed schedule to assess project progress first hand.

The Project Manager will refine the M&E Plan during the project's inception phase which will be distributed and presented to all stakeholders during the initial workshop. The emphasis of the updated M&E plan will be on (participatory) outcome/result monitoring, project risks (financial & project management risks and environmental social safeguard risks), learning and sustainability of the project, and informing stakeholders of the need to always gather sex-disaggregated data

and data that reflects the need to include indigenous people. Periodic monitoring will be conducted through visits to the intervention sites.

UN-Habitat will ensure that all executing partners are fully briefed on the M&E requirements to ensure that baseline and progress data is fully collected and that a connection between the Knowledge Management component and M&E is established. The Agreements of Cooperation will also reflect these.

**An Annual Project Performance Review (PPR)** will be prepared to monitor progress made since the project's start and in particular for the previous reporting period. The PPR includes, but is not limited to, reporting on the following:

- Progress on the project's objective and outcomes – each with indicators, baseline data and end of project targets (cumulative);
- Project outputs delivered per project outcome (annual);
- Lessons learned/good practice;
- Annual Work Plan and expenditure;
- Annual management;
- Environmental and social risks (i.e. status of implementation of ESMP, including those measures required to avoid, minimize, or mitigate environmental and social risks. The reports shall also include, if necessary, a description of any corrective actions that are deemed necessary;
- The engagement of women and indigenous people
- Project financial and management risks (same as per above).

A **Terminal Evaluation** will take place as the last activity before the operational closure of the project in accordance with Adaptation Fund guidance and following UN-Habitat practices based on the OECD DAC framework. The terminal evaluation will focus on the delivery of the project's results, as initially planned and then reflected in the M&E framework, including the implementation environmental and social mitigation measures. The terminal evaluation will assess the impact and sustainability of results, including their contribution to capacity development and the achievement of adaptation benefits.

The **reports** that will be prepared specifically in the context of the M&E plan are:

- (i) the M&E plan,**
- (ii) the project inception report,**
- (iii) the Annual, and terminal project performance reports and**
- (iv) the technical reports.**

The budget for monitoring is presented below:

Type of M&E activity	Responsible parties	Budget US\$	Time frame
Measurements of means of verification (baseline assessment and M&E plans)	Project Manager; Project team	10,000 (from project execution costs)	First quarter of year 1
Direct Project			Quarterly, half

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Monitoring and Quality Assurance including progress and financial reporting, project revisions, technical assistance risk management and monitoring Environmental and Social safeguard compliance	<b>UN-Habitat Regional Office.</b> Project Manager; With inputs from Project team; Provincial and district-level government, community level monitoring	20,000 (from project cycle management fee)  40,000 (from project execution costs)	yearly and annually. Building on provincial and district level assessments and community level monitoring.
Independent terminal evaluations	<b>UN-Habitat Regional Office</b> UN-Habitat M&E Section and external consultants (from project execution and project cycle management)  Supported by Project Manager; Project team; Provincial and district-level government and community	25,000 from project execution costs and 20,000 from project cycle management fee	At end of project implementation
Project management committee meetings	UN-Habitat Regional Office  Project Manager; Project team; Project Management Committee	7,014 (from project cycle management fee)  6,000 from project cycle management fee	Inception meeting within first 2 months and bi-annual PMC meetings
Travel	UN-Habitat Regional Office  Project Manager	10,500 from project cycle management fee  20,000 from project execution costs	Quarterly, half-yearly and annually and as required
Total		158514	

## E. Project proposal results framework

Table 19 - Project Results Framework

Expected Result	Indicators	Baseline data	Targets	Risks & assumptions	Data collection method	Fre-quency	Res-ponsibility
<b>Project objective:</b>							
<b>Project component 1:</b> Develop town level master plans which integrate climate change adaptation into socially inclusive infrastructure, spatial planning and land-use management in and beyond the project area.							
Capacity built at District, Provincial and National level to plan for climate-resilient infrastructure development and to maintain and manage infrastructure							
<b>Outcome 1.1</b> 40 government staff, at least 15 of whom female, have increased capacity to design climate resilient urban infrastructure in small towns	Level of capacity at the subnational level increased	Capacity to autonomously plan adaptation projects at the sub-national level is limited	5 New adaptation projects prepared by sub-national staff	R Limited time means government staff have to prioritise other day-to-day tasks  A There will be continued government support to develop new adaptation projects	Review of new projects developed	Baseline, mid-term and end	Executing entities (MPWT)
<b>Output 1.1.1</b> Training provided to district, provincial and national government staff on resilient infrastructure design. Female government staff must be represented	Number of government staff trained, disaggregated by sex	There is constrained capacity for government staff to plan for new resilient infrastructure	40 government staff trained, 15 of whom are female.	R Time constraints mean other government activities will take priority  A There will be continued government support to develop new adaptation projects	Training reports	On completion	Executing entities (MPWT)

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<p><b>Outcome 1.2</b> 60 government staff, at least 20 of whom are female, have capacity to develop climate resilient town master plans and two master plans approved, that support the development of resilient infrastructure, serving 57,144 people, 53.5% of whom are female.</p>	<p>Comprehensive adaptation action plans in place for Sayphouthong and Sethamouak Towns</p>	<p>No such plans developed or in place</p>	<p>Sayphouthong and Sethamouak Towns have comprehensive adaptation action plans in place that consider infrastructure, as well as economic, social and environmental adaptation actions beyond the life of this project.</p>	<p>R New infrastructure projects are planned centrally that don't consider climate change  A Plans will facilitate further climate finance and investment</p>	<p>Approved plans</p>	<p>Upon completion of plans</p>	<p>Executing Entities (MPWT) and UN-Habitat</p>
<p><b>Output 1.2.1</b> Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented</p>	<p>No. of staff trained disaggregated by sex</p>	<p>There is very limited capacity at all levels to plan for climate change adaptation actions</p>	<p>60 staff, 20 of whom female, trained</p>	<p>R Time constraints mean other government activities will take priority  A There will be continued government support to develop new adaptation projects</p>	<p>Training reports</p>	<p>Mid-term</p>	<p>Executing entities (MPWT)</p>
<p><b>Output 1.3.1</b> Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the project area</p>	<p>Developed adaptation plans</p>	<p>There are currently no adaptation plans and no training has been provided on developing such plans</p>	<p>60 staff trained, 20 of whom female. 2 masterplans developed. The master plans will include specific provisions for the development and climate change resilience of women.</p>	<p>R New infrastructure projects are planned centrally that don't consider climate change  A Plans will facilitate further climate finance and investment</p>	<p>Training and workshop reports relating to the development of the master plans</p>	<p>Mid-term</p>	<p>Executing Entities (MPWT)</p>
<p><b>Activities</b> 1.1.1 Define trainee group 1.1.2 Baseline knowledge/training needs assessment 1.1.3 Prepare the exact nature of the training materials based on the specific requirements of the trainee group 1.1.4 Provide the trainings and mentorship of the trainee group through a mixture of</p>				<p><b>Milestones</b> Activities begin by month 6 All trainings complete by month 24 Plans developed by month 30 Complete by month 36</p>			

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<p>1.1.5 training workshops and 'on the job' type training Monitor the achievement of the output of the training</p> <p>1.2.1 Define trainee group (note that this is a different group from that trained under Output 1.1)</p> <p>1.2.2 Baseline knowledge/training needs assessment</p> <p>1.2.3 Prepare the exact nature of the training materials based on the specific requirements of the trainee group</p> <p>1.2.4 Provide the trainings and mentorship of the trainee group through a mixture of training workshops and 'on the job' type training</p> <p>1.2.5 Monitor the achievement of the output of the training</p> <p>1.3.1 Identify key vulnerabilities by re-confirming those presented in this proposal</p> <p>1.3.2 Define objectives for the planning process</p> <p>1.3.3 Define shortlist of proposed future adaptation actions through further multi-criteria analysis, cost-benefit analysis and applying environmental and social safeguards, considering the specific needs of women and indigenous people</p> <p>1.3.4 Write up draft plans for review and approval</p> <p>1.3.5 Approve draft plans</p>	
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**Project Component 2:** Socially inclusive infrastructure built in target towns that protects people from climate change related impacts and provides continuous services despite current and anticipated future changes in the climate

<p><b>Outcome 2</b> 57,144 people, 53.5% of whom are female, who currently have inadequate water and/or protective infrastructure, have access to year-round, clean water and protective infrastructure despite current climate hazards and future changes in climate</p>	<p>The target population has access to clean, year-round water supply, which is able to withstand current and anticipated future climate extremes</p>	<p>Neither town has access to reliable water supply, nor capacity to adapt to future changes in climate conditions</p>	<p>57,144 people, 53.5% of whom are female, have access to affordable, clean and climate-resilient water supply</p>	<p>R People are unwilling to pay for water and/or unwilling to switch away from traditional practices of sourcing water</p> <p>A There will be continuous water supply from the river</p>	<p>Site visits, photographs, testimony from communities</p>	<p>Mid-term, end</p>	<p>UN-Habitat, NPSE Savankhet</p>
<p><b>Output 2.1.</b> New resilient infrastructure constructed in response to climate change impacts, including</p>	<p>Physical infrastructures and connections in place</p>	<p>There is no adaptive water supply infrastructure in place at present</p>	<p>2 water supply systems constructed that are able to continue functionality in present and</p>	<p>R Construction delays</p> <p>A Capacity building efforts proposed in this project will be sufficient</p>	<p>Plans, site visits, photos</p>	<p>Mid-term, end</p>	<p>UN-Habitat, NPSE Savannakhet</p>

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variability		in the two towns	anticipated future climate conditions	to ensure that the construction takes place on time, to budget			
<b>Activities</b> <ul style="list-style-type: none"> <li>• Re-confirm designs by engineer</li> <li>• Further public consultation, including consultations with women and indigenous people</li> <li>• Procure materials</li> <li>• Hire local communities through the People’s Process</li> <li>• Begin construction</li> <li>• Establish NPSE offices and management structure in the two districts</li> <li>• Monitor (including under ESMP)</li> <li>• Complete</li> </ul>				<b>Milestones</b> <ul style="list-style-type: none"> <li>▪ Construction underway by Month 9</li> <li>▪ Complete by month 42</li> </ul>			
<b>Project component 3:</b> Knowledge and awareness enhanced from national to local levels along the economic corridor, ensuring sustainability and potentially leading to policy changes at the national level							
<b>Outcome 3</b> Project implementation is fully transparent. All stakeholders, including women, are informed of products and results and have access to these for replication.	Level of awareness at the local and national level of climate change adaptation actions and potential for replication	Awareness of the need to take adaptation actions and the potential for replication remains very low aside from specialists in climate change adaptation	At least 100, including at least 35 women, government staff are aware of the project’s activities and have improved knowledge and capacity to replicate its benefits	R Competing priorities and the long-term nature of climate change mean that other short-term actions  A There will be incentives to develop adaptation projects in the future	Training reports	Mid-term, end	MoNRE, UN-Habitat

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<p><b>Output 3.1.</b> Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.</p>	<p>No. of knowledge products generated by the project (knowledge products could be newspaper articles, published case studies and tools or guidelines).</p>	<p>Information-sharing is typically limited, and there is no institutionalised mechanism to capture project results</p>	<p>At least 20 knowledge products generated by the project by its end (see indicators column)</p>	<p>R Limited capacity to consume such knowledge products in a country with numerous aid projects ongoing</p> <p>A Knowledge products are an essential catalyst of replication actions</p>	<p>Knowledge products</p>	<p>Mid-term, end</p>	<p>MoNRE</p>
<p><b>Output 3.2</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure, including the provision of infrastructure in a way that benefits women</p>	<p>NAP and post-Paris climate policies and reporting reflect urban adaptation and basic service provision priorities, and issues relating to women</p>	<p>National Climate change related policies show some consideration of urban infrastructure adaptation</p>	<p>NAP and all post-Paris climate policy thoroughly reflects urban and basic service adaptation priorities</p>	<p>R Competing priorities at the national level</p> <p>A There is continued political level support for the prioritisation of urban and basic service infrastructure adaptation at the national level</p>	<p>Policy documents, NAP</p>	<p>End</p>	<p>MoNRE</p>
<p>Activities</p> <p>3.1.1 Develop case studies, and other appropriate good practice documentation.</p> <p>3.1.2 Establish contact with national newspapers and write semi-regular articles about project successes</p> <p>3.1.3 Based on training, develop local language guidance and tools. Where guidance is produced for communities it should be usable as oral materials, for the benefit of indigenous and illiterate sections of the community.</p> <p>3.1.4 Develop video, fliers and other KM products, as appropriate and under the guidance of the PMC</p> <p>3.2.1 Engage in regular dialogue with NAP stakeholders and those engaged in Post-Paris work</p>				<p>Milestones</p> <ul style="list-style-type: none"> <li>• Activities under 3.1 will be implanted regularly throughout the project</li> <li>• Activities under output 3.2 will be implemented on-demand, in alignment with the NAP and climate policy process</li> </ul>			



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3.2.2. Conduct alignment workshops with NAP Stakeholders 3.2.3 Provide support to NAP team and other stakeholders involved in Post-Paris policy work to integrate urban and basic service adaptation considerations	
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**Table 20 - Activities and Milestones**

Output	Year 1			Year 2			Year 3			Year 4					
<b>Output 1.1.</b> Training provided to district, provincial and national government staff on resilient infrastructure design. Female government staff must be represented		X		X			X		X						
<b>Output 1.2.</b> Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented		X		X			X		X						
<b>Output 1.3.</b> Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the project area. The master plans will include specific provisions for the development and climate change resilience of women.				X				X			X				
<b>Output 2.1.</b> New resilient infrastructure constructed in response to climate change impacts, including variability			X	X	X	X	X	X	X	X	X	X	X	X	
<b>Output 3.1</b> Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.			X			X		X		X		X		X	X
<b>Output 3.2</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure, including the provision of infrastructure in a way that benefits women			X			X		X		X		X		X	X

## F. Project alignment with the Adaptation Fund results framework

**Table 21 – Project Alignment with AF Priorities**

Project Outcome	Project Outcome Indicator	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
<p><b>Outcome 1.1</b> 40 government staff, of whom at least 15 are female, have increased capacity to design climate resilient urban infrastructure in small towns</p> <p><b>Outcome 1.2</b> 60 government staff, of whom at least 20 are female, have capacity to develop climate resilient town master plans and two master plans approved, that support the development of resilient infrastructure, serving 57,144 people.</p>	<p>Level of capacity at the subnational level increased</p> <p>Comprehensive adaptation action plans in place for Sayphouthong and Sethamouak Towns</p>	<p><b>Outcome 2:</b> Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses</p>	<p>2.1. No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks</p>	<p><b>\$125,000</b></p> <p><b>\$225,000</b></p>
<p><b>Outcome 2</b> 57,144 people, of whom 53.5% are female, who currently have inadequate water and/or protective infrastructure, have access to year-round, clean water and protective infrastructure despite current climate hazards and future changes in climate</p>	<p>The target population has access to clean, year-round water supply, which is able to withstand current and anticipated future climate extremes</p>	<p><b>Outcome 4:</b> Increased adaptive capacity within relevant development and natural resource sectors</p>	<p>4.2. Physical infrastructure improved to withstand climate change and variability-induced stress</p>	<p><b>\$4,000,000</b></p>

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<p><b>Outcome 3</b> Project implementation is fully transparent. All stakeholders, including women, are informed of products and results and have access to these for replication.</p>	<p>Level of awareness at the local and national level of climate change adaptation actions and potential for replication</p>	<p><b>Outcome 1:</b> Reduced exposure at national level to climate-related hazards and threats  and  <b>Outcome 7:</b> Improved policies and regulations that promote and enforce resilience measures</p>	<p>Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis   7. Climate change priorities are integrated into national development strategy</p>	<p><b>\$237,557</b></p>
Project Output	Project Output Indicator	Fund Output	Fund Output Indicator	Grant Amount (USD)
<p><b>Output 1.1.</b> Training provided to district, provincial and national government staff on resilient infrastructure design. Female government staff must be represented</p>	<p>Number of government staff trained, disaggregated by sex</p>	<p><b>Output 2.1:</b> Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events</p>	<p>2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events</p>	<p><b>\$125,000</b></p>
<p><b>Output 1.2.</b> Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented</p>	<p>Number of staff trained, disaggregated by sex</p>	<p><b>Output 2.1:</b> Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events</p>	<p>2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events</p>	<p><b>\$125,000</b></p>
<p><b>Output 1.3.</b> Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the</p>	<p>Developed adaptation plans</p>	<p><b>Output 2.2:</b> Targeted population groups covered by adequate risk reduction systems</p>	<p>2.2.1. Percentage of population covered by adequate risk-reduction systems</p>	<p><b>\$100,000</b></p>

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project area. The master plans will include specific provisions for the development and climate change resilience of women.				
<b>Output 2.1.</b> New resilient infrastructure constructed in response to climate change impacts, including variability	Physical infrastructures and connections in place	<b>Output 4:</b> Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	<b>\$4,000,000</b>
<b>Output 3.1</b> Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.	No. of knowledge products generated by the project (knowledge products could be newspaper articles, published case studies and tools or guidelines).	<b>Output 1:</b> Risk and vulnerability assessments conducted and updated at a national level	1.1. No. and type of projects that conduct and update risk and vulnerability assessments	<b>\$170,000</b>
<b>Output 3.2</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure	NAP and post-Paris climate policies and reporting reflect urban adaptation and basic service provision priorities	<b>Output 7:</b> Improved integration of climate-resilience strategies into country development plans	7.2. No. or targeted development strategies with incorporated climate change priorities enforced	<b>\$67,557</b>

Adaptation Fund Core Indicators	Indicative Targets	Comments
1 Number of Beneficiaries	57,144 beneficiaries, 53.5% of whom are women	This only counts the direct beneficiaries of the infrastructure works in the two towns. It does not count government staff who will benefit from training or people who will benefit from improved infrastructure that will ultimately emerge from the training, master-planning or policy enhancement

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		components of the project.
2. Early Warning Systems	0	The project does not target early warning systems
3. Assets Produced, Developed, Improved, or Strengthened	2	The project strengthens two water supply systems in Sayphouthong and Sethamouak Towns
4. Increased income, or avoided decrease in income	All beneficiaries	All beneficiaries will have access to affordable, clean water. This means that, as water becomes more scarce and therefore more expensive as a result of climate change, the beneficiaries will have continued water supply as a result of the project.
5. Natural Assets Protected or Rehabilitated	2	The project will also strengthen and protect the riverbank and nearby riparian ecosystems

### G. Detailed Budget

Table 21 – Detailed Budget

Programme component	Outputs	Activities	Total Budget (Activity)	Total budget (Output)	Year 1	Year 2	Year 3	Year 4
Develop town level master plans which integrate climate change adaptation into socially inclusive infrastructure, spatial planning and land-use management in and beyond the project area. Capacity built at District, Provincial and National level to plan for climate-resilient infrastructure development and to maintain and manage infrastructure	<b>Output 1.1.1</b> Training provided to district, provincial and national government staff on resilient infrastructure design, Female government staff must be represented			\$125,000	\$50,000	\$75,000	0	0
		1.1 Define trainee group	\$5,000	<ul style="list-style-type: none"> <li>• Climate Change expert: \$24,000</li> <li>• Infrastructure expert: \$40,000</li> <li>• Capacity building expert: \$20,000</li> <li>• ESS: \$12,000</li> <li>• GIS: \$9,000</li> <li>• Travel: \$10,000</li> <li>• Workshops: \$10,000</li> </ul>	\$5,000			
		1.2 Baseline knowledge/training needs assessment	\$20,000		\$20,000			
		1.3 Prepare the exact nature of the training materials based on the specific requirements of the trainee group	\$25,000		\$25,000			
		1.4 Provide the trainings and mentorship of the trainee group through a mixture of training workshops and 'on the job' type training	\$65,000			\$65,000		
		1.5 Monitor the achievement of the output of the training	\$10,000			\$10,000		
	<b>Output 1.2.1</b> Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented				\$125,000	\$50,000	\$75,000	0
	2.1 Define trainee group (note that this is a different group from that trained under Output 1.1)	\$5,000	<ul style="list-style-type: none"> <li>• Urban Planning expert: \$16,000</li> <li>• Infrastructure expert: \$44,000</li> <li>• Climate Change Expert: \$24,000</li> <li>• Capacity</li> </ul>	\$5,000	\$5,000			
	2.2 Baseline knowledge/training needs assessment	\$20,000		\$20,000				
	2.3 Prepare the exact nature of the training materials based on the specific requirements of	\$25,000		\$25,000				

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		the trainee group		building Expert: \$20,000 • Travel: \$7,000 • Workshops: \$14,000				
		2.4 Provide the trainings and mentorship of the trainee group through a mixture of training workshops and 'on the job' type training	\$65,000			\$65,000		
		2.5 Monitor the achievement of the output of the training	\$10,000			\$10,000		
		<b>Output 1.3.1</b> Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the project area. The master plans will include specific provisions for the development and climate change resilience of women.		\$100,000	\$25,000	\$50,000	\$25,000	
		1.3.1 Identify key vulnerabilities by re-confirming those presented in this proposal	\$10,000	• Urban Planning expert: \$16,000 • Infrastructure expert: 20,000 • Climate Change Expert: \$24,000 • Travel: \$7,000 • Workshops: \$14,000 • Miscellaneous: \$19,000	\$10,000			
		1.3.2 Define objectives for the planning process	\$5,000		\$5,000			
		1.3.3 Define shortlist of proposed future adaptation actions through further multi-criteria analysis, cost-benefit analysis and applying environmental and social safeguards, considering the specific needs of women and indigenous people	\$45,000		\$10,000	\$35,000		
		1.3.4 Write up draft plans for review and approval	\$20,000			\$15,000	\$5,000	
		1.3.5 Approve draft plans	\$20,000				\$20,000	
		<b>Project component total</b>			<b>\$350,000</b>	<b>\$125,000</b>	<b>\$200,000</b>	<b>\$25,000</b>
Socially inclusive infrastructure built in target towns that protects people from climate change related impacts and	<b>Output 2.1</b> New resilient infrastructure constructed in response to climate change impacts, including variability	Re-confirm designs by engineer	\$25,000	• Infrastructure costs: \$3,900,000 Other allied costs: \$100,000	\$25,000			
		Further public consultation	\$25,000		\$25,000			
		Construction of facility in Sayphouthong	\$3,200,000		\$300,000	\$1,500,000	\$1,200,000	\$200,000
		Construction of facility in Sethamouak	\$700,000		\$50,000	\$250,000	\$400,000	



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		Establishment of NPSE Sayphouthong	\$30,000				\$30,000		
		Establishment of NPSE Phine District (Sethamouak)	\$20,000				\$20,000		
	<b>Project component total</b>			<b>\$4,000,000</b>	<b>\$400,000</b>	<b>\$1,750,000</b>	<b>\$1,650,000</b>	<b>\$200,000</b>	
Knowledge and awareness enhanced from national to local levels along the economic corridor, ensuring sustainability and potentially leading to policy changes at the national level	<b>Output 3.1</b> Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.			\$170,000	\$15,000	\$50,000	\$50,000	\$55,000	
		3.1.1. Develop case studies	\$50,000	<ul style="list-style-type: none"> <li>• KM expert: \$75,000</li> <li>• Printing: 25,000</li> <li>• Climate Change Expert: \$24,000</li> <li>• Infrastructure Expert: 24,000</li> <li>• Travel: \$20,000</li> <li>• Miscellaneous: \$2,000</li> </ul>			\$15,000	\$35,000	
		3.1.2 Establish contact with national newspapers and write semi-regular articles about project successes	\$50,000		\$5,000	\$25,000	\$10,000	\$10,000	
		3.2.3 Based on training, develop local language guidance and tools	\$70,000		\$10,000	\$25,000	\$25,000	\$10,000	
		<b>Output 3.2</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure, including the provision of infrastructure in a way that benefits women			\$67,557	\$10,000	\$10,000	\$30,000	\$17,557
			3.2.1 Engage in regular dialogue with NAP stakeholders and those engaged in Post-Paris work	\$10,000	<ul style="list-style-type: none"> <li>• CC expert: \$16,000</li> <li>• Infrastructure expert: 20,000</li> <li>• Travel: \$7,000</li> <li>• Workshops: \$14,000</li> <li>• Miscellaneous: \$10,557</li> </ul>	\$2,500	\$2,500	\$2,500	\$2,500
			3.2.2. Conduct alignment workshops	\$40,000		\$7,500	\$5,000	\$17,500	\$10,000
			3.2.3 Provide support to NAP team and other stakeholders involved in Post-Paris policy work to integrate urban and basic service adaptation considerations	\$17,557			\$2,500	\$10,000	\$5,057
		<b>Project component total</b>				<b>\$237,557</b>	<b>\$25,000</b>	<b>\$60,000</b>	<b>\$80,000</b>
	<b>Project Activities Total</b>				<b>\$4,587,557</b>	<b>\$550,000</b>	<b>\$2,010,000</b>	<b>\$1,755,000</b>	<b>\$272,557</b>

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<b>Programme execution</b>	Project Manager		\$290,000	\$41,250	\$103,750	\$103,750	\$41,250
	Office staff and technical support		\$60,000	\$7,500	\$22,500	\$22,500	\$7,500
	Office facilities		\$66,567	\$16,642	\$16,642	\$16,642	\$16,641
	Travel related to execution		\$40,000	\$10,000	\$10,000	\$10,000	\$10,000
	End-Term Evaluation		\$25,000				\$25,000
<b>Programme execution total</b>			<b>\$481,567</b>	<b>\$75,392</b>	<b>\$152,892</b>	<b>\$152,892</b>	<b>\$100,391</b>
<b>Total Programme Cost</b>			<b>\$5,069,124</b>	<b>\$625,392</b>	<b>\$2,162,892</b>	<b>\$1,907,892</b>	<b>\$372,948</b>
<b>Programme cycle management</b>	PSC 7 Percent (on total operational budget including components below) approx. 7,1 percent		\$363,362	\$35,000	\$70,000	\$200,000	\$58,362
	Evaluation support cost (HQ)		\$10,000	\$1,500	\$2,800	\$3,900	\$1,800
	Project Support Costs (ROAP) - Project Management Committee Meetings	\$6,000		\$3,000	\$1,000	\$1,000	\$1,000
	- IE staff salary / supervision of reports etc.	\$41,014		\$3,000	\$8,000	\$26,000	\$4,014
	- Project supervision missions	\$10,500	\$57,514	\$1,500	\$3,000	\$3,000	\$3,000
<b>Programme cycle management total</b>			<b>\$430,876</b>	<b>\$44,000</b>	<b>\$84,800</b>	<b>\$233,900</b>	<b>\$68,176</b>
<b>Amount of Financing Requested</b>			<b>\$5,500,000</b>	<b>\$669,392</b>	<b>\$2,247,692</b>	<b>\$2,141,792</b>	<b>\$441,124</b>

## H. Disbursement Schedule

	Year 1	Year 2	Year 3	Year 4	Total
	1 <sup>st</sup> disbursement – upon agreement signature	2 <sup>nd</sup> disbursement – One Year after project start <ul style="list-style-type: none"> <li>▪ Upon First Annual Report</li> <li>▪ Upon financial report indicating disbursement of at least 70% of funds</li> </ul>	3 <sup>rd</sup> disbursement - Two years after project start <ul style="list-style-type: none"> <li>▪ Upon Second Annual Report</li> <li>▪ Upon financial report indicating disbursement of at least 70% of funds</li> </ul>	4 <sup>th</sup> disbursement – Third Year after Project Start <ul style="list-style-type: none"> <li>▪ Upon Third Annual Report</li> <li>▪ Upon financial report indicating disbursement of at least 70% of funds</li> </ul>	
<b>Milestone</b>	Milestones (by end of year) <ul style="list-style-type: none"> <li>- Inception workshop report</li> <li>- Initial training provided on resilient infrastructure design</li> <li>- Initial training provided on climate mainstreamed urban planning.</li> <li>- Designs re-confirmed by engineer and procurement underway</li> <li>- Advocacy materials (project brochure, social media) developed</li> </ul>	Milestones (by end of year) <ul style="list-style-type: none"> <li>- All training complete under Outputs 1.1 and 1.2</li> <li>- Masterplans developed in draft</li> <li>- Infrastructure construction advanced</li> <li>- PMC meeting</li> <li>- Advocacy materials developed and distributed</li> <li>- Climate policy alignment workshop conducted</li> </ul>	Milestones (by end of year) <ul style="list-style-type: none"> <li>- All masterplans complete, with new adaptation investments developed</li> <li>- Infrastructure constructed or in a highly advanced stage.</li> <li>- Advocacy materials all developed</li> <li>- PMC meeting</li> <li>- Climate policy alignment workshop conducted and alignment identified</li> </ul>	Milestones (by end of year) <ul style="list-style-type: none"> <li>- All infrastructure complete, functional and providing services</li> <li>- Final evaluation</li> <li>- Climate policy update completed</li> </ul>	

Schedule date	October 2019 Or Upon Signing	October 2020	October 2021	October 2022	TOTAL
A. Project Funds (US\$)	\$670,000	\$2,000,000	\$1,705,000	\$212,557	\$4,587,557
B. Programme Execution	\$80,392	\$162,892	\$152,892	\$85,391	\$481,567
C. Programme Cycle Mgt	\$54,000	\$94,800	\$233,900	\$48,176	\$430,876
<b>TOTAL</b>	<b>\$804,392</b>	<b>\$2,257,692</b>	<b>\$2,091,792</b>	<b>\$346,124</b>	<b>\$5,500,000</b>

## Part IV: Endorsement by government and certification by the Implementing Entity

**A. Record of endorsement on behalf of the government<sup>57</sup>** Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:

Mr. Syamphone SENGCHANDALA Deputy Director General Department of Climate Change (DCC) Ministry of Natural Resources and Environment  Designated National Authority for the Adaptation Fund of Lao PDR	Date: 31 <sup>st</sup> December, 2018  (Note, this is the main endorsement letter)
Mr. Phomma Veovaranh, Director General, Water Supply Department, Ministry of Public Works & Transport	Date 26 <sup>th</sup> December 2018  (Note, this is a supporting letter)

Please see letters scanned on the following page

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1. <sup>6.</sup> Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.



Lao People's Democratic Republic  
Peace Independence Democracy Unity Prosperity

Ministry of Natural Resources and Environment (MONRE)  
Department of Climate Change (DCC)

1028-...-...  
No...../DCC  
Vientiane Capital, 31. December 2018

To: The Adaptation Fund Board  
c/o Adaptation Fund Board Secretariat  
Email: [Secretariat@Adaptation-Fund.org](mailto:Secretariat@Adaptation-Fund.org)  
Fax: 202 522 3240/5

**Subject: Endorsement for “Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR”.**

Dear Sir or Madam

In my capacity as the National Designated Authority for the Adaptation Fund in Lao PDR, I confirm that the aforementioned project proposal is in accordance with the government of Lao PDR's national priorities in implementing climate change adaptation actions to reduce the impacts caused by the adverse effects of climate change. A final discussion took place in December 2018 between UN-Habitat, the Multilateral Implementing Entity and the proposed executing entities, including MoNRE, at which all stakeholders agreed to give support to the project.

Accordingly, I am delighted to endorse the aforementioned project and request the Adaptation Fund to give it due consideration. If approved, the project will be implemented by UN-Habitat, and executed by MoNRE, the Ministry of Public Works and Transport and the Nam Papa State Enterprise of Savannakhet Province. Several other government ministries and agencies will also be important stakeholders for the implementation of the project.



Sincerely,

Mr. Syamphone Sengchandala  
Deputy Director General  
Department of Climate Change (MoNRE)  
Designed Authority for the Adaptation Fund of Lao PDR



Lao People's Democratic Republic  
Peace Independence Democracy Unity Prosperity

Ministry of Public Works and Transport  
Department of Water Supply

No.: 515/DWS  
Date: 26 DEC 2018

To: Mr. Syamphone Sengchandala  
Deputy Director General  
Department of Climate Change (MoNRE)  
Designed Authority for the Adaptation Fund of Lao PDR

**Subject: Clearance Letter for the proposal on “Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR”.**

Dear Mr. Syamphone,

In my capacity as Director General of Department Water Supply at Ministry of Public Works and Transports (MPWT) that currently working as Executing Entity with UN-Habitat on implementation for the Adaptation project in Lao PDR on “Enhancing the climate and disaster resilience of the most vulnerable rural and emerging urban human settlements in Lao PDR” with referring to the MoU signed between UN-Habitat and MPWT dated 28<sup>th</sup> April 2017, please be informed that the ongoing project’s to enhance the climate and disaster resilience of the most vulnerable human settlements in Southern Laos by increasing sustainable access to basic infrastructure systems and services, emphasizing resilience to storms, floods, droughts, landslides and disease outbreaks by providing a comprehensive approach which strengthens national and local government capacities, policies and legal frameworks, enhances community capacities and facilitates processes that responds to current and future needs and provides a strong mix of soft and hard interventions it is anticipated that local resilience at the household, community and human settlements level is sustainably strengthened.

Whilst the planned interventions are strongly rooted in national and local priorities, in particular Sustainable Development Goal 11 (and several of its targets), Make cities and human settlements inclusive, safe, resilient and sustainable as well as Goal 6 (and its targets), Ensure availability and sustainable management of water and sanitation for all will be addressed by the project.

This initiatives are already piloting and demonstrating innovative approaches, developing institutional capacities of the national government and local authorities to increase the resilience of human settlements and infrastructure systems; enabling communities to improve their well-being/health conditions by developing local capacities and resilience strategies for their settlements and infrastructure systems; enhancing climate and disaster resilient infrastructure systems in human settlement; and as a module to scaling up to the another regional parts of Lao PDR.

I confirm that the above national project/programme proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Lao PDR.

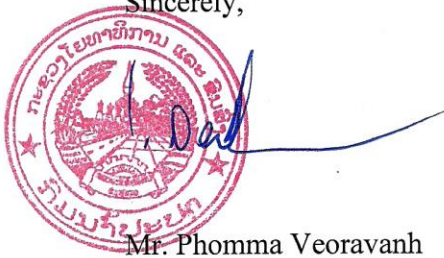
As you are aware that Department of Water Supply, MPWT, and UN-Habitat with your support and endorsement, had submitted a 2<sup>nd</sup> concept note to the Adaptation Fund, entitled "*Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR*". We are delighted that this concept note has been approved by the Adaptation Fund Board at its meeting in October 2018.

UN-Habitat has now developed the full proposal in consultation with my department and the provincial/district authorities. The scope of work and activities in the proposal are in line with our Ministry's strategy and overall strategy of the NSEDP.

Accordingly, I am pleased to confirm to you, Mr. Syamphone Sengchandala, the National Focal Point for Adaptation Fund of Lao PDR, that we agree with the contents of the document and we would like you to kindly endorse the above project/programme proposal so as to receive support from the Adaptation Fund.

Grateful if you could kindly issue an endorsement letter please.

Sincerely,



Mr. Phomma Veoravanh  
Director General of Department Water Supply  
Ministry of Public Works and Transports

## Implementing Entity Certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans, including Laos's National Socio-economic Development Plan, and its Second National Communication under the UNFCCC, and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the implementing entity will be fully (legally and financially) responsible for the implementation of the project/programme.

*For Rungthong OIC.*

Raf Tuts, Director, Programme Division, UN-Habitat

**Date: January 3<sup>rd</sup>, 2019**

Tel and email: +254-20-762-3736,  
raf.tuts@un.org

Project Contact Person: Bernhard Barth, Human Settlements Officer, Regional Office for Asia and the Pacific,

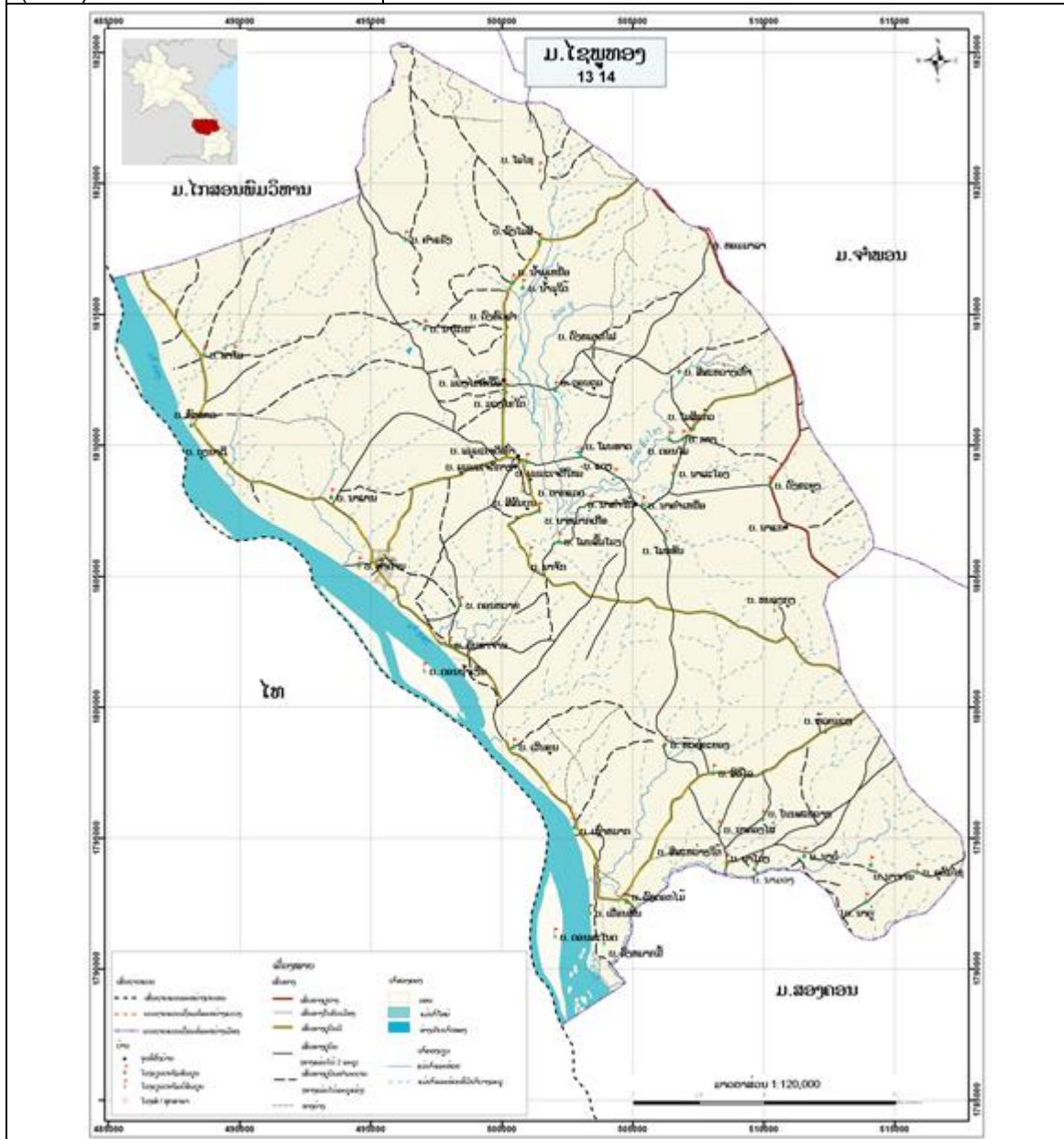
Tel+ 81-92-724-7121

Email: [bernhard.barth@un.org](mailto:bernhard.barth@un.org)



## Annex 1 – Rapid Vulnerability Assessments (RVA) from Sayphouthong and Sethamouak Towns

RAPID VULNERABILITY ASSESSMENT (RVA)		
1314	SAYPHOUTHONG	SAVANNAKHET PROVINCE, LAO PDR
Population of District (2017)		48,188
Population of District Town (2017)		48,188
Population Growth Rate		1.65% annum
Population of District Town (2025)		54,929
Population of District Town (2032)		61,596



One of the small towns in Lao PDR proposed for inclusion in the Adaptation Fund programme is **Sayphouthong** District in Savannakhet Province. Savannakhet Province is the most populated province in Lao PDR with the total population of 970,478 persons. The Province comprises of 15 districts of which four including Sayphouthong are officially classified as poor districts. The district of Sayphouthong is located in the Mekong lowlands in the western portion of Savannakhet province.

RAPID VULNERABILITY ASSESSMENT (RVA)	
1314	SAYPHOUTHONG SAVANNAKHET PROVINCE, LAO PDR
<p>Sayphouthong District is the urban settlement located in the East-West Economic Corridor along Mekong river with the border with Thailand, the second friendship bridge across the Mekong at Savannakhet to Moukdahan (Thailand) and the already upgraded Highway No. 9 together with measures being taken to facilitate cross-border transportation created new opportunities to the community living along the Corridor. While Lao PDR is essentially a rural country, Sayphouthong District town of Savannakhet and other urban centers are playing an increasingly important role in the country's economic and social development.</p> <p>In view of the above, the Government of Lao PDR considers as of high priority the improvement of social and physical basic infrastructures of small towns along the Corridor in order to realize the expected benefits. Subsequently, Sayphouthong District Town with comparable advantage in terms of <i>“Climate action into urban planning to build resilient communities along an economic corridor in Lao PDR”</i>.</p> <p><b>Sayphouthong</b> District Town is composed of 39 core villages in 8 village clusters with a total 2017 population of 48,188 persons. In 2015, 100% of survey respondents belong to Tai-Kadai linguistic group (consisting of 73% Lao and 27% Phoutay) that form the majority of the national population. There are in total households, of which 8,908 households (27%) are considered as poor households.</p>	
CLIMATE CHANGE & DISASTER RISKS	
TEMPERATURE	Significant increase
RAIN	Significant Decrease
FLOOD	Years: every year
STORM	Hima/Ketsana/Nokten/Songka
DROUGHT	Years: every 3-4 years
LANDSLIDE	Along Mekong River
ENVIRONMENTAL ISSUES	
DEFORESTATION	No deforestation activity
HYDROPOWER	No hydropower dam
MINING	No mining activity
UXO	None
SOURCES OF INCOME	
AGRICULTURE	65%
LIVESTOCK	20%
HANDICRAFT	5%
CASUAL LABOR	10%
EDUCATION	
PRIMARY SCHOOL	36
SECONDARY SCHOOL	28
FULL SECONDARY SCHOOL	17
HEALTH	
HOSPITAL	1
DISPENSARY	30
WATER-BORNE	Yes
VECTOR-BORNE	Dengue
WASH	
WATER	Dug well/deep bore well/Mekong river
SANITATION	65% households have latrine
PRIORITIZED NEEDS	
WATER SUPPLY	First priority
HOUSEHOLD LATRINE	First priority
SCHOOL LATRINE	Second priority
HOSPITAL SANITATION	Second priority
WASTEWATER (DEWATS)	
FLOOD PROTECTION	Bank protection of Mekong river (length: 700-800 m)
LANDSLIDE PROTECTION	
WATER SOURCE	Mekong river

RAPID VULNERABILITY ASSESSMENT (RVA)		
1314	SAYPHOUTHONG	SAVANNAKHET PROVINCE, LAO PDR
<b>MANAGEMENT</b>		
<b>SHELTER PROTECTION</b>		
<b>ISSUES/PROBLEM OF URBAN BASIC SERVICES</b>		
- Water Supply	<p>The Mekong River is the main water resource in Sayphouthong district. Its catchment accounts for 9% of the country's land area. According to a draft National Water Resource profile, the flow in the Mekong river varies from a minimum of 2,000 m<sup>3</sup>/s in the dry season to several thousand m<sup>3</sup>/s in the wet season, with an average of 15,000 m<sup>3</sup>/s. While the river is reportedly very high turbidity in the raining season, it carries large quantities of sediment in the wet season. The Mekong river is extensively used for irrigation.</p> <p>There are no water treatment facilities in the Sayphouthong District Town. Wealthier households buy bottled water at US\$15/m<sup>3</sup> about 100 times higher than the average tariff for formalized system. The majority of the population in the town relies on untreated water from open dug wells of over 40 meters deep, boreholes using hand pump and electric pump. Surface water (Sethamouak river) is also used during the rainy season although the turbidity is high. Water shortage in the dry season is a serious threat to the health of the population, particularly the poor households who could not afford to dig wells of over 35-40 meters deep.</p> <p>Present water supply coverage: <b>0%</b></p>	
- Wastewater/Drainage/Sanitation	<p>The issue of wastewater and the sanitation in Sayphouthong is not different from other small towns in the country: uncontrolled disposal of domestic wastewater, no drainage ditches in the public place such as markets, bus stations, schools or hospitals etc. Some households still have no sanitary latrine.</p> <p>Present sanitation coverage: <b>65%</b></p>	
- Solid Waste	<p>Solid waste is disposed in barren land without any control. Used plastic bags can be seen in areas around market places. Drainage ditches are provided only along the main urban road.</p>	
- Capacity Building	<p>Strengthening the capacity of the NSPE-Savannakhet aiming to ensure efficient and cost-effective management and operation, improved services to customers.</p>	
<b>PROPOSED INTERVENTIONS</b>		
- Integrating Climate Change Adaptation and Disaster Risk Management (DRM) in Urban Planning of Sayphouthong District	<ul style="list-style-type: none"> <li>• Improve understanding of the role of urban planning in climate change adaptation and disaster risk reduction;</li> <li>• Highlight importance of incorporating climate change adaptation and disaster risk information in urban planning;</li> <li>• Provide guidance on how to incorporate climate change adaptation and disaster risk information in urban planning; and</li> <li>• Identify enabling factors for incorporating disaster risk information in urban planning</li> </ul>	
- 24/7 Water Supply with water treatment system 3,600m <sup>3</sup> /day	<p>Proposed a water supply system 24/7 using surface water from Mekong river including:</p> <ul style="list-style-type: none"> <li>• Construction of intake involves construction of land disintegration prevention system by utilizing the Gabion Box system. Water will be pumped through submerging</li> </ul>	

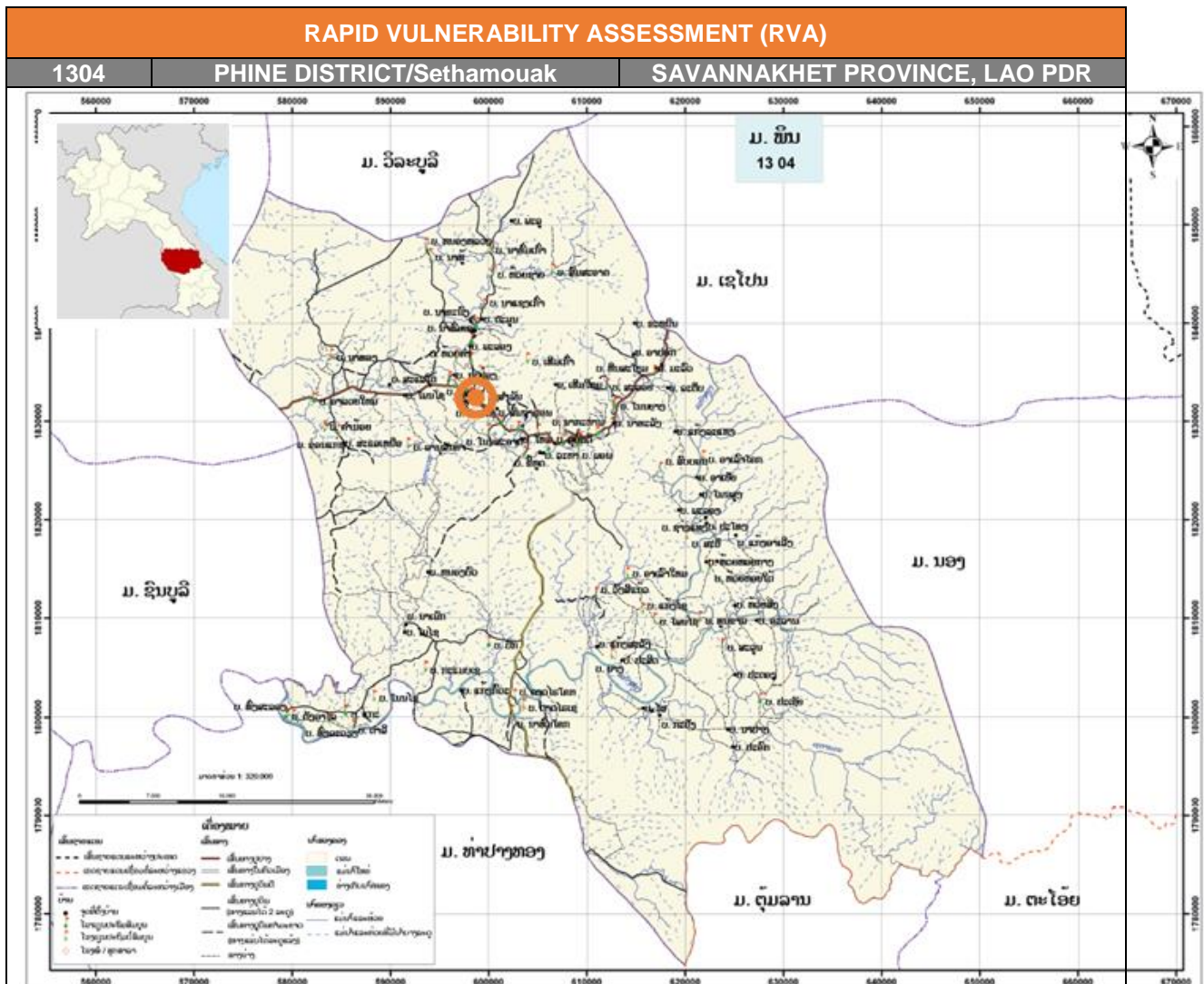
RAPID VULNERABILITY ASSESSMENT (RVA)		
1314	SAYPHOUTHONG	SAVANNAKHET PROVINCE, LAO PDR
		<p>pump and transmitted through DN 150 mm pipeline to the Pre-Sedimentation tank/Flocculation, Sedimentation Tank/Filters Tank/Clear Water Reservoir Tank/Pump House/Chlorine House/Elevated Reservoir 400 m3/Pump station with clear water tank 260 m3/Pipe Laying System and Sewage System inside the plant/Collection Pipe./Distribution Pipe network; and</p> <ul style="list-style-type: none"> <li>Household 24/7 water connection</li> </ul>
- Sanitation		<ul style="list-style-type: none"> <li>Improvement/new construction of latrines for poor households</li> </ul>
- Capacity Building		<ul style="list-style-type: none"> <li>Develop institutional capacities of the local authorities the disaster resilience of human settlements and infrastructure systems; and</li> <li>Capacity of the water supply utility improved resulting in more efficient and cost effective management and operation, and better service to the population</li> </ul>
<b>Expected Outcomes<sup>58</sup></b>		
- Water Supply		<p>Improved water supply 24/7 to 54,929 people by 2025, including the poor and vulnerable; and</p> <ul style="list-style-type: none"> <li>Improved community health, disaster resilience and family income levels</li> </ul>
- Sanitation		<ul style="list-style-type: none"> <li>Increased sanitation coverage to remaining poor people; and</li> <li>Greater awareness of the need for improved wastewater/drainage/ sanitation, leading to a cleaner urban environment.</li> </ul>
- Solid Waste disposal		<ul style="list-style-type: none"> <li>Organize solid waste collection to promote a cleaner urban environment</li> </ul>
- Capacity building		<ul style="list-style-type: none"> <li>Increase institutional capacities of the local authorities the disaster resilience of human settlements and infrastructure systems;</li> <li>More efficient and cost-effective management and operation; and</li> <li>Improve revenue generation, leading to sustainable improvements</li> </ul>
<b>COST OF INTERVENTIONS (US Dollars)</b>		
	Urban Planning	100,000
	Water Supply	3,200,000
	Sanitation	80,000
	Capacity building	50,000
	<b>Total</b>	<b>3,430,000</b>
<b>Impact on building climate and disaster resilience capacities of vulnerable small town</b>		<p>Increase institutional capacities of the local authorities the disaster resilience of human settlements and infrastructure systems (as such water supply coverage and wastewater/drainage/sanitation conditions, particularly for the population living in area officially classified as poor and vulnerable district):</p> <ul style="list-style-type: none"> <li>Establish water supply 24/7 for 48,188 peoples, including the poor and vulnerable;</li> <li>Pilot rainwater harvesting to promote the conservation rainwater and mitigate the flood;</li> <li>Increase sanitation coverage in the low-income and flood prone areas for the 16,865 remaining peoples;</li> </ul>

<sup>58</sup> Please note that the water supply was prioritized as the main adaptation measure for this proposal

RAPID VULNERABILITY ASSESSMENT (RVA)		
1314	SAYPHOUTHONG	SAVANNAKHET PROVINCE, LAO PDR
		<p>and</p> <ul style="list-style-type: none"> <li>• Enable communities in the small town to improve their well-being/health conditions by developing local capacities and resilience strategies for their settlements and infrastructure systems</li> </ul>
RAPID VULNERABILITY ASSESSMENT PICTURES		
Meeting with District governor Dated 19/07 /2018		
Meeting with stakeholder: DoNRE/DoL/DoH/DPWT/ NPSE-Savannakhet Dated 19/07 /2018		
Data collection	 	
Consultation with communities		

RAPID VULNERABILITY ASSESSMENT (RVA)		
1314	SAYPHOUTHONG	SAVANNAKHET PROVINCE, LAO PDR
<p>Field visit with District governor: To select the location for Intake &amp; WTP At Mekong river</p>	  	
	<p>Field visit: Location for Elevated reservoir</p> 	

RAPID VULNERABILITY ASSESSMENT (RVA)		
1304	PHINE DISTRICT/Sethamouak	SAVANNAKHET PROVINCE, LAO PDR
Population of District (2018)	64,634	
Population of District Town (2018)	8,956	
Population Growth Rate	2.5% annum	
Population of District Town (2025)	10,288	
Population of District Town (2030)	11,358	



One of the small towns in Lao PDR proposed for inclusion in the Adaptation Fund programme is **Sethamouak** the District Town of Phine in Savannakhet Province. Savannakhet Province is the most populated province in Lao PDR with the total population of 979,000 persons. The Province comprises of 15 districts of which four including Phine are officially classified as poor districts. Phine District is the third largest urban settlement located in the East-West Economic Corridor, on the junction between the highway No 9 linking the North East of Thailand to the central Part of Viet Nam and the highway No. 23 providing access to the South-East hinter land provinces (Saravane, Attapeu and Sekong).

In view of the above, the Government of Lao PDR considers as of high priority the improvement of social and physical basic infrastructures of small towns along the Corridor in order to realize the expected benefits. Subsequently, Sethamouak District Town of Phine District with comparable advantage in terms of **“Climate action into urban planning to build resilient communities along an economic corridor in Lao PDR”**.


**Sethamouak** Town is composed of 7 villages with a total 2018 population of 8,956 persons. About sixty two (62) percent of the population are “Phouthai, Katang and Mangkone”, three of the minority ethnic groups in Lao PDR. There are in total 1,533 households, of which 541 households (35%) are considered as poor households.

CLIMATE CHANGE & DISASTER RISKS	
TEMPERATURE	Significant increase
RAIN	Significant Decrease
FLOOD	Years: 2005/2009/2011/2012/2017
STORM	Hima/Ketsana/Nokten/Doksuri
DROUGHT	Years: 2013/2014/2015
ENVIRONMENTAL ISSUES	

RAPID VULNERABILITY ASSESSMENT (RVA)		
1304	PHINE DISTRICT/Sethamouak	SAVANNAKHET PROVINCE, LAO PDR
<b>DEFORESTATION</b>	No deforestation activity	
<b>HYDROPOWER</b>	No hydropower dam	
<b>MINING</b>	No mining activity	
<b>UXO</b>	None	
SOURCES OF INCOME		
<b>AGRICULTURE</b>	55%	
<b>LIVESTOCK</b>	25%	
<b>HANDICRAFT</b>	5%	
<b>CASUAL LABOR</b>	15%	
EDUCATION		
<b>PRIMARY SCHOOL</b>	6	
<b>SECONDARY SCHOOL</b>	6	
<b>FULL SECONDARY SCHOOL</b>	5	
HEALTH		
<b>HOSPITAL</b>	1	
<b>DISPENSARY</b>	6	
<b>WATER-BORNE</b>	Yes	
<b>VACTOR-BORNE</b>	Dengue	
WASH		
<b>WATER</b>	Hand dug well/deep bore well/Xetamouak river	
<b>SANITATION</b>	43% households have latrine	
PRIORITIZED NEEDS		
<b>WATER SUPPLY</b>	First priority	
<b>HOUSEHOLD LATRINE</b>	First priority	
<b>SCHOOL LATRINE</b>	Second priority	
<b>HOSPITAL SANITATION</b>	Second priority	
<b>WASTEWATER (DEWATS)</b>		
<b>FLOOD PROTECTION</b>	Bank protection of Sethamouak river (length: 80 m)	
<b>LANDSLIDE PROTECTION</b>		
<b>WATER SOURCE MANAGEMENT</b>	Sethamouak river	
<b>SHELTER PROTECTION</b>		
ISSUES/PROBLEM OF URBAN BASIC SERVICES		
- Water Supply	<p>There are no water treatment facilities in the Sethamouak District Town. Wealthier households buy bottled water at US\$15/m<sup>3</sup> about 100 times higher than the average tariff for formalized system. The majority of the population in the town relies on untreated water from open hand dug wells of over 40 meters deep, boreholes using hand pump and electric pump. Owners of private boreholes sell the water by drums of 200 litres at a cost of US\$0.2 to US\$0.3 per drum that is affordable to those who have substantial income such as those engaged in trade and service sectors. Surface water (Sethamouak river) is also used during the rainy season although the turbidity is high. Water shortage in the dry season is a serious threat to the health of the population, particularly the poor households who could not afford to dig wells of over 40 meters deep. Some have to rely on water confined in depression areas of river bed.</p> <p>Present water supply coverage: <b>0%</b></p>	
- Wastewater/Drainage/Sanitation	<p>The issue of wastewater and the sanitation in Phine is not different from other small towns in the country: uncontrolled disposal of domestic wastewater, no drainage ditches in the public place such as markets, bus stations, schools or hospitals etc. Some households</p>	



RAPID VULNERABILITY ASSESSMENT (RVA)		
1304	PHINE DISTRICT/Sethamouak	SAVANNAKHET PROVINCE, LAO PDR
		still have no sanitary latrine. Present sanitation coverage: <b>43%</b>
- Solid Waste		Solid waste is disposed in barren land without any control. Used plastic bags can be seen in areas around market places. Drainage ditches are provided only along the Highway No. 9
- Capacity Building		Strengthening the capacity of the NSPE-Savannakhet aiming to ensure efficient and cost-effective management and operation, improved services to customers.
PROPOSED INTERVENTIONS		
- Integrating Climate Change Adaptation and Disaster Risk Management (DRM) in Urban Planning of Phine District		<ul style="list-style-type: none"> <li>• Improve understanding of the role of urban planning in climate change adaptation and disaster risk reduction;</li> <li>• Highlight importance of incorporating climate change adaptation and disaster risk information in urban planning;</li> <li>• Provide guidance on how to incorporate climate change adaptation and disaster risk information in urban planning; and</li> <li>• Identify enabling factors for incorporating climate change adaptation and disaster risk information in urban planning</li> </ul>
- 24/7 Water Supply with water treatment system		<p>Proposed a water supply system 24/7 using surface water from Sethamouak river including:</p> <ul style="list-style-type: none"> <li>• Construction of Dam approx. 65 m length;</li> <li>• Construction of intake involves construction of land disintegration prevention system by utilizing the Gabion Box system. Water will be pumped through submerging pump and transmitted through DN 150 mm pipeline to the Pre-Sedimentation tank/Flocculation, Sedimentation Tank/Filters Tank/Clear Water Reservoir Tank/Pump House/Chlorine House/Elevated Reservoir 200 m<sup>3</sup>/Pipe Laying System and Sewage System inside the plant/Collection Pipe./Distribution Pipe network; and</li> <li>• Household 24/7 water connection. Further information can be found in <a href="#">Annex 4</a>.</li> </ul>
- Sanitation		<ul style="list-style-type: none"> <li>• Improvement/new construction of latrines for poor households</li> </ul>
- Capacity Building		<ul style="list-style-type: none"> <li>• Develop institutional capacities of the local authorities the disaster resilience of human settlements and infrastructure systems; and</li> <li>• Capacity of the water supply utility improved resulting in more efficient and cost effective management and operation, and better service to the population</li> </ul>
Expected Outcomes		
- Water Supply		<ul style="list-style-type: none"> <li>• Improved water supply 24/7 to 10,288 people by 2025, including the poor and vulnerable; and</li> <li>• Improved community health, disaster resilience and family income levels</li> </ul>

RAPID VULNERABILITY ASSESSMENT (RVA)		
1304	PHINE DISTRICT/Sethamouak	SAVANNAKHET PROVINCE, LAO PDR
- Wastewater/Drainage/Sanitation	<ul style="list-style-type: none"> <li>• Increased sanitation coverage to remaining poor people; and</li> <li>• Greater awareness of the need for improved wastewater/drainage/ sanitation, leading to a cleaner urban environment.</li> </ul>	
- Solid Waste disposal	<ul style="list-style-type: none"> <li>• Organize solid waste collection to promote a cleaner urban environment</li> </ul>	
- Capacity building	<ul style="list-style-type: none"> <li>• Increase institutional capacities of the local authorities the disaster resilience of human settlements and infrastructure systems;</li> <li>• More efficient and cost-effective management and operation; and</li> <li>• Improve revenue generation, leading to sustainable improvements</li> </ul>	
COST OF INTERVENTIONS (US Dollars)		
	Urban Planning	50,000
	Water Supply	750,000
	Sanitation	30,000
	Solid Waste disposal	20,000
	Capacity building	30,000
	<b>Total</b>	<b>880,000</b>
<b>Impact on building climate and disaster resilience capacities of vulnerable small town</b>	<p>Increase institutional capacities of the local authorities the disaster resilience of human settlements and infrastructure systems (as such water supply coverage and wastewater/drainage/sanitation conditions, particularly for the population living in area officially classified as poor and vulnerable district):</p> <ul style="list-style-type: none"> <li>• Establish water supply 24/7 for 8,956 people, including the poor and vulnerable;</li> <li>• Pilot rainwater harvesting to promote the conservation rainwater and mitigate the flood;</li> <li>• Increase sanitation coverage in the low-income and flood prone areas for the 5,104 remaining peoples; and</li> <li>• Enable communities in the small town to improve their well-being/health conditions by developing local capacities and resilience strategies for their settlements and infrastructure systems</li> </ul>	
RAPID VULNERABILITY ASSESSMENT PICTURES		
<p>Meeting with District governor/DoNRE/DPWT/ NPSE-Savannakhet Dated 13/12/2017</p>		

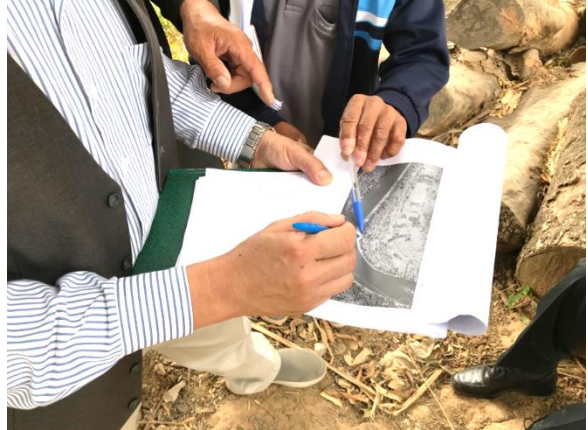
RAPID VULNERABILITY ASSESSMENT (RVA)

1304

PHINE DISTRICT/Sethamouak

SAVANNAKHET PROVINCE, LAO PDR

Data collection



Consultation with communities



Field visit:  
Sethamouak river  
(at downstream)



Field visit:  
Sethamouak river  
(at upstream)



## Annex 2 – Comprehensive Gender Assessment of Sayphouthong and Phine Districts (Sethamouak is the largest population centre in Phine District)



November 2018 – Revised April 2019

### ***Background***

The proposed project's main objective is to build climate resilience in small towns along the east-west economic corridor in the central region of Lao PDR. The two towns of Sayphouthong, in the district of the same name and Sethamouak (in Phine district) are highly vulnerable settlements in the province of Savannakhet. These towns have been selected due to their low level of resilience based on high levels of poverty, high exposure to severe climatic events, low institutional capacity and preparation.

In Savannakhet Province, floods commonly destroy houses and infrastructure and public buildings and common health problems resulting from the consumption of contaminated water arise frequently. This combined with high levels of poverty, rapid urbanisation, almost no access to basic services, particularly continuous, clean water supply, limited knowledge of how climate change interplays with these issues, high numbers of indigenous people, and gender inequality, combine to give a low adaptive capacity. Based on these factors and through close and frequent consultations, authorities and communities unanimously prioritised the construction of water treatment plants in the two towns to serve the surrounding communities.

As described in [Part 1](#) of the proposal, women in the two target towns (and as in much of Laos) are particularly vulnerable to climate change, because severe hazards such as storms, floods

and droughts combine with drivers of underlying vulnerability for women, such as lower levels of high school enrolment and graduation, lower levels of literacy, lower rates of unemployment, higher rates of economic inactivity, dependence on agriculture and a lack of social protection. Furthermore, social norms and traditions can place additional burdens on women. In many cases women are primary care givers, and are responsible for collecting water. Because of the additional burdens placed on women through water collection, care giving and the impacts of climate change, providing consistent water supply to households is an adaptation action that has benefits for all, but is particularly beneficial for women.

However, it is essential that the project is designed and implemented in a way that specifically benefits women. This annex provides baseline figures that the project partially seeks to address, and provides wider awareness of the contextual factors that constrain women's ability to adapt to climate change. This proposal also includes an environmental and social risk assessment and management plan (see [Annex 5](#)), in response to the Environmental and Social, and Gender Policies of the Adaptation Fund. Measures to protect and promote women in the implementation of the project are described there. This section focuses on the current baseline situation of women in the two target districts. However, this section, and the proposal more generally, has been developed in conjunction with Lao Women's Union and the quotas for female participation it includes have been discussed and agreed with LWU.

### **Context**

According to the 2015 Population and Housing Census, Savannakhet Province has a population of 969,700, making it the most populous province in the country, with around 15% of the national population. The male to female sex ratio is 0:98:1<sup>59</sup>.

As Savannakhet is situated along the EWEC and is characterised by high rates of urbanisation, development poses risks for vulnerable populations, particularly women. Fragile natural resources, a reliance on agriculture for food and income and low literacy levels amongst women all contribute to the vulnerabilities and risks of unplanned, unmonitored growth in Savannakhet. Furthermore, more frequent and severe natural disasters are affecting the area every year, which calls for an urgent need to act now rather than later.

Women in Laos, including in Savannakhet and the two target towns, play a critical role in agriculture and other economic activities – even when the statistics (such as those in the census) say that women are less likely to be in informal employment. Women in the target area are also responsible for providing primary care in the household, preparation of food and also spend long hours performing off-farm and household chores, including collecting water and firewood, and caring for children<sup>60</sup>.

Key socio-economic characteristics within Savannakhet follow trends of the country as a whole. Recent data has shown that women in most areas of Lao PDR face a lack of awareness about maternal health and malnutrition, and education inequality. Low-quality education and

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<sup>59</sup> LSB *et al* (2015) Lao Population and Housing Census Provisional Report, p.16

<sup>60</sup> Khamphoui, Phanlany. 2012. "SCOPING STUDY ON WOMEN'S LEADERSHIP IN THE AGRICULTURE SECTOR IN LAO PDR: Capacity Building for Women's Leadership in Farmer Producer Organizations in Asia and the Pacific Region Project". *Women Organising for Change in Agriculture and NRM (WOCAN)*.

consistent dropout rates among girls have ranked Lao PDR as one of the lowest performers in the East Asia Pacific region in girls' education<sup>61</sup>.

During the stakeholder consultations, involving Lao Women's Union representatives in Savannakhet province, it was identified that mostly women and girls are responsible for the task of collecting water in the target settlements of the project (as like in many other places), which poses a serious burden, especially if they have to walk considerable distances while combining other chores such as caring for young children. Women lose out on other income opportunities while there are instances of girls dropping out of schools to attend to such domestic errands.

### **Socioeconomic data on men and women in the target area**

<b>Data</b>	<b>National</b>	<b>Savannakhet</b>	<b>Sayphouthong</b>	<b>Phine District/Sethamouak</b>
Population	6,492,228 <sup>62</sup>	969,700 <sup>63</sup>	48,818	8,956 (Sethamouak)
Sex Ratio	0.99:1 M/F	0.99 (M/F)	0.88 (M/F)	0.84 (M/F Sethamouak)
Average Household Size <sup>64</sup>	5.3 <sup>65</sup>	6.1	5.3	6.3 (Phine), 5.9 (Sethamouak)
Female-Headed Households	13.2%		19.5%	8.4%
No. of Villages with electricity (/total villages) <sup>66</sup>	84% of households <sup>67</sup>	739/1017	39/40	49/100 (Phine)
No. of Villages with piped <sup>68</sup> water supply (/total villages)	7% of households <sup>69</sup>	111/1017	2/40	7/100
Primary School Enrolment and girl/boy ratio <sup>70</sup>	75.8% Male 75.3% Female	68.3%, 0.92 (G/B)	81.2%, 1:1	53.1% 0.9:1 (G/B – Phine District)
High school enrolment and girl/boy ratio	23.4% Male 20.1% Female	15%, 1.04:1 (G/B)	17.6%, 0.97:1 (G/B)	6.2%, 0.84:1 (G/B – Phine District)
Literacy Rate <sup>71</sup>	88.5% men 76.7% women	71% men 56% women	93.2% (gender disaggregated figures not available)	47.6% (gender disaggregated figures not available)
Dependency rate <sup>72,73</sup>	38.9%	36.4%	29.8%	43.4%
Women in Non-Agricultural Employment	37.2%	41.4%	46.2%	36.6%

<sup>61</sup> Japan International Cooperation Agency (JICA). 2013. "Profile on Environmental and Social Considerations in Lao P.D.R". Retrieved from [http://open\\_jicareport.jica.go.jp/pdf/12144762.pdf](http://open_jicareport.jica.go.jp/pdf/12144762.pdf)

<sup>62</sup> Lao Statistics Bureau (2015) Results of the Population and Housing Census, p.22

<sup>63</sup> LSB *et al* (2015) Lao Population and Housing Census Provisional Report, p.48

<sup>64</sup> *Ibid*

<sup>65</sup> Lao Statistics Bureau (2015) Results of the Population and Housing Census, p.83

<sup>66</sup> LSB *et al* (2015) Lao Population and Housing Census Provisional Report, p.48

<sup>67</sup> Lao Statistics Bureau (2015) Results of the Population and Housing Census, p.91

<sup>68</sup> *ibid*

<sup>69</sup> Lao Statistics Bureau (2015) Results of the Population and Housing Census, p.91

<sup>70</sup> World Bank/Lao Statistics Bureau (2016) Where are the Poor? P.105

<sup>71</sup> *Ibid*, p.21 – refers to adults 25-64 years old

<sup>72</sup> People of working age not in education or formal employment and not currently seeking employment. This is a proxy for women who do unpaid domestic work

<sup>73</sup> *Ibid*, p.113

Percentage of people born in the District they currently live <sup>74</sup>		89.5% men 92.9% women		
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### **Analysis**

As we understand that underlying vulnerabilities affect women more greatly than men, the data provided above paints a picture of high levels of underlying vulnerability, especially for women. In Sethamouak Town (and Phine District) there is an average family size of around 6, much greater than the national average. As women are the primary domestic care-givers<sup>75</sup>, this means that in the target area, especially in Sethamouak, they are more heavily burdened but domestic responsibilities, which would be exacerbated by both having to fetch water daily and by any severe impacts of climate change. Underlying vulnerability is generally higher in Sethamouak Town/Phine District, so it is worth noting that the rate of female headed households is 2 and a half times higher – and well above the national average – in Sayphouthong. This also indicates higher vulnerability, as women are responsible for both providing the main source of income, as well as domestic tasks described elsewhere in this Gender Assessment.

Electricity coverage is high throughout the target area, which improves outcomes for women, especially safety, through better lighting. However, as shown above and elsewhere in the proposal water supply is virtually non-existent, only 2 of Sayphouthong and 7 of Phine District's villages – and none of the villages targeted in this project, have piped water in the house, meaning the burden of collecting water falls almost entirely on women. This is one of the major justifications why the project has proposed water supply as an adaptation measure, and why women stand to benefit exponentially from it.

The education indicators in the target districts, as in much of Laos, are very poor. The primary enrolment rate nationally, in Savannakhet and in Sayphouthong has a relatively even girl to boy ratio, but in Phine District this is slightly lower for girls. However, the high school enrolment rate is very low throughout the country, but is even lower in Sayphouthong and a very low rate of just over 6 per cent in Phine District. The girl to boy ratio also decreases, especially in Phine. This is a severe development challenge – few people – especially women – are receiving sufficient education to enable them to move into industrial or service type jobs that tend to be less directly dependent on a conducive climate. The educational challenges are borne out in the literacy rate, which is low throughout the country and especially low in Phine. While gender disaggregated figures are not available, considering that female literacy is 15% lower in Savannakhet Province than male, we can assume that women's literacy is lower too in Phine. Literacy is a good proxy for adaptive capacity and it therefore shows that women have lower adaptive capacity.

The dependency rate is also high, again, especially in Phine District. Figures for the dependency ratio are not gender disaggregated, but a high dependency ratio is a proxy for high levels of women not in formal employment, and instead doing informal work inside and outside the home. In many cases, dependency ratios are high because women are required by the societal structure to do domestic tasks, such as collecting water and caring for infants or the elderly, while men work. High dependency often points to a household with only one

<sup>74</sup> Lao Statistics Bureau (2015) Results of the Population and Housing Census, p.140

<sup>75</sup> World Vision (2018) Gender Analysis Report: Partnership for Improved Nutrition in Lao PDR Pillar 3: Accelerating Healthy Agriculture and Nutrition

breadwinner, thus increasing vulnerability if that income source is cut off. Moreover, economic opportunities are not forthcoming in many cases, meaning women also lack opportunities to engage in the formal economy. These factors are exacerbated by climate change during droughts, for example, when water is scarce, or during severe storms, when homes are often damaged (and basic services may not be available).

Finally, women born in the district where they currently live is high, and slightly higher than the comparative figure for men. This tends to suggest low overall rates of migration (which is also backed up by the 2015 Population and Housing Census Report), especially for women. However, it also suggests a lack of mobility (probably directly related with low skill levels). This also correlates with higher vulnerability, because if disasters hit or slow onset, long-run changes occur, people, and especially women, are less able to move. The benefits of the provision of a closed water source for vulnerable populations, especially women cannot be underestimated. Major vulnerabilities in our target area such as low literacy and high dependency levels, can be lessened by easing the pressures of daily burdens. Importantly, water supply in or very nearby the home frees up vital hours of the day for education, skill acquirement or farming; having the potential to lessen dependency levels with alternative sources of income. Women who have to walk a long distance to remote water sources are also exposed to the possibility of physical or sexual violence and the burden of carrying children. The project's activities will therefore have benefits beyond the climate change adaptation benefits for women through providing water in or adjacent to the home.

### **Provisions and Activities of the Project to include women**

While the analysis above points to complex socioeconomic problems that go well beyond the scope of the project's activities, the project nevertheless makes specific targets for the adaptation and benefit of women.

As shown in [Part III, Section E](#), the inclusion of women has been included throughout the Results Framework. All training and planning outputs and outcomes include at least 30% women. This represents an ambitious target, considering the paucity of professional female staff at the subnational level.

Component 2 of the project will provide adaptation benefits through year-round water supply to all households in both target towns, so there is no risk of exclusion for women as a result of this activity. However, female headed households will be prioritized so that they are the first to receive connections to the new infrastructure. Consultations will be held throughout the detailed planning and construction of the infrastructure in the two target towns, and this will involve specific focus groups/consultations with women (as well as indigenous people).

Component 3 will make specific recommendations to national policy development and enhancement, including, but not limited to, the under-formulation National Adaptation Plan and revision of the NDC. Specific knowledge will be generated and recommendations made on planning for and delivering adaptation projects in infrastructure in such a way that include and promote women, and enhance their adaptation outcomes.

In terms of the project's management and governance, as described in [Part III, Section A](#), Lao Women's Union will participate in the Project Management Committee, ensuring that a representative of women's interests will always participate in the highest management body of the project. The national level project team will have the explicit responsibility of ensuring that the project is included in compliance with the Gender Policy of the Adaptation Fund. The Project Execution Unit, which is the main manager of day-to-day activities at the provincial level, will



also have a representative from Lao Women's Union and at least one other female member. Overall, it is the responsibility of the team leader (in the project team) to ensure compliance with the Gender Policy of the Adaptation Fund, while the PMC will oversee this and provide guidance.

### **Gender Action Plan**

The project has developed the following gender action plan to ensure equal participation of women and other vulnerable groups, including indigenous people in the project's implementation. The GAP describes measures that have been or will be included in the project design and implementation approach to gender equality. This particularly focuses on the provisions that have been or will be made to ensure that women benefit equally from the planning and infrastructure components of the project and to ensure that women are not excluded.

Among the gender mainstreaming strategies to be implemented are:

- Ongoing consultations with women in women-only focus groups throughout the project implementation.
- Provide gender-sensitive training, awareness and communication for women, recognizing that literacy rates are low in the target area, especially for women
- Ensure that there are female staff members throughout the management hierarchy and that Lao Women's union is fully and meaningful engaged

The specific provisions of the gender action plan, by project outcome and activity, are highlighted in the table below:

<b>Project Outcome</b>	<b>Output</b>	<b>Action</b>	<b>Indicator</b>	<b>Responsible Party</b>
<p><b>Outcome 1.1</b> 40 government staff, at least 15 of whom female, have increased capacity to design climate resilient urban infrastructure in small towns</p>	<p><b>Output 1.1.1</b> Training provided to district, provincial and national government staff on resilient infrastructure design. Female government staff must be represented</p>	<p>Define the trainee group ensuring that women in professional positions are identified</p> <p>Conduct training needs assessment that includes information on barriers faced by women</p>	<p>Number of trainees – sex disaggregated</p> <p>Training materials</p>	<p>Executing entity Team Leader PMC will review the engagement of women</p>
<p><b>Outcome 1.2</b> 60 government staff, at least 20 of whom are female, have capacity to develop climate resilient town master plans and two master plans approved, that support the development of resilient infrastructure, serving 57,144 people, 53.5% of whom are female.</p>	<p><b>Output 1.2.1</b> Training provided to district, provincial and national government staff on climate action mainstreamed urban planning. Female government staff must be represented</p> <p><b>Output 1.3.1</b> Two master plans developed, using knowledge generated by the project, to both provide sustainable adaptation benefits to the infrastructure designed under this project and to enable the government to better plan for adaptation in other infrastructure, beyond that in the project area</p>	<p>Define the trainee group ensuring that women in professional positions are identified (note this is a different trainee group from 1.1.1., above, and different women will be engaged)</p> <p>Conduct training needs assessment that includes information on barriers faced by women</p> <p>Conduct specific, targeted focus groups for women to ensure that the master plans have their input</p>	<p>Number of trainees – sex disaggregated</p> <p>Training materials</p> <p>2 masterplans that contain specific activities, targets and objectives for women.</p> <p>Focus Group Discussion documentation (photographs, attendance, etc)</p>	<p>Executing entity Team Leader PMC will review the engagement of women</p>
<p><b>Outcome 2</b> 57,144 people, 53.5% of whom are female, who currently have inadequate water and/or protective infrastructure, have access to year-round, clean water and protective infrastructure despite current climate hazards and future changes in climate</p>	<p><b>Output 2.1.</b> New resilient infrastructure constructed in response to climate change impacts, including variability</p>	<p>Further consultations to take place before and during construction, that will include women-only focus groups</p> <p>Ensure that women have the opportunity to work in construction (if they wish) and if they do, that facilities, including safety equipment and adequate sanitation facilities are available</p> <p>Female headed households will be prioritized to receive the first connections</p>	<p>Focus Group Discussion documentation (photographs, attendance, etc)</p>	<p>Executing entity Team Leader PMC will review the engagement of women</p>
<p><b>Outcome 3</b></p>	<p><b>Output 3.1.</b></p>	<p>When developing case studies, at least 1 will</p>	<p>Case studies</p>	<p>Executing entity</p>

<p>Project implementation is fully transparent. All stakeholders, including women, are informed of products and results and have access to these for replication.</p>	<p>Project activities and results are captured and disseminated through appropriate information for the beneficiaries, partners and stakeholders and the public in general.</p> <p><b>Output 3.2</b> Climate policy – especially the National Adaptation Plan and post-Paris agreement reporting – influenced to reflect the challenges of climate change adaptation in basic service and protective infrastructure, including the provision of infrastructure in a way that benefits women</p>	<p>be specific to the engagement of women in the project, and all case studies will stress the need to comprehensively engage women</p> <p>Identify 35 female government staff for awareness raising (these will be distinct from the government staff trained in Component 1)</p>	<p>Other awareness-raising materials</p>	<p>Team Leader PMC will review the engagement of women</p>
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## Annex 3 – Feasibility Study of Implementation for Sayphoutong Town

LAO PEOPLE'S DEMOCRATIC REPUBLIC  
MINISTRY OF PUBLIC WORKS AND TRANSPORT  
DEPARTMENT OF WATER SUPPLY

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# FEASIBILITY STUDY FOR SAYPHOUTHONG TOWN



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Prepared by  
UN-Habitat in association with NPSE-Savannakhet

## EXECUTIVE SUMMARY

### Project Description

Sayphouthong District is the urban settlement located in the East-West Economic Corridor along Mekong river with the border with Thailand, the second friendship bridge across the Mekong at Savannakhet to Moukdahan (Thailand) and the already upgraded Highway No. 9 together with measures being taken to facilitate cross-border transportation created new opportunities to the community living along the Corridor. While Lao PDR is essentially a rural country, Sayphouthong District town of Savannakhet and other urban centers are playing an increasingly important role in the country's economic and social development.

In view of the above, the Government of Lao PDR considers as of high priority the improvement of social and physical basic infrastructures of small towns along the Corridor in order to realize the expected benefits.

**Sayphouthong** is one of the small towns in Lao PDR proposed for inclusion in the Adaptation Fund programme. The proposed Sayphouthong district town aims to mainstream “**Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR**”, to provide safe, reliable and affordable 24/7 piped water supplies and village environmental improvements in small towns along an economic corridor. It has been formulated as a community-based project and in line with “Samsang” (3 level development), requiring the towns and their provincial authorities to demonstrate their commitment to the project and its associated reforms, thus encouraging a demand-driven approach. The project has a strong community participation focus, reinforced by environmental and social safeguard, health and sanitation awareness.

### Rationale

#### Background

While Lao PDR is essentially a rural country, Sayphouthong district town and other urban centers are playing an increasingly important role in the country's economic and social development. Over the past decade, substantial investments have been made in the urban water supply sector; however the majority of investment has focused on Vientiane capital and the four secondary towns, which represent only about 47% of the country's urban population. The remaining small towns with populations ranging from 4,000 to 20,000 were largely neglected until the UN-Habitat's project MEKWATSAN.

Inadequate water supply and poor environmental conditions in Sayphouthong town and other small towns deter socio-economic development and restrict the ability of the towns to serve as centers for economic activity and delivery of social services for their surrounding rural areas.

#### Project Supports Government Policy

The Project will build on the Government's policy of developing small towns as centers of marketing and agricultural processing, as economic links between rural, national and international markets, and as places offering non-farm employment to the rural poor. By developing these small urban centers, the Government is also seeking to reduce poverty through economic growth and improve geographical equity in urban social infrastructure development. The Project supports Government of Lao PDR's (GOL's) water supply sector goal which is to provide 24-hour per day access to safe drinking water for 80% of the urban population by the year 2020. For further information on how the project supports the

government's priorities and complies with laws and technical standards, see Part II, Sections D and E.

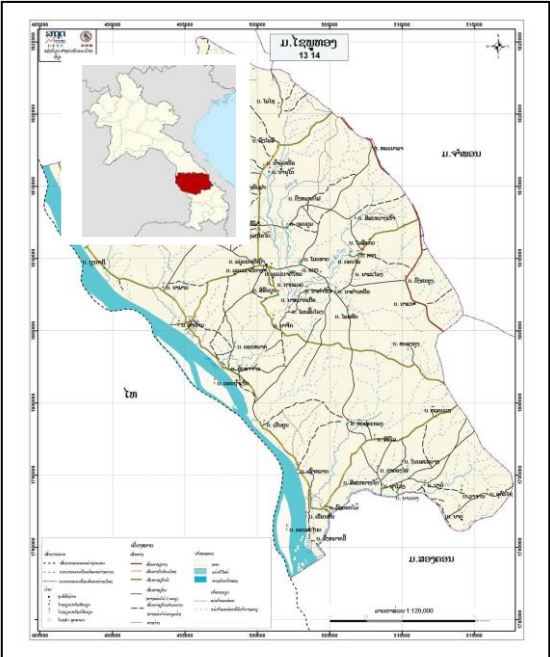
### Project Impact and Outcome

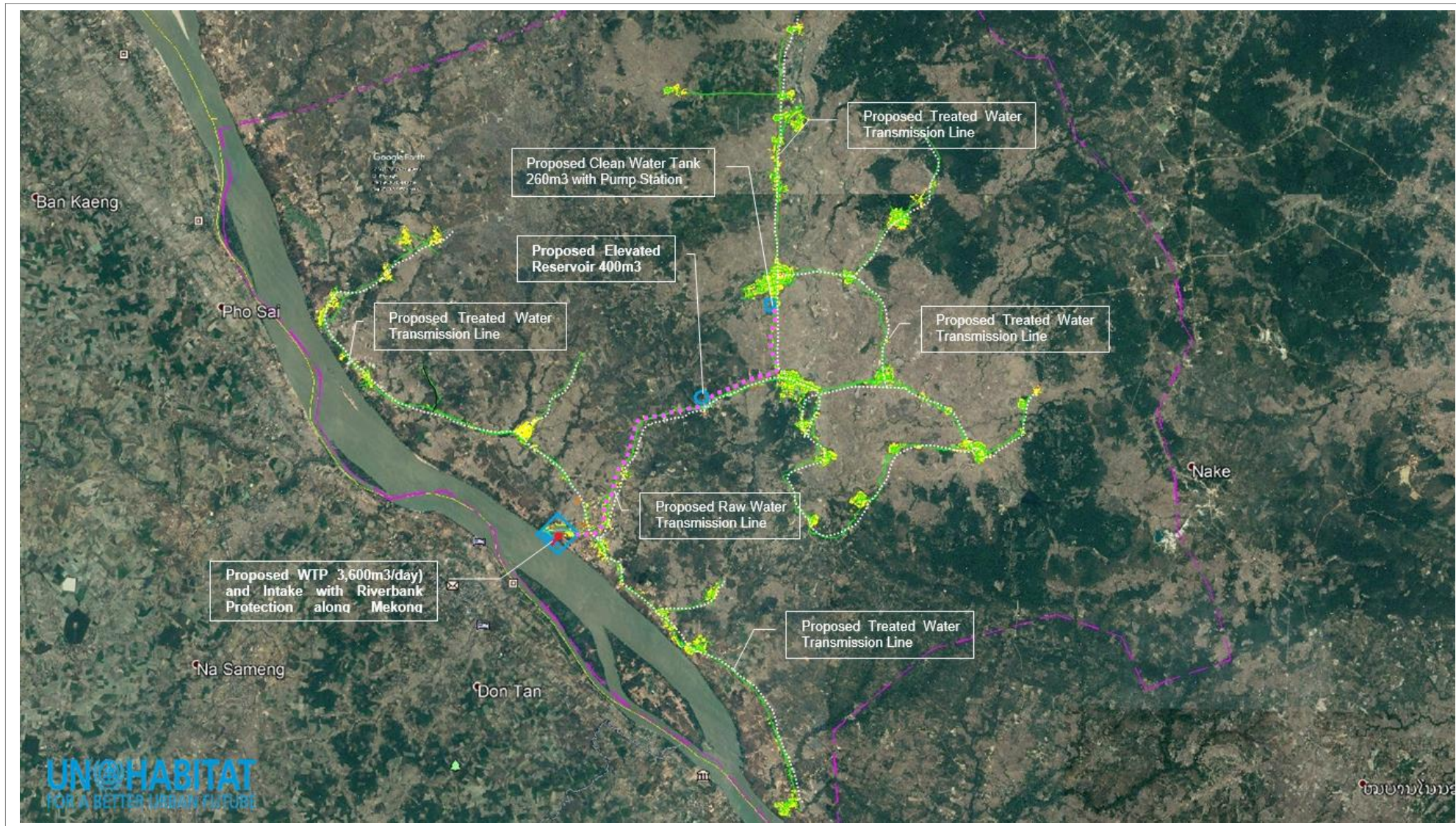
The expected impact of the Project is to build resilience to climate change in communities along an economic corridor in the central region of Lao PDR. This will be achieved by the provision of climate resilient infrastructure and the mainstreaming of climate action into urban planning. To achieve this objective, the project focuses its actions on highly vulnerable settlements along the economic corridor in the province of Savannakhet and also to improve quality of life of small town residents in Lao PDR and enhanced role of the small towns as economic, market, services, and manufacturing centers for their surrounding rural areas.

These outcomes will be achieved by:

- Mainstreaming climate action into urban planning to build resilient communities along an economic corridor in Lao PDR;
- Establishing new optimally sized water supply systems using appropriate innovation technologies;
- Motivating public participation in water and sanitation infrastructure development to improve the environment; and
- Strengthening the urban water supply sector planning, managing, and regulating capacity

### Location of Project: Sayphouthong District Town in Savannakhet Province



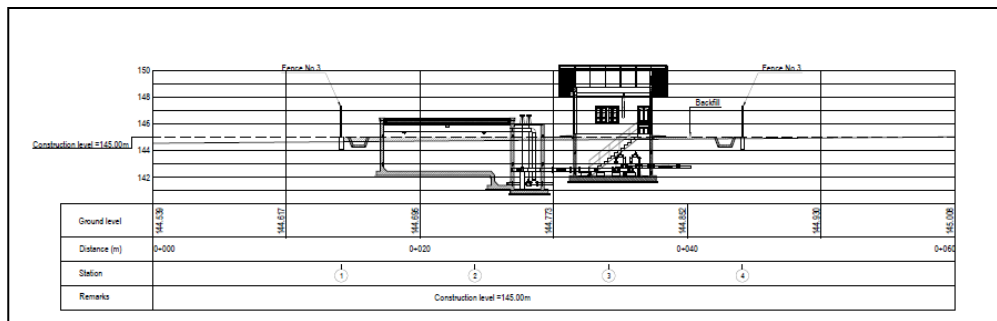


Location Plan of Proposed Sayphouthong Water Treatment Plant





- A lift transmission pumping station with 260 m<sup>3</sup> clear water tank at Mouangkay village to supply the treated water to the distribution network for the 39 core villages in 8 village clusters in Sayphouthong District Town; and



- Equipment for operation and maintenance (O&M) of the water supply systems will be procured for the Sayphouthong branch Nam Papa (BNP), including basic tools, laboratory equipment and office equipment. Households that apply to connect during the construction period will not be required to pay any up-front connection charges. This measure will assist poor and low-income groups to participate in the piped water supply system, encourage new connections and enhance PNP financial sustainability. Marketing and awareness campaigns will inform communities about the Project's connections policies and the benefits of connecting to PNP piped water supply.

**The Provincial Execution Unit** will implement the project. It will also enhance the capacities of village water and sanitation units (WATSANs) to implement and monitor the project.

**Capacity Development for O&M:** will help to develop more efficient systems in the town to manage urban services in a sustainable manner, by building the capacities of the provincial and branch NPSE and district Department of Public Works and Transport. It will also provide support to village water and sanitation units (WATSANs) and communities to enhance their capacities to operate and maintain village infrastructure and their on-site water and sanitation facilities.

### Executing Agency and Implementation Arrangements

These are described in [Part III, Section A](#).

### Implementation Period

The Project will be implemented over a four-year period from fourth quarter 2019 until fourth quarter 2023. The detailed implementation will be governed by an agreement of cooperation between UN-Habitat and NPSE Savannakhet. For further information on the implementation arrangements, please see [Part III, Section A](#).

### Procurement

Goods, works and services financed under the project will be procured in accordance with *the UN Procurement Manual*. International Competitive Bidding (ICB) procedures will be used for major civil works contracts estimated to cost over \$1 million, and for supply contracts valued over \$500,000. Procurement of civil works valued at less than \$1.0 million equivalent will be undertaken through national competitive bidding (NCB). Shopping procedures will be followed for materials and equipment packages or works estimated to cost less than \$100,000 equivalent.

The PEU in each province will be responsible for overseeing procurement. Installation of water meters and service connections will be carried out by the construction contractor under the main water supply construction contract for each town.

## Tariff and Affordability

The financial objectives of the sector are: (i) fully recover utility wide operation and maintenance (O&M) costs; (ii) recover utility wide debt service; (iii) maintain a utility wide debt service ratio of at least 1.2; (iv) gradually recover an increasing proportion of annual depreciation expense of the utility wide fixed assets; and (v) maintain its accounts receivable at less than 90 days of annual sales. To meet the agreed upon financial objectives of the sector, the projected utility wide tariffs shall be increased at a minimum of 0.2% every three years to keep pace with inflation. The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG).

The percentages of monthly household income spent on water, inclusive of the monthly meter rental and turnover tax, by the average household and LIG are below 5% in 2014 and 2018. However, the Water Law states that the expenditure on water should not exceed 3% of household income, the projected water tariffs are considered affordable. This tariff can be increased to 5% however, where necessary, to offset maintenance or depreciation costs, according to policy guidance from the Department of Housing and Urban Planning, Ministry of Public Works (references in Part II, Section E of the proposal).

The results of the socio-economic survey revealed that households are willing to pay an average of about Kip 12,300 per month for piped water supply with 81% of respondents willing to pay at least Kip 10,000 per month. It was noted that asset ownership, such as motorcycles, is also very evident in the town. However, the analysis above shows that the average monthly water bill in 2014 and 2018, inclusive of the monthly meter rental and turnover tax, are higher than the households' willingness to pay. However, affordability seems to be a far more reliable indicator. In addition, it has been found that the few poor families who either cannot afford or are unwilling to pay for water, regulate their consumption to meet their particular circumstances. During this transition period, the PNPs forgive unpaid bills. In addition, it is recommended that the minimum 5m<sup>3</sup>/month be eliminated, so that the poor only pay for what they actually use.

## Project Benefits and Beneficiaries

The project will benefit an estimated **61,596 residents by 2032** in the 39 core villages of Sayphouthong District Town by providing safe, reliable piped water supplies and improved urban environments that will have a direct impact on the health and living conditions of the town communities. Health and hygiene promotion activities will improve the health status of the target communities.

The town's economy will benefit from enhanced productivity as a result of health improvements, time savings in collecting water, as well as from increased urban efficiency arising from improved sanitation. Many residents will benefit from lower water costs and from savings in health care costs.

Sayphouthong There are in total households, of which 8,908 households (27%) households classified as poor. Nevertheless, all project interventions will either directly or indirectly benefit the poor. About 150 urban poor (Y2015) or 27% of the urban population will benefit from: (i) greater access to safe water supplies and sanitation which will improve health profiles, and; (ii) from improved sanitation that will enhance the poor's mobility and access to income-earning activities and government facilities such as schools and hospitals.

Both men and women will benefit from project activities, but women will be the major beneficiaries of the piped water supply system through timesaving, drudgery avoidance, and improved family health. Women will also benefit from the sanitation improvements. Female-headed households will be prioritized to receive water connections first, in accordance with the gender action plan, part of the gender assessment in [Annex 2](#).

## Land Acquisition and Resettlement (LAR)

The LAR impacts in Sayphouthong District Town are insignificant, or **AF category B2-Medium Risk**. There are no severely affected households. The main water supply facilities such as the major part of the intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way, with minor impacts on land, property or crops.

- **PROFILE OF SAYPHOUTHONG AREA**

### Town Location and Profile

**Sayphouthong** District is the urban settlement located in the East-West Economic Corridor along Mekong river with the border with Thailand, the second friendship bridge across the Mekong at Savannakhet to Moukdahan (Thailand) and the already upgraded Highway No. 9 together with measures being taken to facilitate cross-border transportation created new opportunities to the community living along the Corridor. While Lao PDR is essentially a rural country, Sayphouthong District town of Savannakhet and other urban centers are playing an increasingly important role in the country's economic and social development.

In view of the above, the Government of Lao PDR considers as of high priority the improvement of social and physical basic infrastructures of small towns along the Corridor in order to realize the expected benefits.

**Sayphouthong** District Town is composed of 39 core villages in 8 village clusters with a total 2017 population of 48,188 persons. In 2015, 100% of survey respondents belong to Tai-Kadai linguistic group (consisting of 73% Lao and 27% Phoutay) that form the majority of the national population. There are in total households, of which 8,908 households (27%) are considered as poor households.

The district town is the administrative, commercial and social center of the district, with many of the government offices, community and commercial facilities. Cluster 1 contains 7 primary schools and 1 secondary school; 10 pharmacies/dispensaries, 4 health clinics and 1 hospital; a market, and; nearly 200 businesses including restaurants, guesthouses, shops, garages, etc. The district administration offices and a bus station are also located in Cluster 1. In Cluster 2, there are 5 primary schools and 2 secondary schools; 5 pharmacies/dispensaries and 1 hospital; a market and about 50 small businesses.

### Natural Features

#### Topography

The town's 12 core villages are situated on the Mekong lowlands, about 25km northeast of the Mekong River. Songkhone district is bisected by the Xe Banghieng river, a major tributary of the Mekong. The Xe Banghieng originates at the Vietnam border some 200km northeast of Songkhone and joins the Mekong about 50km downstream of the town. The elevation of the core villages vary from about 140m at the Xe Banghieng riverbank, to 180m at Paksong near the district center. The town is surrounded by low-lying land and swamps which are transected by numerous intermittent streams.

#### Geology and Soils

Soils in Sayphouthong district consist of alluvial deposits of sand and sandy clay, underlain by sandstones. Nam Sa'at bore logs indicate 10m of soils and weathered rock overlying fissured sandstone. Sandstone outcrops are exposed at the lower end of the proposed water treatment

plant site at Thadan Village and sandstone is likely to be encountered at river bed level near the proposed intake site where the Mekong river has formed a “hairpin” bend.

Lao PDR has a tropical monsoon climate which features a pronounced dry season (November to February) and wet season (May to October). The dry season is generally cooler, though temperatures rise significantly in March and April prior to the onset of the rains. Rainfall data for Savannakhet province indicate that maximum monthly rainfall occurs in July and August, averaging 322mm in July over the past decade.

Average annual temperature is about 28°C, varying from a low of 18°C in December-February to a maximum of 35 °C in April. Monthly maximum temperatures are above 30 °C for most of the year. Evaporation averages 94mm/month, ranging from 60mm in August and September to more than 100mm from November until April.

### Surface water

The Mekong River is the main water resource in Sayphouthong district. Its catchment accounts for 9% of the country’s land area. According to a draft National Water Resource profile, the flow in the Mekong River varies from a minimum of 2,000 m<sup>3</sup>/s in the dry season to several thousand m<sup>3</sup>/s in the wet season, with an average of 15,000 m<sup>3</sup>/s. While the river is reportedly very high turbidity in the raining season, it carries large quantities of sediment in the wet season. The Mekong River is extensively used for irrigation. The proposed investment will extract 0.002% of the daily flow of water from the Mekong. Far below a level of extraction that could cause downstream impacts.

### Groundwater

Groundwater is used extensively for domestic water supply throughout Sayphouthong’s core villages, which contain over 3,216 pumped wells. Savannakhet Nam Saat (under the Provincial Department of Public Health) advised that, prior to 1995, the water table in Sayphouthong was at about 12m depth, but is now much lower because of increasing groundwater use which has affected the reliability of the wells. Household bores in Sayphouthong consist of two main types: typically 18m deep bores with hand pumps that yield about 0.3L/s, and 40-50m deep bores with electric pumps that yield about 0.5L/s. Nam Sa’at bore logs indicate that the deep bores take water from fissures within the underlying sandstone, which are rapidly depleted in the dry season. For this reason, groundwater extraction has been ruled out as an adaptation measure suitable for this project.

### Population and Household Characteristics

In 2017, the total population of the 39 core villages in 8 cluster villages was 48,118 people. Women account for 46% of household members (male/female ratio of 0.88); overall, they head approximately 7.8% of households in the town. 66.7% of the population is working age (15-60 years).

**Table Error! No text of specified style in document.-4: Sayphouthong Population Characteristics**

No	Core Villages	2017 Pop’n.	No. HH	Persons/ HH	M/F Ratio
1	Naphane	1,484	299	5.0	0.91
2	Thadan	1,868	353	5.3	0.86
3	Khanthacham	1,058	248	4.3	0.94
4	Doneway				

No	Core Villages	2017 Pop'n.	No. HH	Persons/ HH	M/F Ratio
		634	129	4.9	1.06
	<b>Total Cluster 1-THADAN</b>	<b>5,044</b>	<b>1,029</b>	<b>4.9</b>	<b>0.92</b>
1	Somsaat	848	168	5.0	0.93
2	Thapho	2,738	577	4.7	0.89
3	Houahad	1,284	206	6.2	0.79
4	Bungnady	703	151	4.7	0.85
	<b>Total Cluster 2-THAPHO</b>	<b>5,573</b>	<b>1,102</b>	<b>5.2</b>	<b>0.87</b>
1	Phoummachedy	1,549	356	4.4	0.93
2	Namakkeua	1,095	212	5.2	0.89
3	Phonsomhong	1,059	188	5.6	0.79
4	Phonthad	1,063	178	6.0	0.85
	<b>Total Cluster 3-PHOUMMACHADY</b>	<b>4,766</b>	<b>934</b>	<b>5.3</b>	<b>0.87</b>
1	Mouangkhay	3,139	631	5.0	0.93
2	Dontoum	702	189	3.7	0.89
3	Dongmakphay	1,979	331	6.0	0.79
4	Sysavangneua	976	145	6.7	0.85
	<b>Total Cluster 4-MOUANGKHAY</b>	<b>6,796</b>	<b>1,296</b>	<b>5.3</b>	<b>0.87</b>
1	Khamsan	1,245	200	6.2	0.93
2	Khouadam	1,043	190	5.5	0.89
3	Khamheng	1,270	222	5.7	0.79
4	Dongphosy	1,637	300	5.5	0.85
5	Namphou	2,198	375	5.9	0.85
6	Nadon	744	153	4.9	0.85
	<b>Total Cluster 5-NAMPHOU</b>	<b>8,137</b>	<b>1,440</b>	<b>3.7</b>	<b>0.87</b>
1	Takded	511	88	5.8	0.93
2	Phosykeo	1,618	205	7.9	0.89
3	Nakham	1,886	316	6.0	0.79

No	Core Villages	2017 Pop'n.	No. HH	Persons/ HH	M/F Ratio
4	Nalaong	813	131	6.2	0.85
5	Khamsensay	1,485	220	6.8	0.85
6	Phonthan	946	154	6.1	0.85
	<b>Total Cluster 6-NAKHAM</b>	<b>7,259</b>	<b>1,114</b>	<b>4.2</b>	<b>0.87</b>
1	Namoong	703	128	5.5	0.93
2	Sysavangtay	793	129	6.1	0.89
3	Houaymouang	1,285	291	4.4	0.79
4	Nadou	612	105	5.8	0.85
5	Nabo	879	145	6.1	0.85
6	Nachane	1,202	191	6.3	0.85
	<b>Total Cluster 7-NABO</b>	<b>5,474</b>	<b>989</b>	<b>3.8</b>	<b>0.87</b>
1	Houakhangong	1,162	247	4.7	0.93
2	Veunkhoun	878	169	5.2	0.89
3	Laomakhoud	732	149	4.9	0.79
4	Donesanod	285	60	4.8	0.85
5	Dongdokmay	1,432	238	6.0	0.85
6	Heunhinh	650	141	4.6	0.85
	<b>Total Cluster 8-VEUNKHOUN</b>	<b>5,139</b>	<b>1,004</b>	<b>3.4</b>	<b>0.87</b>
	<b>TOTAL</b>	<b>48,188</b>	<b>8,908</b>	<b>4.5</b>	<b>0.88</b>

### Ethnicity

In 2010, 100% of survey respondents belong to Tai-Kadai linguistic group (consisting of 73% Lao and 27% Phoutay) that form the majority of the national population.

### Population Growth and Migration

Between 2001 and 2006, the overall population of the core villages in Sayphouthong declined about 0.8%, possibly because of emigration of residents to work in Thailand. Sayphouthong is a well-established community. The 2007 data indicates that the average length of residency is more than 20 years. The population of the 39 core villages is forecast to grow at 1.65% p.a. with a projected population in 2032 of 61,596. (Section 4 describes the basis for population projections)

## **Education**

In Sayphouthong, approximately 8% of the population has never attended school. Of those who have attended school about 44.6% lower secondary level and only 0.21% have completed higher secondary respectively. About 20.7% have attended grade 1 to 4 of primary school and almost 19.8% have completed primary school.

## **Health and Hygiene Conditions**

The Sayphouthong 2015 survey results for '*incidence of water-related disease by HH*' did not highlight any significant incidence of disease for the last 6 months.

## **Land and House Tenure**

The majority of the interviewed households own their house and land (92%). Approximately 89.6% of those who owned the land and house obtained the ownership documents and most households said that they are allowed to sell their property.

## **Occupations and Livelihoods**

The main occupation of the population in Sayphouthong is farming (65%). Around 38% are the dependents including the children, the old age or disable people and the students who cannot contribute to the income of the family. Government staff and the teachers represent about 4% and 2% respectively. Based on data from surveyed households, the majority (60%) of women living in Sayphouthong core villages are economically active.

## **Income and Poverty Levels**

An attempt was made to ascertain the average monthly cash income and expenses of households. On analysis, it was found that figures provided were generally an estimation of the respondents. As with any study/survey one has to be extremely cautious. The monthly income per person is calculated dividing the yearly HH income by the average HH size in Sayphouthong (4.5), giving us an average monthly income of Kip 558,000 per person.

The new decree of the government issued in October 2009 has been applied to assess the proportion of poor households in Sayphouthong. The new criterion on poverty determined the limit of poverty: households with the monthly income less than Kip 180,000 per person regardless of age and gender are considered to be the poor households. The analysis of monthly income per capita has revealed that 4% of the households in the proposed service area live under poverty line of which 0.6% live in the poorest condition with the monthly income per capita less than Kip 80,000 on average per person/month.

## **Existing Water Supply and Sanitation**

### **Water Supply**

The Mekong River is the main water resource in Sayphouthong district. Its catchment accounts for 9% of the country's land area. According to a draft National Water Resource profile, the flow in the Mekong River varies from a minimum of 2,000 m<sup>3</sup>/s in the dry season to several thousand m<sup>3</sup>/s in the wet season, with an average of 15,000 m<sup>3</sup>/s. While the river is reportedly very high turbidity in the rainy season, it carries large quantities of sediment in the wet season. The Mekong River is extensively used for irrigation. There are no water treatment facilities in the Sayphouthong District Town. Wealthier households buy bottled water at US\$15/m<sup>3</sup> about 100 times higher than the average tariff for formalized system. The majority of the population in the town relies on untreated water from open dug wells of over 40 meters deep, boreholes using hand pump and electric pump. Surface water (Mekong River) is also used during the rainy season although the turbidity is high. Water shortage in the dry season is a serious threat to the

health of the population, particularly the poor households who could not afford to dig wells of over 35-40 meters deep.

Present piped water supply coverage: **0%**.

### **On-Site Sanitation**

The issue of wastewater and the sanitation in Sayphouthong is not different from other small towns in the country: uncontrolled disposal of domestic wastewater, no drainage ditches in the public place such as markets, bus stations, schools or hospitals etc. Some households still have no sanitary latrine.

The town does not have a sludge collection tanker or septage disposal facilities.

Present sanitation coverage: **65%**

### **Other Infrastructure**

#### **Roads and Drains**

The Sayphouthong district center has about 7.2 km of bitumen sealed road. Other roads in the core villages comprise about 11km of urban and district roads with gravel pavement, and 17km of village access roads with dirt pavements. About 50% of urban gravel roads also have side drains, but village access roads lack side drains and are often boggy in the wet season. The terrain is relatively flat. Primary drains for the district center discharge to adjoining swamp areas and have limited outlets and poorly defined connecting channels, so that stormwater backs up in the wet season, causing minor flooding of the town.

#### **Electricity**

About 95% of households in the core villages are connected to the electricity grid, which provides 24-hour supply.

- **POPULATION GROWTH AND WATER DEMAND FORECASTS**

#### **General**

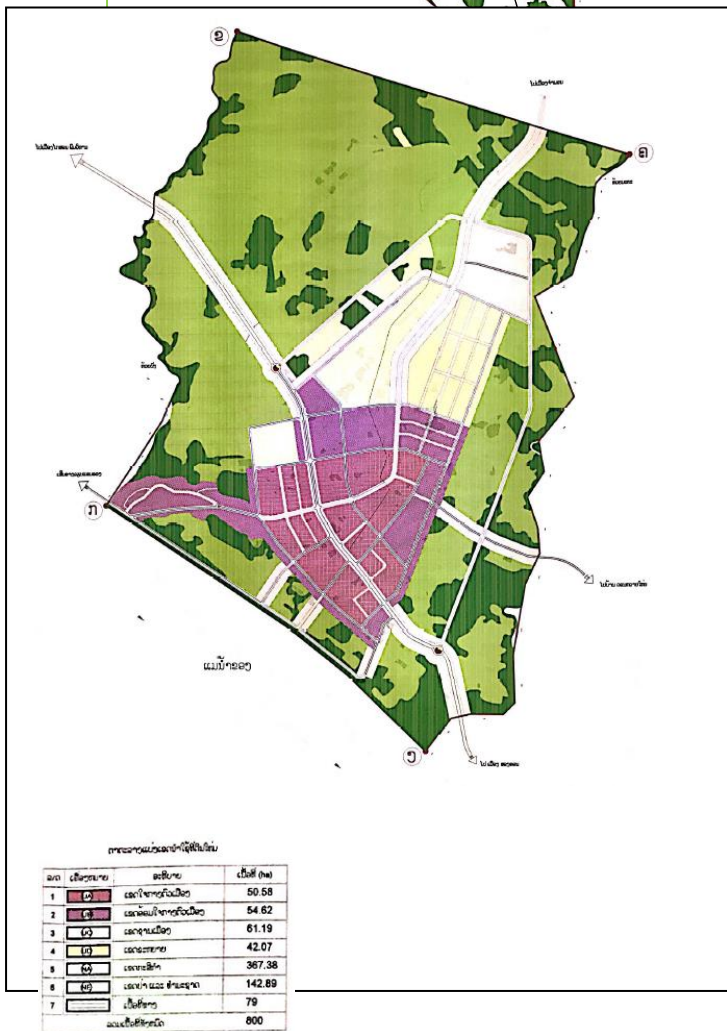
Sayphouthong town is the center of services, trade and agriculture in Sayphouthong district, which is one of the largest districts along Mekong River in Savannakhet province. It is located on National Road 13, which links two main population centers – the provincial capital, Kaysone about 35km to the north of Sayphouthong, the capital of Champasak province about 166km to its south. Rice, water melons and soy beans are Sayphouthong's main agricultural products and provide more than 50% of the province's annual export production. At present there is no agro-processing or industrial development in Sayphouthong.

The district Governor in Sayphouthong has identified diversification and strengthening of agricultural production as the principal priority for economic development in the district. Future development is based on expanded rice cultivation. Although there are no plans for non-agricultural or industrial development, the district government encourages local and foreign investment in agricultural food processing, and is also promoting handicraft production.

#### **Urban Master Plan**

The Urban Master Plan for Sayphouthong was prepared by the MPWT's Urban Research Institute in June 2010, and was approved by the provincial governor in August 2010. The Master Plan is essentially a land use plan, but is based on the following orientation for future development:





The existing urban area of Sayphouthong will continue to serve as the administrative and commercial center of the town.

### Population Projections

The population of Sayphouthong's 39 core villages was 48,188 in 2017, with population growth rate of 1.65% over the five-year period 2001-2017. The Urban Master Plan for the town does not

provide population projections. Accordingly, population projections were made using population statistics for the province, modified to take account of local factors.

The population projections are set out in Table 4-3. Within the core villages, total population is forecast to increase from about 48,188 in 2017 to about 61,596 in 2032. **Population Projections for Sayphouthong’s Core Villages**

Year 2017 Population	Growth Rate %	Forecast Population 2020	Forecast Population 2025	Forecast Population 2032
48,188	1.65	50,613	54,929	61,596

**Water Demand Forecasts**

**General Approach**

Water demand forecasts for the Sayphouthong subproject were prepared by making separate projections of each component of demand, including:

- Demand for domestic use (based on per capita consumption, coverage targets and population projections);
- Demand for industry (based on a % of domestic use, and specific allowances for large industries);
- Demand for services (based on a % of domestic use, and specific allowances for large services areas);
- Unaccounted-for-water<sup>76</sup> (ufw) as a % of total demand, excluding the demand of large industrial zones.
- Production losses in treatment plant (based % of total demands).

**Domestic Consumption**

Water demand and consumption data for other provincial and district towns in Lao PDR show that domestic consumption accounts for about 90% of total demand. Per capita consumption figures for urban water supply systems in Lao PDR vary widely. For 52 water supply systems throughout the country (excluding Vientiane capital), per capita consumption ranges from 36 to 191 litres per capita per day (LPCD), with an average of 135 LPCD, while for 31 small town water supply systems, the corresponding figures are 11 to 145 LPCD, with an average of 79 LPCD. (WSD Statistics for PNPs, 2006).

Per capita consumption for Sayphouthong’s three piped water supply systems (PNP and two private systems) varies from 46 to 88 LPCD, however customers supplement the piped supplies with bottled water and with rainwater in the wet season, so actual consumption is likely to be higher. According to the household surveys, householders estimate that their consumption varies from 38 to 260 LPCD, with an average of 130 LPCD.

Based on Sayphouthong household survey results and experience from other projects, per capita consumption for drinking and cooking is about 10 LPCD, while water for bathing and washing is in the order of 50 LPCD. About 4-16 LPCD will be required to operate a pour-flush toilet<sup>77</sup>, so per capita consumption for a typical household with pour flush toilet is estimated at 64-76LPCD. Experience in other towns in Lao PDR indicates that piped connections directly to the house will

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<sup>76</sup> Unaccounted-for-water is the difference between water production and authorized consumption.  
<sup>77</sup> In general, pour flush toilets require 1-4 liters of water per flush, including water for washing. Assuming that each member of the household uses the facility 4 times per day, consumption varies from 4-16 lpcd.

usually increase water consumption over time. On the other hand, some residents in Sayphouthong will continue to use existing pumped wells and free sources of supply such as rainwater to minimize their overall water supply costs. To account for Sayphouthong having relatively low poverty levels, and a growing number of private businesses, this Feasibility Study has adopted a per capita consumption figure of 100 LPCD, 50m<sup>3</sup>/day for backwashing filters, plus 10% for non-domestic use and 15% for unaccounted for water (ufw).

The water demand calculation of 100 litres per day is based on the Technical Guideline for Water Supply Design issues by the Department of Water Supply, Ministry of Public Works, which says that water projects for secondary towns with a population between 20,000 and 50,000 people should be a minimum of 100 litres per person per day. This is also outlined in row 9 of the table presented below.

### Water Demand Forecasts

Table 4-4 summarizes the demand forecasts and design criteria for the Sayphouthong subproject. By 2032, the average daily water production at the water treatment plant is expected to be 3,600m<sup>3</sup>/d, comprising 78% domestic consumption, with the remaining 22% being for institutions, public use, services, handicraft and small industries, and allowances for NRW and backwashing the filters.

**Table Error! No text of specified style in document.-5: Water Demand Forecasts for Sayphouthong Town**

No.	Items	Unit	Forecasts			
			2017	2020	2025	2032
<b>A.</b>	<b>Domestic Demand</b>					
1	<b>Growth Rate</b>	%	1.65	1.65	1.65	1.65
2	Population in Core Area		48,188	50,613	54,929	61,596
3	Population in Extension Area	No.				
4	<b>Total Population</b>	<b>No.</b>	<b>48,188</b>	<b>50,613</b>	<b>54,929</b>	<b>61,596</b>
5	Coverage in Core Area	%	-	80	80	80
6	Coverage in Extension Area	%	-	80	80	80
7	Percentage Coverage	%	-	80%	80%	80%
8	<b>Population with Piped Water</b>	<b>No.</b>	<b>-</b>	<b>17,668</b>	<b>19,175</b>	<b>21,502</b>
9	<b>Per Capita Consumption</b>	<b>l/c/d</b>	<b>-</b>	<b>100</b>	<b>100</b>	<b>100</b>
10	Total Domestic Demand	m <sup>3</sup> /d	-	1,767	1,917	2,150
<b>B.</b>	<b>Non Domestic Demand</b>					
1	Services, Small Industry, Institutions, Public (% Dom)	%	-	20	20	20
2	Total Non domestic demand	m <sup>3</sup> /d	-	353	383	430
<b>C.</b>	<b>Subtotal Water Demand All Categories</b>	<b>m<sup>3</sup>/d</b>	<b>-</b>	<b>2,120</b>	<b>2,301</b>	<b>2,580</b>
<b>D.</b>	<b>Non Revenue Water (NRW) in Distribution system</b>					
1	NRW as % Average Daily Water Production	%	-	15	15	15
2	NRW (physical losses only-pipelines and WTP)	m <sup>3</sup> /d	-	318	345	387
<b>E.</b>	<b>Average Daily Water Production (C+D) rounded</b>	<b>m<sup>3</sup>/d</b>	<b>-</b>	<b>2,440</b>	<b>2,650</b>	<b>2,970</b>
<b>F.</b>	<b>Peak Daily Water Demand</b>					
1	Peak Daily Water Demand		-	1.2	1.2	1.2
2	Peak Daily Water Demand (PDD)	m <sup>3</sup> /d	-	2,928	3,180	3,564
3	Peak Daily Water Demand	l/s	-	33.9	36.8	41.3
<b>G.</b>	<b>Required Treatment Plant Output (rounded)</b>	<b>m<sup>3</sup>/d</b>	<b>-</b>	<b>2,930</b>	<b>3,180</b>	<b>3,560</b>
<b>H.</b>	<b>Treatment Plant Backwashing</b>					
1	Backwashing as % of Treatment Plant Output	%	-	5	5	5
2	Treatment Plant Backwashing	m <sup>3</sup> /d	-	147	159	178
<b>I.</b>	<b>Raw Water System</b>					
1	Required Capacity of Source & Raw Water System	m <sup>3</sup> /d	-	3,077	3,339	3,738
2	<b>Required Source Capacity (rounded)</b>	<b>m<sup>3</sup>/d</b>	<b>-</b>	<b>3,080</b>	<b>3,340</b>	<b>3,740</b>
3	<b>Required Source Capacity</b>	<b>l/s</b>	<b>-</b>	<b>35.6</b>	<b>38.7</b>	<b>43.3</b>
<b>J.</b>	<b>Peak Hourly Demand (Distribution System)</b>					
1	Peak Hourly Factor	%	-	1.5	1.5	1.5
2	<b>Peak Hourly Demand (K<sub>hx</sub>PDD/86.4)</b>	<b>l/s</b>	<b>-</b>	<b>53.5</b>	<b>58.0</b>	<b>64.9</b>

- **DESIGN & TECHNOLOGY CHOICE**

### **Introduction**

This section outlines design and planning criteria for the Sayphouthong water supply system. It also discusses water treatment technology.

### **Design and Planning Periods**

The Project is scheduled for implementation in the period 2019-2023. Sayphouthong project the planning has considered development to 2032 (15 year design life), to ensure that: (i) adequate provisions are made in the Project for future expansion; (ii) facilities are optimally sized, and; (iii) adequate land areas are reserved for future facilities. The proposed design horizons for intakes, raw water transmission and water treatment plants were determined by least cost analyses, while design periods for other parts of the system were determined by practical considerations. (e.g. problems and risks associated with future land acquisition and upgrading operating water supply systems in growing urban areas).

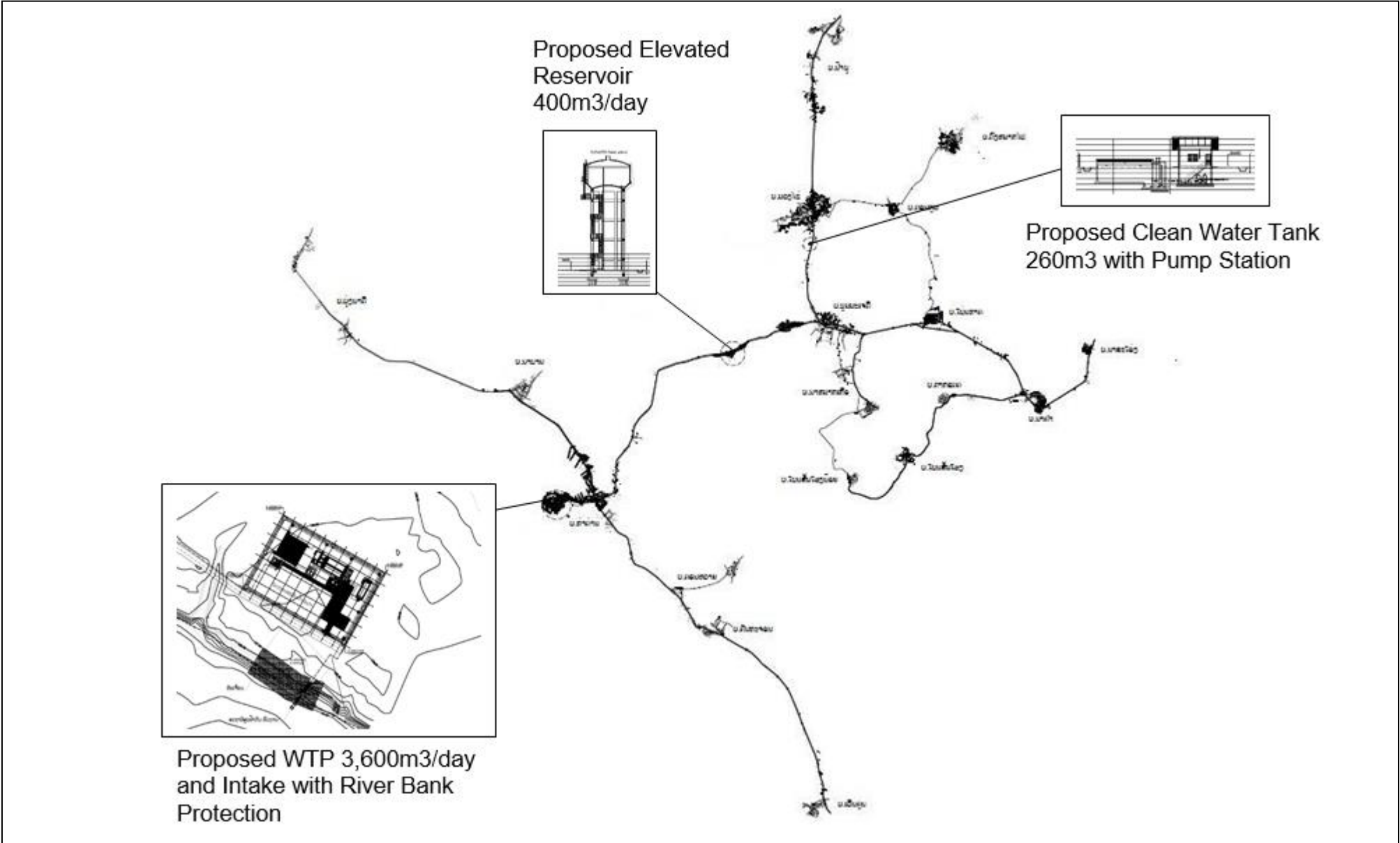
The adopted design periods for various parts of the water supply system are as follows:

**Table Error! No text of specified style in document.-6: Recommended Design Periods**

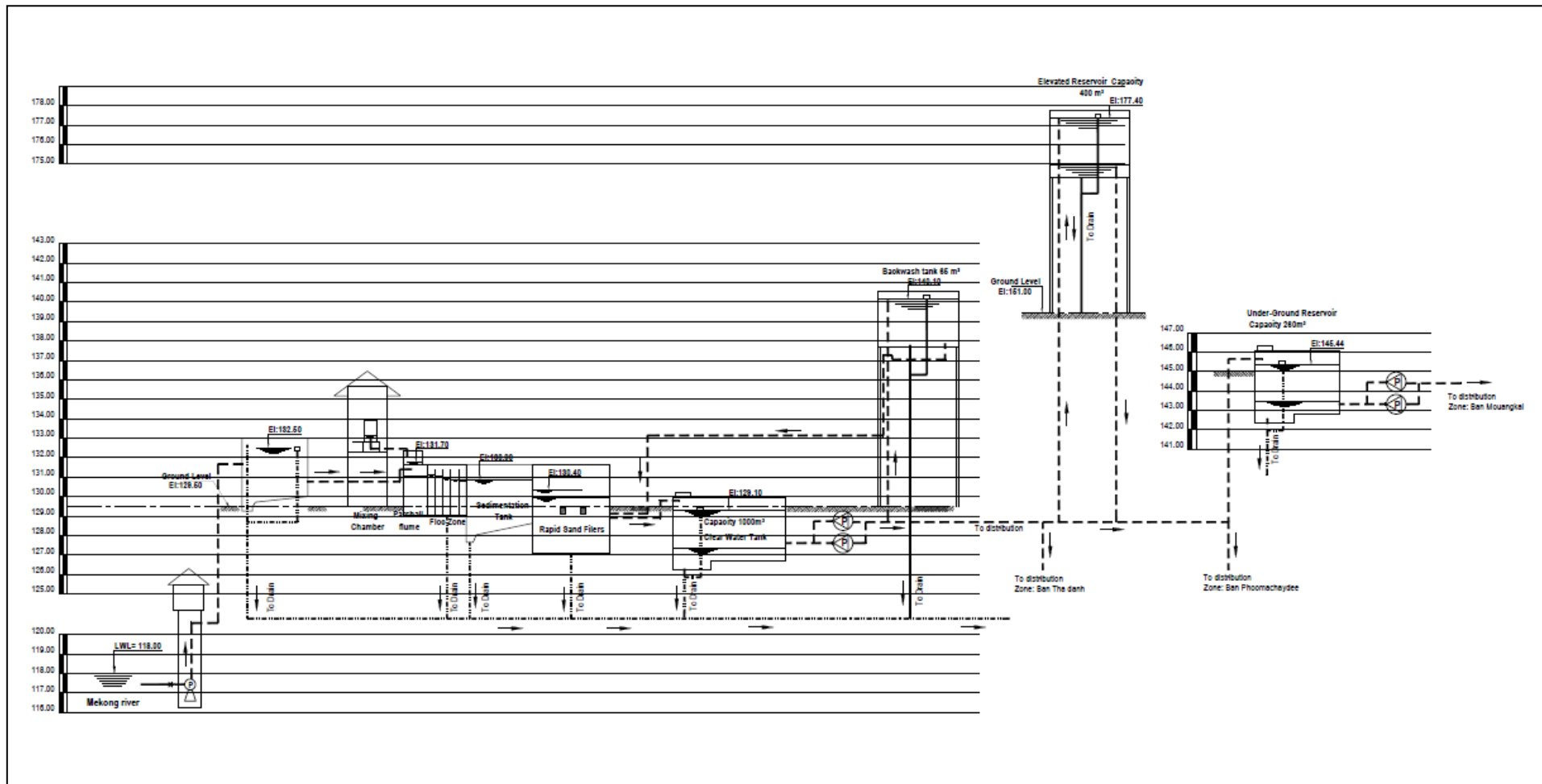
<b>Component</b>	<b>Design Approach</b>
Intake and raw water transmission mains	Design for Y2032 demands
Water treatment plant	Design for Y2032 demands, with provision (e.g. adequate hydraulic capacity) for plant uprating. Acquire adequate land to enable plant duplication in future.
Treated water transmission and trunk mains	Design for Y2032 demands, including provision for future extension to non-core areas.
Pumping Stations	Design mechanical plant for Y2032 demands, with provision for pump (or impeller) replacement with larger capacity units after 2025. Acquire adequate land to enable pumping station duplication in future.
Distribution and reticulation	Design for Y2032 demands
Service reservoirs	Design and construct for 2032 demands. Acquire adequate land to enable reservoir duplication in future.

### **Water Treatment Technology**

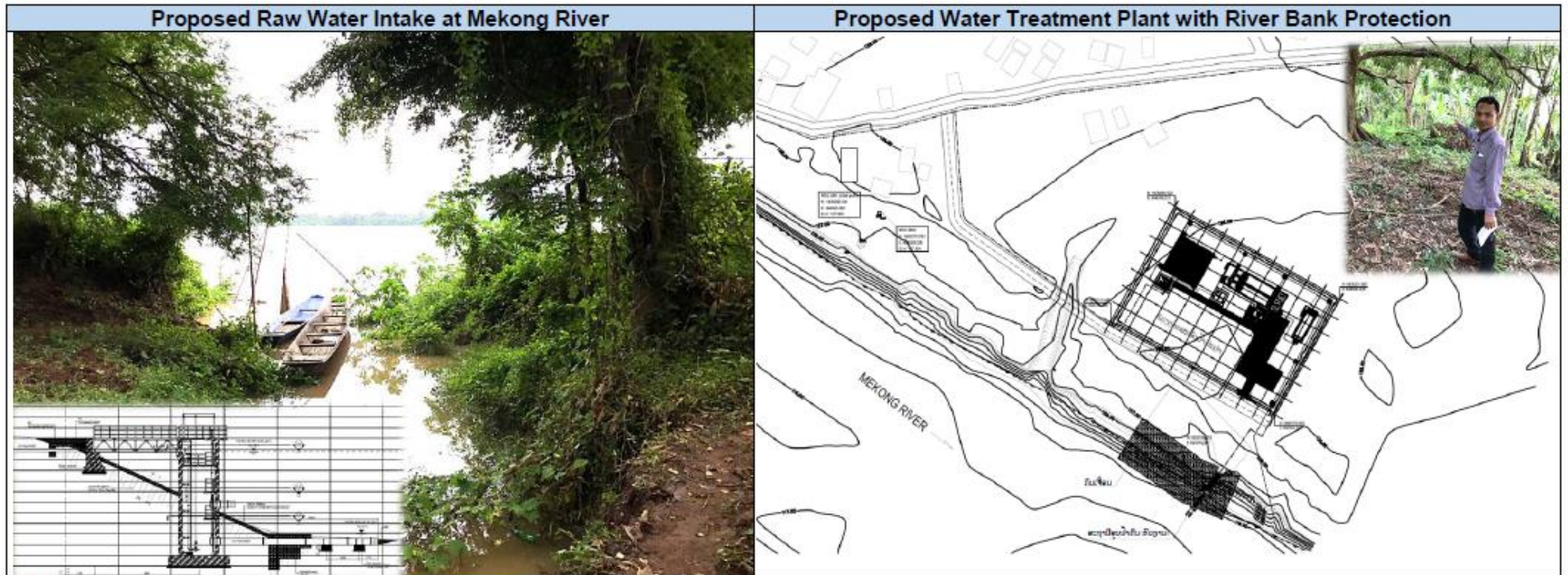
The choice of water treatment technology for Sayphouthong is dictated primarily by the raw water quality, operator capacity and financial resources to ensure sustainability. Wet season turbidity of the Mekong River is high, and is subject to rapid fluctuations. Slow sand filters and rapid sand filters were considered for possible use in Sayphouthong. Although slow sand filters are relatively simple to operate, they require a large land area and require presedimentation and/or sedimentation processes to operate with highly turbid waters. Limited land is available in Sayphouthong and the raw water is very turbid. Slow sand filters are not therefore a viable option. Rapid sand filters are the most appropriate system.



**Figure Error! No text of specified style in document.-1 Proposed Sayphouthong Water Treatment Plan Conceptual Design**



Sayphouthong Town: IEE - Visual Impact of Proposed Water Treatment Plant (WTP) at Mekong River



**Notes:**

- |     |   |
|-----|---|
| (1) | The new water treatment plant (WTP) is proposed at the right embankment of the River Mekong, at an existing unused area about 300m adjacent to the village. The location has been selected because of existing soil roads to and from the WTP compound avoiding environmental or land acquisition requirements.   |
| (2) | Similar to the water treatment plant, the new water intake is proposed at the right embankment of the River Mekong. The location has been selected at a downstream location of the WTP area allowing an alignment of a new raw water pipe to the WTP only about 100m, outside of the village area.  |
| (3) | Imposing the designed water treatment plant and water intake on the current situation indicates that this new water infrastructure would use a limited area within the shown area.  |
| (4) | The Mekong River is the main water resource in Sayphouthong district. Its catchment accounts for 9% of the country's land area. According to a draft National Water Resource profile, the flow in the Mekong River varies from a minimum of 2,000 m <sup>3</sup> /s in the dry season to several thousand m <sup>3</sup> /s in the wet season, with an average of 15,000 m <sup>3</sup> /s and the Mekong River is extensively used for irrigation. |

## Management Arrangements

The District Nam Papa will be responsible for managing, operating and maintaining the new water supply system. The Provincial NamPapa in the provincial capital will provide ongoing technical and managerial support to the District Nam Papa following commissioning of the new water supply system. It will process/print water bills in the provincial office, and coordinate BNP staff training. The PWT will be responsible for managing the new or improved sanitation systems.

The Project will procure essential O&M equipment for the District NamPapa and Department of Public Works and Transport, as shown in Tables 6-1 and 6-2.

### O&M Equipment for PNP and Sayphouthong BNP

Item No	Description of Item	No
(i)		
(ii) 1	1 tonne Flatbed truck	1
(iii) 2	Set of furniture for water treatment plant, including desks, chairs, and work benches.	1
(iv) 3	Basic laboratory equipment for water quality testing	1
(v) 4	Standard software programs such as standard accounting (assumes billing will be centralized at the PNP provincial office)	1
(vi) 5	Workshop tools such as pipe cutting, threading and tapping machines; lathe; pedestal drill; grinder; workbench and complete tool chest with spanners, wrenches etc.	1
(vii) 6	Field tools and equipment for O&M of water supply system, such as valve keys; wheel barrows, shovels, picks and crow bars, portable lighting, small dewatering pump, soil compactor, powered weed / grass cutter, and other minor construction/ repair equipment.	1

**Table Error! No text of specified style in document.-7: O&M Equipment for OPWT**

Item No	Item	No
1	Set of minor office equipment including fax and A4 photocopier)	1
2	Computer and printer for management, administration, accounting and engineering	2
3	Standard software programs such as MS office	1
4	Minor field tools and equipment for O&M of drains and public sanitation facilities, such as powered weed / grass cutter, soil compactor, wheel barrows, shovels and picks, portable lighting, small dewatering pump, and other minor construction/ repair equipment.	1



- **Calculation of Water Tariffs**

### **Project-Specific Tariff**

The project-specific tariff was determined using the Average Incremental Financial Cost (AIFC) approach, which is regarded as an approximation of the long-run marginal cost. The average tariff required for full cost recovery of the subproject is Kip 4,551 / m<sup>3</sup>. The average tariff required to cover the subproject's full O&M cost and 30% of capital cost is Kip 2,438 / m<sup>3</sup>. The long run utility wide average tariff, which will also be applied to the subproject, is Kip 4,997 / m<sup>3</sup> at 2010 price level. The use of utility wide tariff for the subproject does not result to a subsidy for subproject consumers.

### **Affordability and Willingness to Pay**

An affordability analysis was undertaken to ensure that domestic consumers, particularly female headed households and those in low-income groups, can afford the projected water tariff levels that meet the financial objectives of the sector. The affordability analysis was done for year 2017, two years before the project is assumed to be operational, and year 2024.

The results of the socio-economic survey revealed that households are willing to pay an average of about Kip 20,000 per month for piped water supply with 43% of respondents willing to pay between Kip 11,000 to Kip 70,000 per month. The analysis above shows that the average monthly water bill in 2017 and 2024, inclusive of the monthly meter rental and turnover tax, are higher than the households' willingness to pay. During this transition period, the PNPs forgive unpaid bills. In addition, it is recommended that the minimum 5m<sup>3</sup>/month be eliminated, so that the poor only pay for what they actually use.

- **PROJECT ECONOMIC ANALYSIS**

Capital costs and incremental operation and maintenance (O&M) costs of the water supply and sanitation system have been considered. Economic costs have been derived from the financial project costs. All costs were expressed in constant (2010) prices. Taxes and duties have been excluded from base costs. Economic costs were valued using the domestic price numeraire and expressed in local currency. Tradable components have been adjusted to economic prices using shadow exchange rate factors (SERF) and non-traded components are valued at domestic market prices. A shadow wage rate factor (SWRF) for unskilled labor has been used to reflect its opportunity costs in the context of wide availability of labor in Lao PDR.

### **Demand Forecast**

Water demand in the subproject town was derived from the current population within the planned service area, population growth, current and future domestic water consumption levels, and a provision for non-domestic water consumption. Reliable data on the amount of water presently consumed by households without piped-water connection in the subproject town is not available. Households typically utilize a variety of water sources and do not measure or assess their consumption. However, based on the socio-economic household survey result as well as observations of water use behavior in the subproject town during the field visits, it is estimated that average daily demand from existing sources of non-piped water ranges between 40 and 70 liters per capita per day depending on the effort and resources needed to acquire the water, and on income levels. Internationally accepted lifeline consumption requirement was estimated to be 40 lpcd, however, this figure does not factor in future economic or population growth, and the proposed project is based on a demand estimate of 100 litres per household per day.

Per capita water consumption is expected to increase after construction of the piped water supply system, due primarily to (i) the reduced cost of acquiring water, (ii) improved water quality, and (iii) greater convenience and reliability of the piped water supply system. Demand is also a function of changes in price and household income and estimated price and income elasticity were incorporated in the demand forecasts.

- **PROJECT BENEFITS AND IMPACTS**

### **Expected Beneficiaries and Benefits**

In Sayphouthong, the investment will provide direct and indirect benefits for all people living and working in the 39 core villages of the town. Specifically, this will include up to 54,929 people in 2025 and 61,596 people in 2032.

For people living in Sayphouthong, the principal benefits derive from the development of a system of piped, treated water. They include improved convenience and reliability of water supplies for domestic uses in all core villages, as well as increased quantities of water and improved water quality.

Health benefits will result from the provision of safe water and improved household sanitation conditions that reduce the incidence of diarrhea, dysentery, kidney stones and other water-related illness. Other health benefits will include reduced costs for health care and a reduction in work time lost. Moreover, the help all people in the town adapt to climate change by providing year-round water supply, even in dry years. This is a significant improvement on the current situation, where people either source water from wells, that have an increasing propensity to dry out, and bottled water, which is expensive.

The availability of treated water and reliable water supplies may also support the development of economic activities in Sayphouthong. For example, it can improve the opportunities to establish hotels, guesthouses, restaurants and other entertainment venues, if demand increases as a result of the town's location on main Road 13. Home-based and other enterprises that produce rice wine, rice noodles and other processed foods will benefit from access to treated water.

Over 60% of surveyed households in Sayphouthong purchase bottled water for drinking. All households rely partially or entirely on other sources of water for household drinking water, for example, by boiling well water. The availability of treated piped water may result in modest reductions in household expenditures for households that buy water, although this may be offset by increased consumption of water as well as continued purchase of bottled water due to, for example, taste preferences.

### **Poverty Reduction**

In the case of the small number of poor households in the subproject area, the Project policies help to ensure equitable benefits. Specifically, poor households are entitled to (i) no upfront charges for connection to the water supply system regardless of when they connect, on condition that they pay for a minimum amount of water use; (ii) progressive tariffs based on consumption levels (to be confirmed); and, (iii) financial assistance to construct or upgrade their sanitation facilities.

The direct benefits of piped water to the house and hygienic latrines that may contribute to reducing poverty levels of poor households include (i) reduced costs for health care due to the availability of clean water and proper sanitation; and, (ii) reduced costs for drinking water, if households substitute boiled piped water for purchased bottled water; and, (iii) increased opportunities for income-generating activities that require a water source (e.g., food processing or a small restaurant) and/or increased profitability of existing activities.

### **Gender**

Everyone surveyed in core villages agreed that the water supply system offers significant benefits for adult women, as well as for men. In addition to improved health, people believe that women and men will both enjoy time savings and reduced workload. That is, the time and effort to get water will be less compared with current practices of getting water from wells or, in villages close to the Mekong River, going to the river to wash clothes or bathe. The majority felt that access to piped, treated water would result in greater income-generating opportunities,

although the benefit for men was seen to be slightly higher than for women. More than half of respondents indicated that as a result of the water supply system, both girls and boys would have reduced workloads and more time for education.

Women and men in Sayphouthong are almost equally involved in community affairs, measured as the percentages of households with active members. Men tend to be involved in activities of the Youth Union, while women participate through the Lao Women's Union. The objective of the Project gender strategy is to build on the interests and strengths of both women and men to be involved in the proposed village-level activities, and to ensure that the views of both groups are taken into consideration in making decisions.

Further analysis of the gender situation is provided in [Annex 2](#).

### **Minority Ethnic Groups**

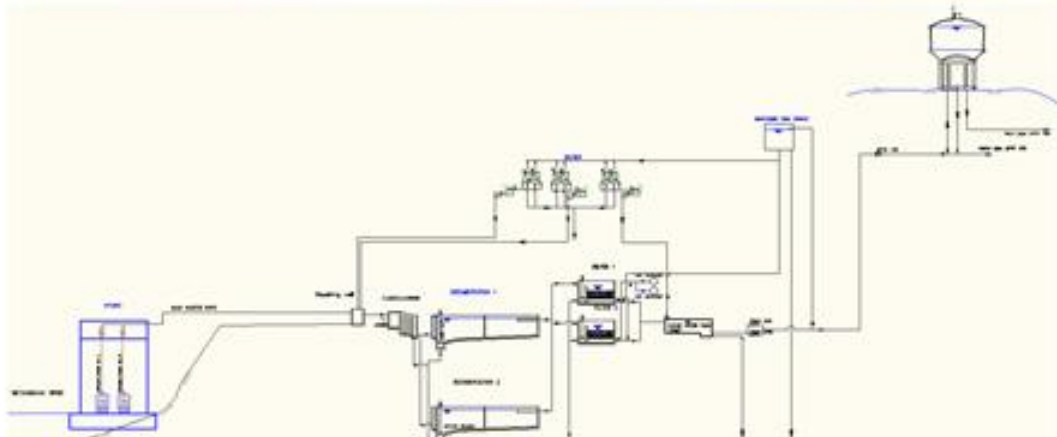
Sayphouthong District Town is composed of 39 core villages in 8 village clusters with a total 2017 population of 48,188 persons. In 2015, 100% of survey respondents belong to Tai-Kadai linguistic group (consisting of 73% Lao and 27% Phoutay) that form the majority of the national population. There are in total households, of which 8,908 households (27%) are considered as poor households.

## Annex 4 – Feasibility Study of Implementation for Sethamouak Town

LAO PEOPLE'S DEMOCRATIC REPUBLIC  
MINISTRY OF PUBLIC WORKS AND TRANSPORT  
DEPARTMENT OF WATER SUPPLY

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# FEASIBILITY STUDY FOR SETHAMOUAK TOWN



**UN HABITAT**  
FOR A BETTER URBAN FUTURE



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Prepared by  
UN-Habitat in association with NPSE-Savannakhet

## Project Description

**Sethamouak** is one of the small towns in Lao PDR proposed for inclusion in the Adaptation Fund programme. The proposed Sethamouak district town aims to mainstream “**Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR**”, to provide safe, reliable and affordable 24/7 piped water supplies and village environmental improvements in small towns along an economic corridor. It has been formulated as a community-based project and in line with “Samsang” (3 level development), requiring the towns and their provincial authorities to demonstrate their commitment to the project and its associated reforms, thus encouraging a demand-driven approach. The project has a strong community participation focus, reinforced by environmental and social safeguard, health and sanitation awareness.

## Rationale

### Background

**Sethamouak** Town is composed of 7 villages with a total 2018 population of 8,956 persons. About sixty two (62) percent of the population are Phouthai, Katang and Mangkone, three of the minority ethnic groups in Lao PDR. There are in total 1,533 households, of which 541 households (35%) are considered as poor households.

Inadequate water supply and poor environmental conditions in Sethamouak town and other small towns deter socio-economic development and restrict the ability of the towns to serve as centers for economic activity and delivery of social services for their surrounding rural areas.

### Project Supports Government Policy

The Project will build on the Government’s policy of developing small towns as centers of marketing and agricultural processing, as economic links between rural, national and international markets, and as places offering non-farm employment to the rural poor. By developing these small urban centers, the Government is also seeking to reduce poverty through economic growth and improve geographical equity in urban social infrastructure development. The Project supports Government of Lao PDR’s (GOL’s) water supply sector goal which is to provide 24-hour per day access to safe drinking water for 80% of the urban population by the year 2020. For further information on how the project supports the government’s priorities and complies with laws and technical standards, see Part II, Sections [D](#) and [E](#).

### Project Impact and Outcome

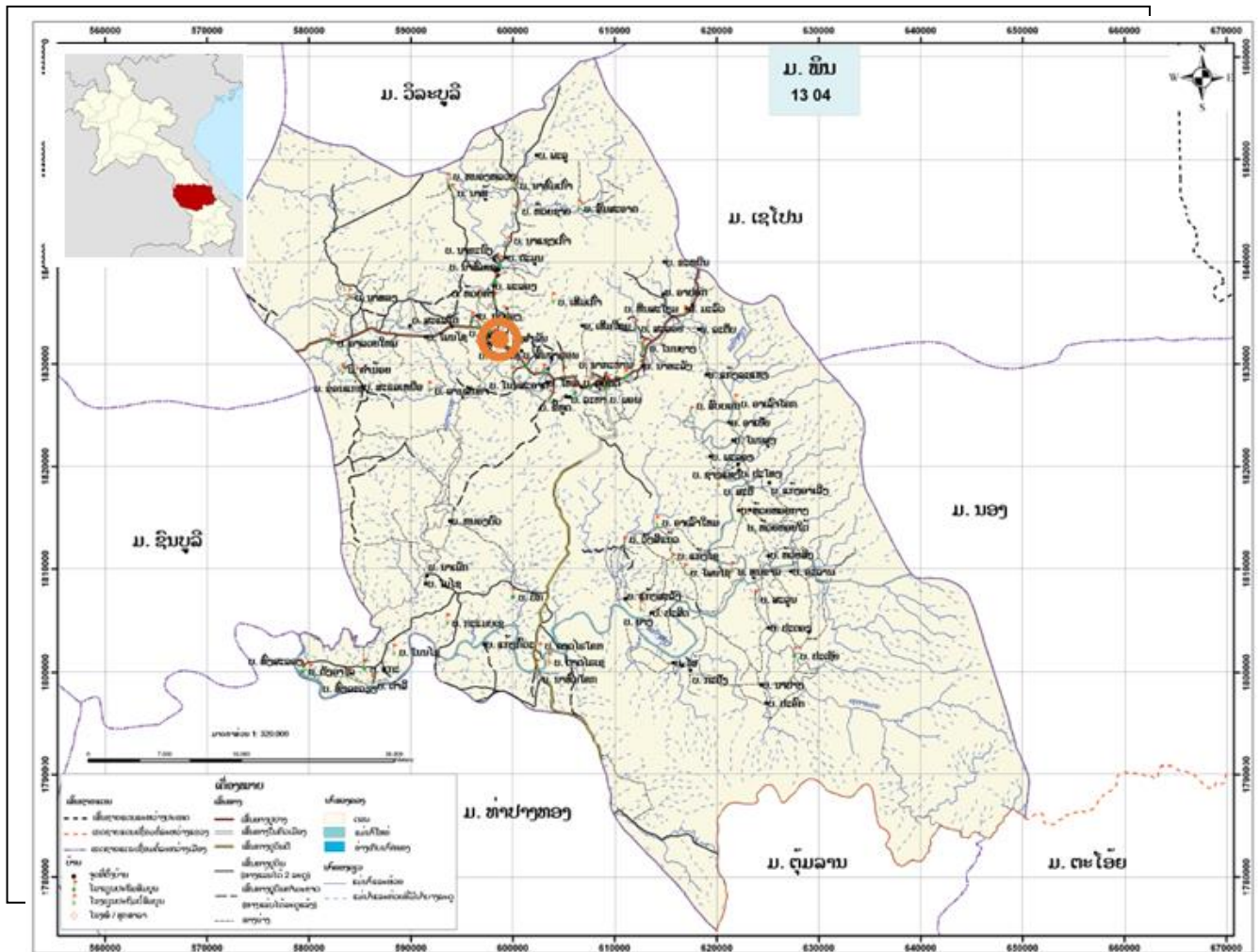
The expected impact of the Project is to build resilience to climate change in communities along an economic corridor in the central region of Lao PDR. This will be achieved by the provision of climate resilient infrastructure and the mainstreaming of climate action into urban planning. To achieve this objective, the project focuses its actions on highly vulnerable settlements along the economic corridor in the province of Savannakhet and also to improve quality of life of small town residents in Lao PDR and enhanced role of the small towns as economic, market, services, and manufacturing centers for their surrounding rural areas.

These outcomes will be achieved by:

- Mainstreaming climate action into urban planning to build resilient communities along an economic corridor in Lao PDR;
- Establishing new optimally sized water supply systems using appropriate innovation technologies;
- Motivating public participation in water and sanitation infrastructure development to improve the environment; and

- Strengthening the urban water supply sector planning, managing, and regulating capacity

Figure 1-4: Location of Project: **Sethamouak Town in Savannakhet Province**



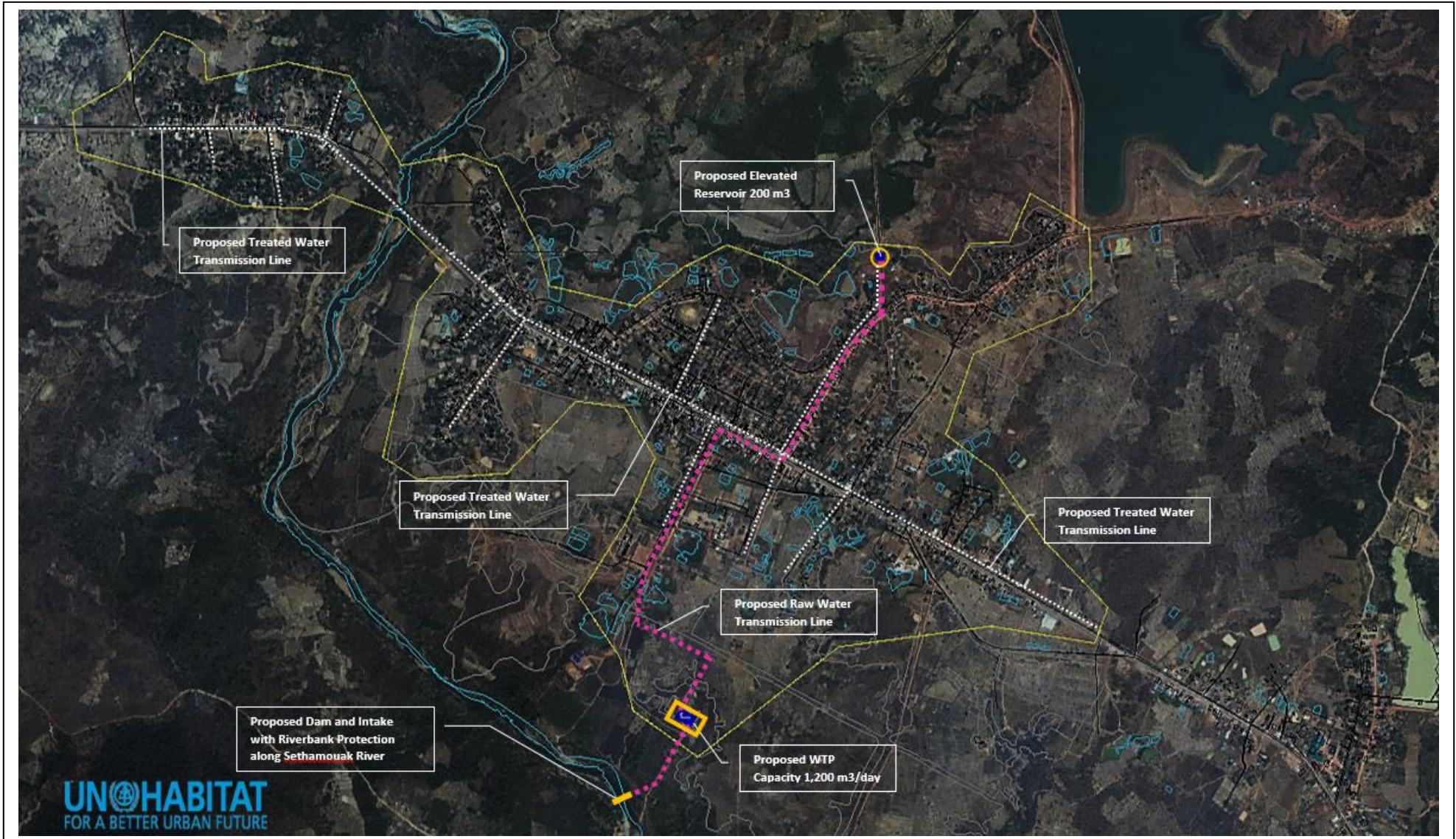


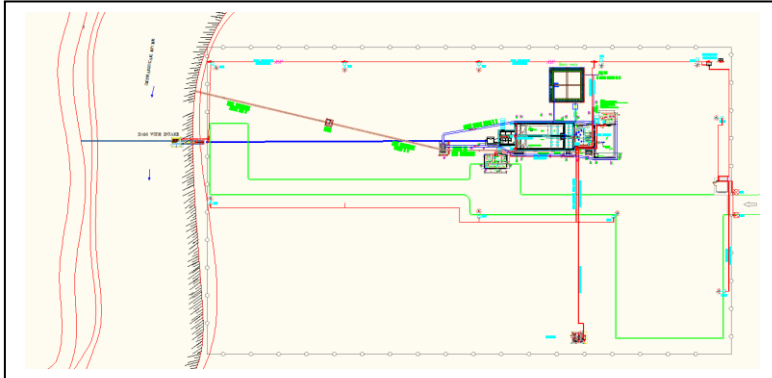
Figure 1-5: Location Plan of Proposed Sethamouak Water Treatment Plan

## Water Supply Development

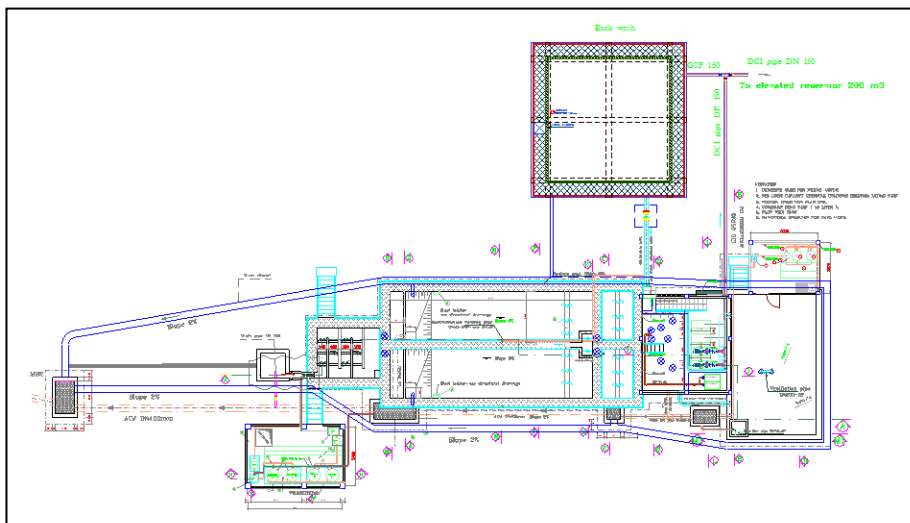
The project will develop a new 24/7 water supply system with individual household connections in Sethamouak's 7 core villages, having a base Y2018 population of about 8,956.

The proposed water supply system will include:

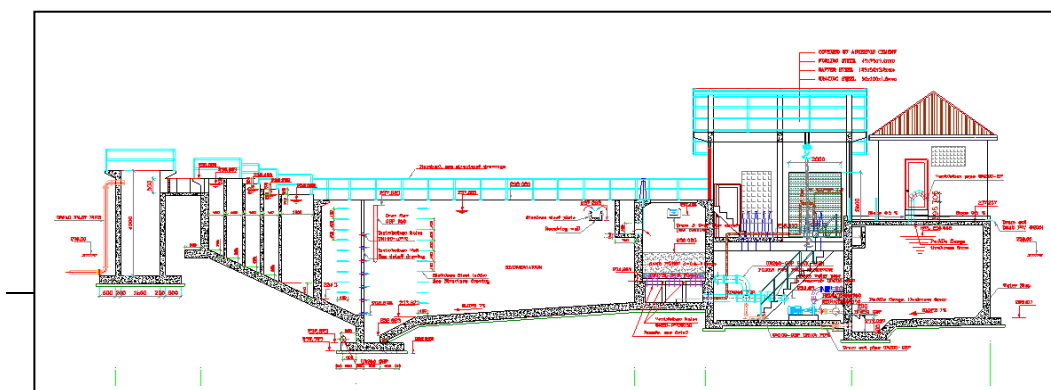
- A 1,200 m<sup>3</sup>/day water treatment plant (WTP) with a check dam and water intake on the Sethamouak River located at Xaysomboun village;



- The WTP will include pre-sedimentation, flocculation, sedimentation, rapid gravity filtration, a backwash tank and chlorination facilities, 100 m<sup>3</sup> clear water reservoir, detention ponds, plant office and a small water testing laboratory. The distribution and reticulation network will include about 15 km of pipelines. A branch Nam Papa (BNP) office will be constructed in the district center;



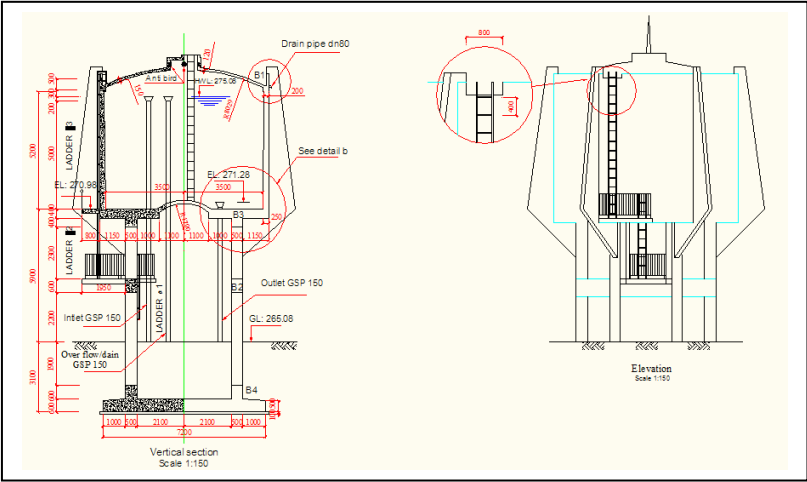
Details of Water Treatment Plan with capacity of 1,200 m<sup>3</sup>/day





Longitudinal-Section of Water Treatment Plan with capacity of 1,200 m3/day

- A raw water transmission main line supply to 200 m3/day elevated reservoir at Palek village;



**Improved Capacity for Project Implementation and O&M**

This output includes project implementation assistance, capacity development for O&M and incremental administration support.

**The Provincial Execution Unit** will implement the project. It will also enhance the capacities of village water and sanitation units (WATSANs) to implement and monitor the project.

**Capacity Development for O&M:** will help to develop more efficient systems in the town to manage urban services in a sustainable manner, by building the capacities of the provincial and branch Nam Papa (BNP) and district PWT. It will also provide support to village water and sanitation units (WATSANs) and communities to enhance their capacities to operate and maintain village infrastructure and their on-site water and sanitation facilities.

**Executing Agency and Implementation Arrangements**

These are described in Part III, [Section A](#)

**Implementation Period**

The Project will be implemented over a four-year period from fourth quarter 2019 until fourth quarter 2023. The detailed implementation will be governed by an agreement of cooperation between UN-Habitat and NPSE Savannakhet. For further information on the implementation arrangements, please see [Part III, Section A](#).

**Procurement**

Goods, works and services financed under the project will be procured in accordance with the UN Procurement Manual. International Competitive Bidding (ICB) procedures will be used for major civil works contracts estimated to cost over \$1.0 million, and for supply contracts valued over \$500,000. Procurement of civil works valued at less than \$1.0 million equivalent will be undertaken through national competitive bidding (NCB). Shopping procedures will be followed for materials and equipment packages or works estimated to cost less than \$100,000 equivalent.

The PEU in the province will be responsible for overseeing procurement. Installation of water meters and service connections will be carried out by the construction contractor under the main water supply construction contract for each town.

## Tariff and Affordability

The financial objectives of the sector are: (i) fully recover utility wide operation and maintenance (O&M) costs; (ii) recover utility wide debt service; (iii) maintain a utility wide debt service ratio of at least 1.2; (iv) gradually recover an increasing proportion of annual depreciation expense of the utility wide fixed assets; and (v) maintain its accounts receivable at less than 90 days of annual sales. To meet the agreed upon financial objectives of the sector, the projected utility wide tariffs shall be increased at a minimum of 0.2% every three years to keep pace with inflation. The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG).

The percentages of monthly household income spent on water, inclusive of the monthly meter rental and turnover tax, by the average household and LIG are below 5% in 2014 and 2018. However, the Water Law states that the expenditure on water should not exceed 3% of household income, the projected water tariffs are considered affordable. This tariff can be increased to 5% however, where necessary, to offset maintenance or depreciation costs, according to policy guidance from the Department of Housing and Urban Planning, Ministry of Public Works (references in Part II, Section E of the proposal).

The results of the socio-economic survey revealed that households are willing to pay an average of about Kip 12,300 per month for piped water supply with 81% of respondents willing to pay at least Kip 10,000 per month. It was noted that asset ownership, such as motorcycles, is also very evident in the town. However, the analysis above shows that the average monthly water bill in 2014 and 2018, inclusive of the monthly meter rental and turnover tax, are higher than the households' willingness to pay. However, affordability seems to be a far more reliable indicator. In addition, it has been found that the few poor families who either cannot afford or are unwilling to pay for water, regulate their consumption to meet their particular circumstances. During this transition period, the Provincial Nam Papas forgive unpaid bills. In addition, it is recommended that the minimum 5m<sup>3</sup>/month be eliminated, so that the poor only pay for what they actually use.

## Project Benefits and Beneficiaries

The project will benefit an estimated **11,358 residents (Y2030)** in the 7 core villages of Sethamouak Town by providing safe, reliable piped water supplies and improved urban environments that will have a direct impact on the health and living conditions of the town communities. Health and hygiene promotion activities will improve the health status of the target communities.

The Sethamouak town's economy will benefit from enhanced productivity as a result of health improvements, time savings in collecting water, as well as from increased urban efficiency arising from improved sanitation. Many residents will benefit from lower water costs and from savings in health care costs.

In Sethamouak Town there 1,533 total households, of which 541 households (35%) households are classified as poor. Nevertheless, all project interventions will either directly or indirectly benefit the poor. The target population will benefit from: (i) greater access to safe water supplies and sanitation which will improve health profiles, and; (ii) from improved sanitation that will enhance the poor's mobility and access to income-earning activities and government facilities such as schools and hospitals. These two things are critical in the context of climate change where water is becoming more scarce

Both men and women will benefit from project activities, but women will be the major beneficiaries of the piped water supply system through timesaving, drudgery avoidance, and improved family health. Women will also benefit from the sanitation improvements. Female-headed households will be prioritized to receive water connections first, in accordance with the gender action plan, part of the gender assessment in [Annex 2](#).

## Land Acquisition and Resettlement (LAR)

The LAR impacts in Sethamouak Town are insignificant, or **AF category B2-Medium Risk**. There are no severely affected households. The main water supply facilities such as the check dam, intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way, with minor impacts on land, property or crops.

- PROFILE OF SAYPHOUTHONG AREA

### Town Location and Profile

**Sethamouak** town is the District Town of Phine in Savannakhet Province. Savannakhet Province is the most populated province in Lao PDR with the total population of 979,000 persons. The Province comprises of 15 districts of which four including Phine are officially classified as poor districts. Phine District is the third largest urban settlement located in the East-West Economic Corridor, on the junction between the highway No 9 linking the North East of Thailand to the central Part of Viet Nam and the highway No. 23 providing access to the Southern provinces of Laos. (Saravane, Attapeu and Sekong).

In view of the above, the Government of Lao PDR considers as of high priority the improvement of social and physical basic infrastructures of small towns along the East-West Corridor in order to realize the expected benefits.

**Sethamouak** Town is composed of 7 villages with a total 2018 population of 8,956 persons. About 62 percent of the population are Phouthai, Katang and Mangkone, three of the minority ethnic groups in Lao PDR. There are in total 1,533 households, of which 541 households (35%) are considered as poor households.

### Natural Features

#### Topography

The town's 7 core villages are situated on the lowlands, about 61 km northeast of the Mekong River. Phine district is bisected by the Sethamouak River, a major tributary of the Mekong. The elevation of the core villages vary from about 148m at the Sethamouak riverbank, to 182m above mean seal level at Paksong near the district center. The town is surrounded by low-lying land and swamps which are transected by numerous seasonal streams.

#### Geology and Soils

Soils in Sethamouak district consist of alluvial deposits of sand and sandy clay, underlain by sandstones. Nam Sa'at bore logs indicate 10 m of soils and weathered rock overlying fissured sandstone. Sandstone outcrops are exposed at the lower end of the proposed water treatment plant site at Xaysomboun Village and sandstone is likely to be encountered at river bed level near the proposed intake site where the Sethamouak River has formed a "hairpin" bend.

Rainfall data for Savannakhet province indicate that maximum monthly rainfall occurs in July and August, averaging 322mm in July over the past decade.

Average annual temperature is about 28°C, varying from a low of 18°C in December-February to a maximum of 35 °C in April. Monthly maximum temperatures are above 30 °C for most of the year.

Evaporation averages 94 mm/month, ranging from 60mm in August and September to more than 100 mm from November until April.

## Surface water

The Sethamouak River is the main water resource in Phine district. Its catchment accounts for about 65% of the District's land area. While the river is reportedly very high turbidity in the rainy season, it carries large quantities of sediment in the wet season. The Sethamouak River is extensively used for irrigation.

## Groundwater

Groundwater is used extensively for domestic water supply throughout Sethamouak's core villages. Savannakhet Nam Saat (under the Department of Public Works) advised that, prior to 1995, the water table in Sethamouak was at about 18 m depth, but is now much lower because of increasing groundwater use which has affected the reliability of the wells. Household bores in Sethamouak consist of two main types: typically about 20 m deep bores with hand pumps that yield about 0.3L/s, and about 40-50m deep bores with electric pumps that yield about 0.5L/s. Nam Sa'at bore logs indicate that the deep bores take water from fissures within the underlying sandstone, which are rapidly depleted in the dry season.

## Population and Household Characteristics

In 2018, the total population of the 7 core villages was 8,956 people. Women account for 56% of household members (male/female ratio of 0.84); overall, they head approximately 7.8% of households in the town. About 60% of the population is working age (15-60 years).

**Table 1-2: Sethamouak Population Characteristics**

No	Core Villages	2018 Pop'n.	No. HH	Persons/ HH	M/F Ratio
1	Oudomxay	1,201	260	4.6	0.83
2	Xesavang	1,447	236	6.1	0.89
3	Xanamixay	882	118	7.5	0.79
4	Xaisomboun	1,444	227	6.4	0.85
5	Sibounheuang	2,028	338	6.0	0.84
6	Palek	490	94	5.2	0.85
7	Nonxay	1,464	260	5.6	0.83
	<b>TOTAL</b>	<b>8,956</b>	<b>1,533</b>	<b>5.9</b>	<b>0.84</b>

## Education

During 2018's survey, in Sethamouak town have approximately 1 Children school, 5 primary schools and 1 secondary school (table 1-3 summarize the number of schools in the Sethamouak town)

**Table 1-3: Schools in Sethamouak's Core Villages**

No.	Name of school	Student			Teacher		
		Total	male	female	Total	Male	Female
1	Xethamuak Secondary school	806	418	388	35	10	25
2	Xethamuak Children school	140	70	70	8	-	8
3	Oudomxay Primary school	197	87	110	7	1	6
4	Thaoudom Primary school	121	59	62	7	2	5
5	Xesavath Primary school	289	128	161	13	2	11
6	Nonxay Primary school	183	83	100	6	2	4

7	Sibounheuang Primary school	292	139	153	9	3	6
<b>Summary</b>		<b>2,028</b>	<b>984</b>	<b>1,044</b>	<b>85</b>	<b>20</b>	<b>65</b>

### Health and Hygiene Conditions

The Sethamouak's 2018 survey results for '*incidence of water-related disease by HH*' did not highlight any disease for the last 6 months.

### Land and House Tenure

The majority of the interviewed households own their house and land (97%). Approximately 85% of those who owned the land and house obtained the ownership documents and most households said that they are allowed to sell their property.

### Occupations and Livelihoods

The main occupation of the population in Sethamouak is farming (55%). Around 40% are the dependents including the children, the old age or disable people and the students who cannot contribute to the income of the family. Government staff and the teachers represent about 5% and 2% respectively.

Based on data from surveyed households, the majority (61%) of women living in Sethamouak core villages are economically active.

### Income and Poverty Levels

An attempt was made to ascertain the average monthly cash income and expenses of households. On analysis, it was found that figures provided were generally an estimation of the respondents. As with any study/survey one has to be extremely cautious.

The monthly income per person is calculated dividing the yearly HH income by the average HH size in Sethamouak (5.9), giving us an average monthly income of Kip 480,000 per person.

### Existing Water Supply and Sanitation

#### Water Supply

The Sethamouak River is the main water resource in Phine district. There are no water treatment facilities in the Sethamouak Town. Wealthier households buy bottled water at US\$15/m<sup>3</sup> about 100 times higher than the average tariff for the formalized system. The majority of the population in the town relies on untreated water from open dug wells of over 40 meters deep, boreholes using hand pump and electric pump. Surface water (Sethamouak River) is also used during the rainy season although the turbidity is high. Water shortage in the dry season is a serious threat to the health of the population, particularly the poor households who could not afford to dig wells of over 35-40 meters deep. This problem is likely to be exacerbated by climate change in the future. Present water supply coverage: **0%**.

#### Other Infrastructure

##### Roads and Drains

The Sethamouak town center has about 45% of urban gravel roads also have side drains, but village access roads lack side drains and are often boggy in the wet season. The terrain is relatively flat. Primary drains for the district center discharge to adjoining swamp areas and have limited outlets and poorly defined connecting channels, so that stormwater backs up in the wet season, causing minor flooding of the town.

## Electricity

Over 98% of households in the core villages are connected to the electricity grid, which provides 24-hour supply.

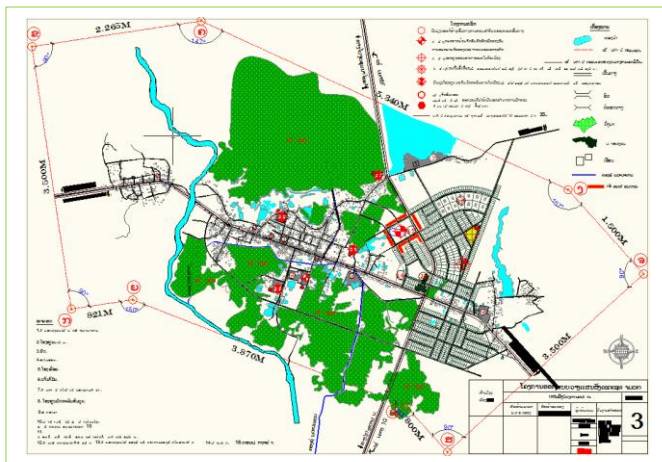
## General

Sethamouak town is the center of services, trade and agriculture in Phine District, which is officially classified as poor district. Phine District is the third largest urban settlement located in the East-West Economic Corridor, on the junction between the highway No 9 linking the North East of Thailand to the central Part of Viet Nam and the highway No. 23 providing access to the South-East hinter land provinces (Saravane, Attapeu and Sekong).

Rice, water melons and soy beans are Sethamouak’s main agricultural products. At present there is no agro-processing or industrial development in Sethamouak.

## Urban Master Plan

The Urban Master Plan for Sethamouak was prepared by the Department of Public Work and Transport of Savannakhet in 2016, and was approved by the provincial governor in 2017. The Master Plan is essentially a land use plan, but is based on the following orientation for future development:



## Population Projections

The population projections are set out in Table 1-4. Within the core villages, total population is forecast to increase from about 8,956 in 2018 to about 11,358 in 2030.

**Table 1-4: Population Projections for Sethamouak’s Core Villages**

Year 2018 Population	Growth Rate %	Forecast Population 2020	Forecast Population 2025	Forecast Population 2030
8,956	2.00	9,318	10,288	11,358

## Water Demand Forecasts

### General Approach

Water demand forecasts for the Sethamouak subproject were prepared by making separate projections of each component of demand, including:

Demand for domestic use (based on per capita consumption, coverage targets and population projections);

Demand for industry (based on a % of domestic use, and specific allowances for large industries);

Demand for services (based on a % of domestic use, and specific allowances for large services areas);

Unaccounted-for-water<sup>78</sup> (ufw) as a % of total demand, excluding the demand of large industrial zones.

Production losses in treatment plant (based % of total demands).

### **Domestic Consumption**

Water demand and consumption data for other provincial and district towns in Lao PDR show that domestic consumption accounts for about 90% of total demand. Per capita consumption figures for urban water supply systems in Lao PDR vary widely. For 52 water supply systems throughout the country (excluding Vientiane capital), per capita consumption ranges from 36 to 191 LPCD, with an average of 135 LPCD, while for 31 small town water supply systems, the corresponding figures are 11 to 145 LPCD, with an average of 79 LPCD. (WSD Statistics for Provincial Nam Papas, 2006).

Per capita consumption for Sethamouak's the piped water supply systems (Provincial Nam Papas and the private systems) varies from 40 to 80 LPCD, however customers supplement the piped supplies with bottled water and with rainwater in the wet season, so actual consumption is likely to be higher. According to the household surveys, householders estimate that their consumption varies from 30 to 130 LPCD, with an average of 80 LPCD.

Based on Sethamouak household survey results and experience from other projects, per capita consumption for drinking and cooking is about 10 LPCD, while water for bathing and washing is in the order of 50 LPCD. About 4-16 LPCD will be required to operate a pour-flush toilet<sup>79</sup>, so per capita consumption for a typical household with pour flush toilet is estimated at 64-76 LPCD. Experience in other towns in Lao PDR indicates that piped connections directly to the house will usually increase water consumption over time. On the other hand, some residents in Sethamoauk will continue to use existing pumped wells and free sources of supply such as rainwater to minimize their overall water supply costs. To account for Sethamoauk having relatively low poverty levels, and a growing number of private businesses, this Feasibility Study has adopted a per capita consumption figure of 80 LPCD, 49 m<sup>3</sup>/day for backwashing filters, plus 10% for non-domestic use and 15% for unaccounted for water (ufw).

### **Water Demand Forecasts**

Table 1-4 summarizes the demand forecasts and design criteria for the Sethamouak subproject. By 2030, the average daily water production at the water treatment plant is expected to be 1,200 m<sup>3</sup>/day, comprising 78% domestic consumption, with the remaining 22% being for institutions, public use, services, handicraft and small industries, and allowances for NRW and backwashing the filters.

**Table 1-5: Water Demand Forecasts for Sethamouak Town**

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<sup>78</sup> Unaccounted-for-water is the difference between water production and authorized consumption.

<sup>79</sup> In general, pour flush toilets require 1-4 liters of water per flush, including water for washing. Assuming that each member of the household uses the facility 4 times per day, consumption varies from 4-16 lpcd.

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No.	Items	Unit	Forecasts			
			2018	2020	2025	2030
<b>A.</b>	<b>Domestic Demand</b>					
1	<b>Growth Rate</b>	%	2.50	2.50	2.50	2.50
2	Population in Core Area		8,956	9,318	10,288	11,358
3	Population in Extension Area	No.				
4	<b>Total Population</b>	<b>No.</b>	<b>8,956</b>	<b>9,318</b>	<b>10,288</b>	<b>11,358</b>
5	Coverage in Core Area	%	-	80	80	80
6	Coverage in Extension Area	%	-	80	80	80
7	Percentage Coverage	%	-	80%	80%	80%
8	<b>Population with Piped Water</b>	<b>No.</b>	<b>-</b>	<b>7,454</b>	<b>8,230</b>	<b>9,087</b>
9	<b>Per Capita Consumption</b>	<b>l/c/d</b>	<b>-</b>	<b>80</b>	<b>80</b>	<b>80</b>
10	Total Domestic Demand	m <sup>3</sup> /d	-	596	658	727
<b>B.</b>	<b>Non Domestic Demand</b>					
1	Services, Small Industry, Institutions, Public (% Dom)	%	-	20	20	20
2	Total Non domestic demand	m <sup>3</sup> /d	-	119	132	145
<b>C.</b>	<b>Subtotal Water Demand All Categories</b>	<b>m<sup>3</sup>/d</b>	<b>-</b>	<b>716</b>	<b>790</b>	<b>872</b>
<b>D.</b>	<b>Non Revenue Water (NRW) in Distribution system</b>					
1	NRW as % Average Daily Water Production	%	-	15	15	15
2	NRW (physical losses only-pipelines and WTP)	m <sup>3</sup> /d	-	107	119	131
<b>E.</b>	<b>Average Daily Water Production (C+D) rounded</b>	<b>m<sup>3</sup>/d</b>	<b>-</b>	<b>820</b>	<b>910</b>	<b>1,000</b>
<b>F.</b>	<b>Peak Daily Water Demand</b>					
1	Peak Daily Water Demand		-	1.2	1.2	1.2
2	Peak Daily Water Demand (PDD)	m <sup>3</sup> /d	-	984	1,092	1,200
3	Peak Daily Water Demand	l/s	-	11.4	12.6	13.9
<b>G.</b>	<b>Required Treatment Plant Output (rounded)</b>	<b>m<sup>3</sup>/d</b>	<b>-</b>	<b>980</b>	<b>1,090</b>	<b>1,200</b>
<b>H.</b>	<b>Treatment Plant Backwashing</b>					
1	Backwashing as % of Treatment Plant Output	%	-	5	5	5
2	Treatment Plant Backwashing	m <sup>3</sup> /d	-	49	55	60
<b>I.</b>	<b>Raw Water System</b>					
1	Required Capacity of Source & Raw Water System	m <sup>3</sup> /d	-	1,029	1,145	1,260
2	<b>Required Source Capacity (rounded)</b>	<b>m<sup>3</sup>/d</b>	<b>-</b>	<b>1,030</b>	<b>1,140</b>	<b>1,260</b>
3	<b>Required Source Capacity</b>	<b>l/s</b>	<b>-</b>	<b>11.9</b>	<b>13.2</b>	<b>14.6</b>
<b>J.</b>	<b>Peak Hourly Demand (Distribution System)</b>					
1	Peak Hourly Factor	%	-	1.5	1.5	1.5
2	<b>Peak Hourly Demand (KlxPDD/86.4)</b>	<b>l/s</b>	<b>-</b>	<b>17.9</b>	<b>19.8</b>	<b>21.9</b>

## Introduction

This section outlines design and planning criteria for the Sethamouak water supply system. It also discusses water treatment technology.

## Design and Planning Periods

The Project is scheduled for implementation in the period 2019-2021. Sethamouak project the planning has considered development to 2030 (12 year design life), to ensure that: (i) adequate provisions are made in the Project for future expansion; (ii) facilities are optimally sized, and; (iii) adequate land areas are reserved for future facilities. The proposed design horizons for intakes, raw water transmission and water treatment plants were determined by least cost analyses, while design periods for other parts of the system were determined by practical considerations. (e.g. problems and risks associated with future land acquisition and upgrading operating water supply systems in growing urban areas).

## Water Treatment Technology

The choice of water treatment technology for Sethamouak is dictated primarily by the raw water quality, operator capacity and financial resources to ensure sustainability. Wet season turbidity of the Sethamouak River is high, and is subject to rapid fluctuations. Slow sand filters and rapid sand filters were considered for possible use in Sethamouak. Although slow sand filters are relatively simple to operate, they require a large land area and require pre-sedimentation and/or sedimentation processes to operate with highly turbid waters. Limited land is available in Sethamouak and the raw water is very turbid. Slow sand filters are not therefore a viable option. Rapid sand filters are the most appropriate system.



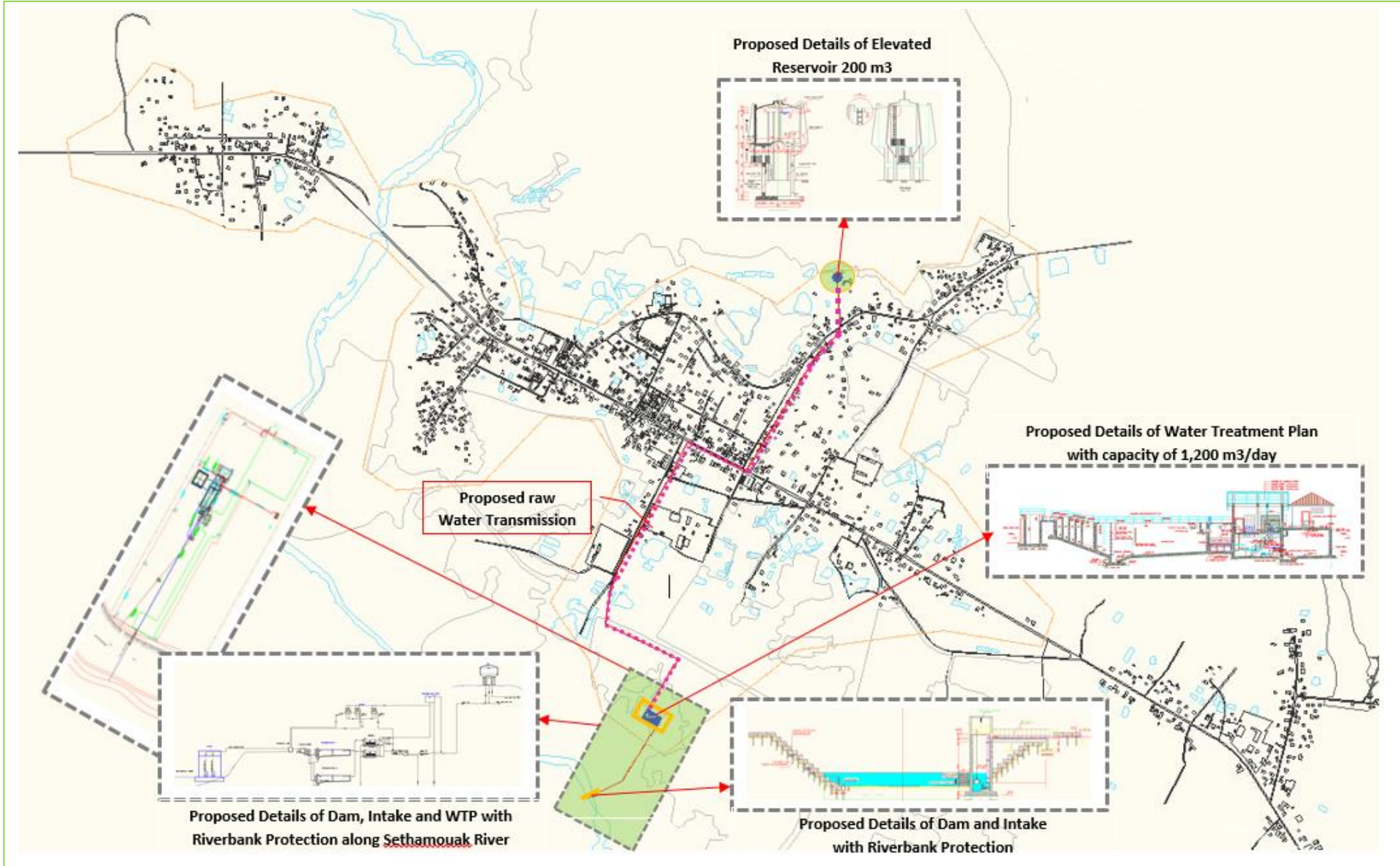


Figure 1-3: Proposed Sethamouak WTP Conceptual Design

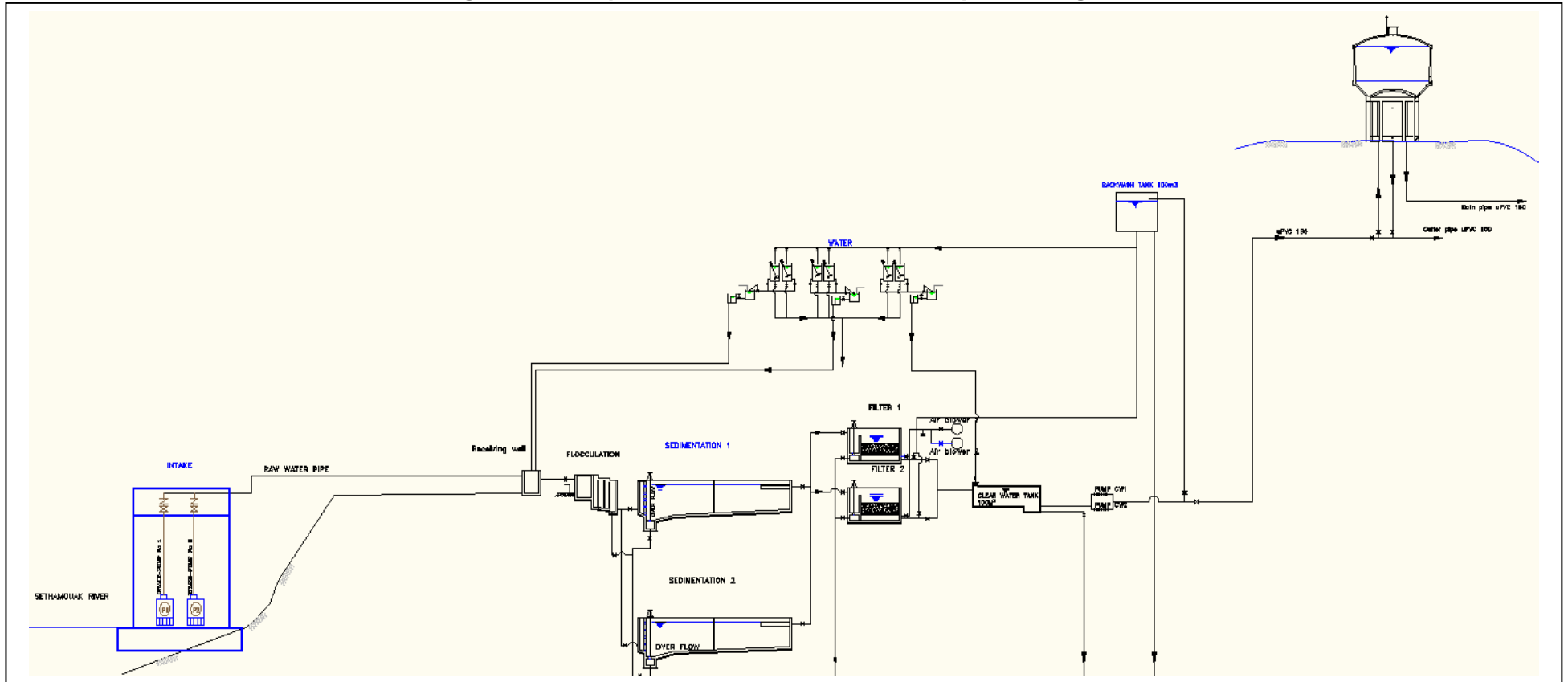


Figure 1-4: Proposed Sethamouak WTP Conceptual Design

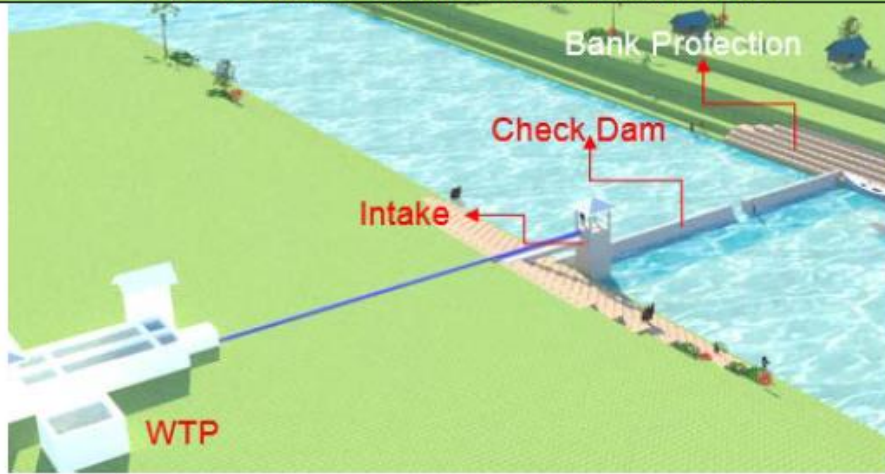
Sethamouak Town: IEE - Visual Impact of Proposed Water Treatment Plant (WTP) in Sethamouak River

3 D VIEW OF PROPOSED WATER INFRASTRUCTURE

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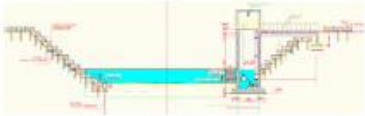
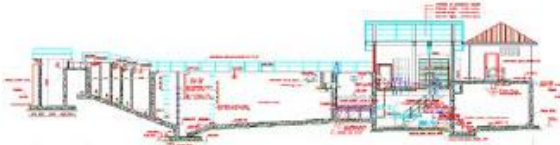


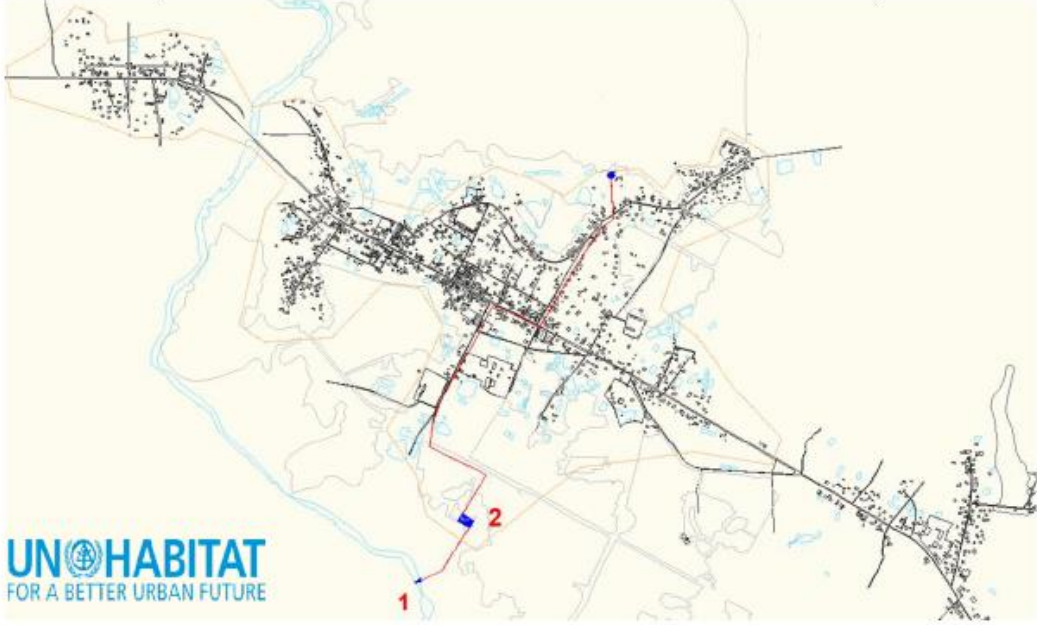



Proposed Water Treatment Plant with Bank Protection



Proposed Raw Water Intake with 1.5 m high Check Dam



**Schematic Description: Sketched and depicted information related to planned Water Treatment Plant (WTP) in Sethamouak Town**

			
<p>[1] Raw Water Intake and Check Dam with Riverbank Protection</p>	<p>[2] Water Treatment Plant (WTP) with capacity of 1,200 m3/day</p>	<p>[3] Schematic of Water Treatment Plant (WTP)</p>	
			
<p>Proposed site of the new Water Treatment Plant at Sethamouak River</p>		<p>Typical small town conditions in Sethamouak</p>	
			
<p>Sethamouak River in the dry season</p>	<p>Bridge over Sethamouak River</p>		
<p><b>Notes</b>          1. <i>Not to scale</i>          2. <i>Map is schematic, not detailed</i>          3. <i>Shown locations are indicative</i></p>	<p><b>Environmental Impacts and Mitigation:</b></p> <ul style="list-style-type: none"> <li>• No negative impacts on water/land resources</li> <li>• No permanent adverse impacts on people</li> <li>• Improvement of health conditions through water supply system and water facilities</li> </ul> <p><i>(Please see Annex)</i></p>	<p><b>ESMP:</b></p> <ul style="list-style-type: none"> <li>• Raw / potable water quality monitoring</li> <li>• Health, Safety &amp; Environmental supervision of construction work to avoid/limit disturbances to communities</li> </ul>	<p><b>Sources</b></p> <ul style="list-style-type: none"> <li>• District Governor</li> <li>• NPSE-Savannakhet</li> <li>• UN-Habitat Lao PDR</li> </ul> <p><b>Date</b></p> <ul style="list-style-type: none"> <li>• April 2019</li> </ul>

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## Management Arrangements

The new District Nam Papa will be established and responsible for managing, operating and maintaining the new or rehabilitated water supply systems. The Provincial Nam Papa in the provincial capital will provide ongoing technical and managerial support to the District Nampapa following commissioning of the new water supply system. It will process/print water bills in the provincial office, and coordinate District Nam Papa staff training. The Provincial Public Works and Transport (PWT) will be responsible for managing the new or improved sanitation systems.

## Project-Specific Tariff

The project-specific tariff was determined using the Average Incremental Financial Cost (AIFC) approach, which is regarded as an approximation of the long-run marginal cost. The average tariff required for full cost recovery of the subproject is Kip 4,551 / m<sup>3</sup>. The average tariff required to cover the subproject's full O&M cost and 30% of capital cost is Kip 2,438 / m<sup>3</sup>. The long run utility wide average tariff, which will also be applied to the subproject, is Kip 4,997 / m<sup>3</sup> at 2010 price level. The use of utility wide tariff for the subproject does not result to a subsidy for subproject consumers.

## Affordability and Willingness to Pay

An affordability analysis was undertaken to ensure that domestic consumers, particularly those in lower income groups and female headed households, can afford the projected water tariff levels that meet the financial objectives of the sector. The affordability analysis was done for year 2017, two years before the project is assumed to be operational, and year 2024.

The results of the socio-economic survey revealed that households are willing to pay an average of about Kip 20,000 per month for piped water supply with 43% of respondents willing to pay between Kip 11,000 to Kip 70,000 per month. The analysis above shows that the average monthly water bill in 2017 and 2024, inclusive of the monthly meter rental and turnover tax, are higher than the households' willingness to pay. During this transition period, the PNPs forgive unpaid bills. In addition, it is recommended that the minimum 5m<sup>3</sup>/month be eliminated, so that the poor only pay for what they actually use.

- PROJECT ECONOMIC ANALYSIS

Capital costs and incremental operation and maintenance (O&M) costs of the water supply and sanitation system have been considered. Economic costs have been derived from the financial project costs. All costs were expressed in constant (2010) prices. Taxes and duties have been excluded from base costs. Economic costs were valued using the domestic price numeraire and expressed in local currency. Tradable components have been adjusted to economic prices using shadow exchange rate factors (SERF) and non-traded components are valued at domestic market prices. A shadow wage rate factor (SWRF) for unskilled labor has been used to reflect its opportunity costs in the context of wide availability of labor in Lao PDR.

## Demand Forecast

Water demand in the subproject town was derived from the current population within the planned service area, population growth, current and future domestic water consumption levels, and a provision for non-domestic water consumption. Reliable data on the amount of water presently consumed by households without piped-water connection in the subproject town is not available. Households typically utilize a variety of water sources and do not measure or assess their consumption. However, based on the socio-economic household survey result as well as observations of water use behavior in the subproject town during the

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field visits, it is estimated that average daily demand from existing sources of non-piped water ranges between 40 and 70 liters per capita per day depending on the effort and resources needed to acquire the water, and on income levels. Internationally accepted lifeline consumption requirement was estimated to be 40 LPCD.

Per capita water consumption is expected to increase after construction of the piped water supply system, due primarily to (i) the reduced cost of acquiring water, (ii) improved water quality, and (iii) greater convenience and reliability of the piped water supply system. Demand is also a function of changes in price and household income and estimated price and income elasticity were incorporated in the demand forecasts.

- PROJECT BENEFITS AND IMPACTS

### **Expected Beneficiaries and Benefits**

In Sethamouak, the subproject will provide direct and indirect benefits for all people living and working in the 7 core villages of the town. Specifically, this will include up to 10,288 people in 2025 and 11,358 people in 2030.

For people living in Sethamouak, the principal benefits derive from the development of a system of piped, treated water. They include improved convenience and reliability of water supplies for domestic uses in all core villages, as well as increased quantities of water and improved water quality, as well as climate change adaptation benefits of guaranteed water supply, even in dry years. This is a significant improvement on the current situation, where people either source water from wells, that have an increasing propensity to dry out, and bottled water, which is expensive.

Health benefits will result from the provision of safe water and improved household sanitation conditions that reduce the incidence of diarrhea, dysentery, kidney stones and other water-related illness. Other health benefits will include reduced costs for health care and a reduction in work time lost.

The availability of treated water and reliable water supplies may also support the development of economic activities in Sethamouak. About 68% of surveyed households in Sethamouak purchase bottled water for drinking. All households rely partially or entirely on other sources of water for household drinking water, for example, by boiling well water. The availability of treated piped water may result in modest reductions in household expenditures for households that buy water, although this may be offset by increased consumption of water as well as continued purchase of bottled water due to, for example, taste preferences.

### **Poverty Reduction**

In the case of the small number of poor households in the target area, the Project policies help to ensure equitable benefits. Specifically, poor households are entitled to (i) no upfront charges for connection to the water supply system regardless of when they connect, on condition that they pay for a minimum amount of water use; (ii) progressive tariffs based on consumption levels (to be confirmed); and, (iii) financial assistance to construct or upgrade their sanitation facilities.

The direct benefits of piped water to the house and hygienic latrines that may contribute to reducing poverty levels of poor households include (i) reduced costs for health care due to the availability of clean water and proper sanitation; and, (ii) reduced costs for drinking water, if households substitute boiled piped water for purchased bottled water; and, (iii) increased opportunities for income-generating activities that require a water source (e.g., food processing or a small restaurant) and/or increased profitability of existing activities.

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## Gender

Everyone surveyed in core villages agreed that the water supply system offers significant benefits for adult women, as well as for men. In addition to improved health, people believe that women and men will both enjoy time savings and reduced workload. That is, the time and effort to get water will be less compared with current practices of getting water from wells or, in villages close to the Sethamouak River, going to the river to wash clothes or bathe. The majority felt that access to piped, treated water would result in greater income-generating opportunities, although the benefit for men was seen to be slightly higher than for women. More than half of respondents indicated that as a result of the water supply system, both girls and boys would have reduced workloads and more time for education.

Women and men in Sethamouak are almost equally involved in community affairs, measured as the percentages of households with active members. Men tend to be involved in activities of the Youth Union, while women participate through the Lao Women's Union. The objective of the Project gender strategy is to build on the interests and strengths of both women and men to be involved in the proposed village-level activities, and to ensure that the views of both groups are taken into consideration in making decisions.

Further analysis of the gender situation is provided in [Annex 2](#).



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## **Annex 5 – Demonstrating Compliance with the Adaptation Fund’s Environmental and Social Policy through the Environmental and Social Management Plan**

### ***Purpose***

The purpose of this overview is to demonstrate compliance of the project with the Environmental and Social Safeguards of the Adaptation Fund. It provides a summary of the measures taken in the project design phase to ensure that the project promotes positive environmental and social benefits, avoids, reduces or mitigates adverse environmental and social risks and impacts considering the 15 Adaptation Fund principles. It further details the measures put in place to uphold the principles throughout the project implementation.

### ***Compliance Process***

In line with UN-Habitat’s Environmental and Social Management System and the Adaptation Fund’s ESP (and Gender Policy). UN-Habitat, in partnership with NPSE Savannakhet completed a comprehensive environmental and social assessment of the target site, which consisted of: a rapid climate change vulnerability assessment, a feasibility study of the two proposed investments (as shown in Annexes [3](#) and [4](#)), and an initial environmental examination (IEE<sup>80</sup>) to support the preparation of this proposal. The full IEE document can be provided on request. The IEE was designed to ensure compliance with both Lao laws and the Environmental and Social Policy of the Adaptation Fund. Its key findings are presented in this Annex.

UN-Habitat’s staff in the Laos country office supported the rapid VA, feasibility study and IEE, while taking the lead in developing this Annex and the proposal generally, by ensuring that consultations took place with vulnerable groups, and that additional information could be gathered to demonstrate compliance with the requirements of the AF ESP. The consultations focused on climate change related hazards, the perceptions, requirements and priorities of the poorest and most vulnerable, beneficial activities, potential risks and effective risk mitigation.

For a full description of the project that was designed based on these consultations, please see [Part II, Section A](#) of the project proposal document.

### ***Screening and Categorization***

As part of the rapid VA, feasibility study and IEE, a screening and assessment was carried out to identify and evaluate environmental and social risks and impacts of proposed interventions.

Planning and policy related activities, which make up all actions under Components 1 and 3 have been screened against the 15 AF ESP principles and no potential risks have been observed, or potential risks are sufficiently inconsequential that no further actions are required. Despite this, there will be ongoing monitoring for compliance undertaken as the project is implemented to ensure that risks don’t develop.

Activities under Component 2 are ‘hard’ investments and as such some relatively minor risks have been identified. These are presented in Tables 10-13, below. The design of the project incorporates means to ensure that risks are minimised, by working in only two locations and maximising community engagement, there are no incentives for mismanagement and substantial incentives to ensure compliance with Environmental and Social Principles.

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<sup>80</sup> Note, this document is only available in Lao, but a screen shot has been presented here and it has been used as a reference in the development of this safeguards assessment and the feasibility studies in Annexes 3&4

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Design features to minimise risks are presented in Tables 10&11, below. The investments are also sufficiently small-scale that any negative impacts that arise would be relatively minor and localised in their scale. Nevertheless, these activities can be classified as category B for environmental and social safeguard risks and as such an ESMP has been developed, below.

**Table 8 - Activity level safeguarding sheet for Sayphouthong Town**

District Name	Sayphouthong		
Specific Activity and Brief Description	<p>“Construct a water infrastructure climate resilient with 3,600m<sup>3</sup>/day WTP that serves 24/7 of 48,188 residents in Sayphouthong town”. Further information about the technical design is presented in <a href="#">Annex 3</a>. Additional screening can be found in Tables 12 and 13, below</p>		
Environmental and Social Safeguard Principle	Yes/No and Specific Risks	Linkage to the Vulnerability Assessment	Risk Mitigation Actions incorporated in the infrastructure and project design
<p><b>Compliance with the law</b></p>	<p><b>No</b></p> <p>The project has assessed that there is no realistic risk under any of the project’s proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section E of this proposal.</p> <p>The main water supply facilities such as the intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way.</p>	<p>The project has assessed that there is no realistic risk under any of the project’s proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section 5 of this proposal</p>	<p>Relevant national, local authorities and engineers were consulted during the project design phase to ensure compliance with all relevant <b>laws and technical standards</b>.</p> <p>It will be ensured that each person associated with the subproject is aware of <b>domestic and international laws and compliance needs to 8<sup>th</sup> NSEDP, SDG and Lao technical standards requirements</b>.</p> <p>Engagement with Department of Land Management under the Provincial Department of Natural Resources and the Environment, Urban Planning and Construction under PWT at the provincial level Integrating legal compliance into all training and awareness. Continued monitoring throughout the project</p> <p>UN-Habitat will work with executing entities to monitor developments and changes to the law and train partners, where appropriate.</p>
<p><b>Access and Equity</b></p>	<p><b>Yes</b></p> <p>That certain groups are denied access to infrastructure, or that preferential access is given to others.</p> <p>This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people (see</p>	<p>. Indigenous people, women and female headed households tend to have higher level of vulnerability</p>	<p>Consultations have and will continue to capture all needs of the target communities/households and the activities have been designed according to their ‘<b>access and equity</b>’ needs. Mapping all the groups and their needs, planning/ management and monitoring process for implementing all components and community management with rules ensuring that equal ‘<b>access and equity</b>’ is guaranteed. A pro-poor tariff will be implemented to reduce the possibility that people can’t access the services.</p>

	below)		
Marginalised and Vulnerable Groups	<p><b>Yes</b></p> <p>According to the feasibility study and IEE in the preparation of the proposal, 49 per cent of Sayphouthong District are indigenous people. In each case, they come from the Phoutong, Katang and Mangkone ethnic groups (all of which have languages from the Thai-Kadai ethnolinguistic family. In total, 27,649 (49.8 per cent) of the beneficiaries are indigenous people.</p> <p>In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 30,567 will be women, meaning that 53.5% of the project's beneficiaries are women.</p> <p>Approximately 30% of households are considered poor throughout the project area.</p> <p>Given the presence of marginalised and vulnerable groups, there is medium risk under the proposed activities under component 2 to them as a result of the project, however, they are the intended beneficiaries.</p> <p>There is some illiteracy in Sayphouthong. Without mitigation measures there is a risk that the illiterate may be marginalised or disenfranchised if written information is the primary mode of communication between the project and beneficiary communities. Illiteracy is thought to be a more significant problem for women.</p>	Indigenous people, women and female headed households tend to have higher level of vulnerability	<p>Community management with rules ensuring that equal access is guaranteed, including for indigenous populations. This means that all consultations and meetings should be made accessible in indigenous languages, where people cannot, or do not wish to communicate in the Lao Language.</p> <p>Consultations have and will continue to capture all issues and needs of “<b>marginalized and vulnerable groups</b>” and particular impacts on- and needs of marginalized and vulnerable groups will be assessed throughout the project.</p> <p>The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water supply, despite their low incomes.</p> <p>Female headed households will be prioritised to receive connections first.</p> <p>Because of high rates of illiteracy (especially among women and indigenous people) information generated by the project will never be presented solely in writing. Village chiefs and other local elders will be responsible for providing information orally to people, if this is more suitable for them.</p>

	Without mitigation measures each of the above could marginalise people		
<b>Human Rights</b>	<p><b>No</b></p> <p>Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example.</p> <p>However, the risk of this is very low, under the proposed activities under component 2, as the project (and its supporting structures) are being created to provide continuity of clean water supply to people. All construction works are taking pace on public land, and water supplies will be provided to all people in the target towns.</p>	In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 29,669 will be women, meaning that 53.5% of the project's beneficiaries are women.	See measures of other risk categories.
<b>Gender Equity and Women's Empowerment</b>	<p><b>Yes</b></p> <p>Women could be denied access to infrastructure or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2.</p> <p>Further assessment of the risks to women arising from the project, as well as underlying vulnerabilities existing in the target area, are analysed further in <a href="#">Annex 2</a>.</p>	The VA and gender assessment finds women more vulnerable to climate change because although the exposure they face to hazards is similar to men, they are more sensitive and have lower adaptive capacity because, for example, they are responsible for collecting water, are less likely to work in the formal economy, are not covered by social protection and on the whole have lower levels of educational attainment and literacy, <i>inter alia</i> . Further information in Annex 2.	<p>Quotas for female participation in decision making at all levels. Engagement throughout the project with the Lao Women's Union and the Women's representative which exists in every village.</p> <p>The project will actively pursue of <b>Gender Equity and Women's Empowerment</b> participation in project activities and stakeholder consultation, e.g. through quota systems and /or organization of separate working groups during the implementation of components 1&amp;2.</p> <p>A comprehensive action plan has been presented in Annex 2. Further information can be found there.</p>

<p><b>Core Labour Rights</b></p>	<p><b>Yes</b></p> <p>The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.</p>	<p>Jobs are often low-paid, temporary or informal. There is a high dependency rate, meaning many people are outside the formal economy (especially women)</p>	<p>All community contracts must be scrutinised to ensure they comply with both national law and international standards.</p> <p>The project will monitor that international and national labour laws are respected, for any work that may be carried out in relation to the project.</p>
<p><b>Indigenous People</b></p>	<p><b>Yes</b></p> <p>See Marginalised and Vulnerable Groups, above</p>	<p>Indigenous people tend to be more vulnerable to climate change because they are, in many cases, poorer, are more likely to live in low-quality housing, less likely to have access to basic services such as water supply, and are more likely to be illiterate.</p>	<p>The State pursues the policy of promoting Unity and Equality among all ethnic groups. All ethnic groups have the rights to protect, preserve and promote the fine customs and cultures of their own tribes and the nation. All Acts of creating Division and Discrimination among ethnic groups are forbidden. The State implements every measure to gradually develop and upgrade the economic and social level of all ethnic groups".</p> <p>Consultations have and will continue to capture all issues and needs of all communities (as the indigenous people, make up the majority of the population nationwide and in the target areas) and particular impacts on- and needs of indigenous people and other communities will be assessed throughout the project.</p>
<p><b>Involuntary Resettlement</b></p>	<p><b>No</b></p> <p>Eviction arising from conflicts over land ownership is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project. There is currently no one living on or immediately adjacent to the project's construction sites, and the sites are not being used for livelihood activities like agriculture or informal markets.</p>	<p>Land ownership is not a major source of vulnerability in the target area. Rates of privately held, owner-occupied land are high. The few people living informally are generally more vulnerable, but these people were not found to be living on, or immediately adjacent to the site of the project intervention.</p> <p>See also 'Marginalised and Vulnerable Groups, above'</p>	<p>No activity will be implemented where there is the possibility, however small, of forced eviction. AoCs and contracts will include standard clauses stating that target communities will not be '<b>involuntary resettled</b>', also after the project.</p> <p>The status of the land will be checked again before the start of construction. Land ownership and occupation can change quickly in growing settlements. Construction can only begin once it is clear that no one is living on or adjacent to the land, or dependent on it for their livelihood.</p>
<p><b>Protection of Natural Habitat</b></p>	<p><b>Yes</b></p> <p>There is a risk of damage to local ecosystems, including forests, and rivers from infrastructure construction. This risk is low significance, under the</p>	<p>Natural habitats have come under pressure from human activities in recent years, including deforestation (both</p>	<p>Incorporating protection of habitats and ecosystems into action planning.</p> <p>The water supply system design includes river bank protection and stabilisation. This is designed to ensure that the construction of the intake and associated infrastructure doesn't destabilise the banks, which may have knock-on impacts on</p>

	<p>proposed activities under component 2, but not impossible, considering that water the be supplied will be sourced from the river in both towns.</p> <p>There is no risk to the river ecology or downstream livelihoods for the investment at Sayphouthong because of the relatively miniscule amount of water being extracted from the river at that point. At Sayphouthong the Mekong river never goes below 6.5m deep in the dry season (and can be over 13m in the rainy season) and is is about 1.16km wide from bank to bank at the point where construction will take pace,. Minimum river flow around Sayphouthong is about 2,000m<sup>3</sup> per second in the dry season (and as much as 7 times this in the rainy season), meaning the maximum daily usage of river water for the system is equal to less than 2 seconds of river flow or about 0.002% of the daily fow – a miniscule amount that will not have affects on the downstream hydrology or ecology of the river.</p>	<p>small and industrial scale) and mining activities. No major evidence was found, however, that the climate is affecting natural habitat, but rather that natural habitats are essential to help people adapt to changes in the climate</p>	<p>the riverbank protection.</p> <p>Further information on the design aspects can be found in <a href="#">Annex 3</a></p>
<b>Conservation of Biological Diversity</b>	<b>No additional risks other than those identified in protection of natural habitats</b>	See Protection of Natural Habitats	See Protection of Natural Habitats
<b>Climate Change</b>	<p><b>Yes</b></p> <p>The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal.</p> <p>The hazards caused by and vulnerability arising from climate change is</p>	<p>See Part I and Annex 1 for analysis of the impacts of climate change</p>	<p>Incorporating waste management and disposal into design and operating procedures for the construction.</p> <p>The infrastructure has been designed to avoid ‘maladaptation’ by ensuring that hazards are not shifted onto other locations not covered by the project. The project will not cause upstream flooding, downstream water shortage or detract from the ability of any other towns or villages to access water for drinking, domestic or agricultural purposes. Analysis has been</p>

	<p>presented in Part I and Annex 1 of this proposal.</p> <p>The construction activities are not anticipated to generate large scale emissions. Where possible, materials will be sourced locally (and where this is not possible, nationally) to avoid emissions arising from unnecessary transportation. The operation of the equipment does not involve fossil fuel burning or any other activity that generates emissions.</p> <p>Long-term changes in the climate, as discussed on Part I and Annex 1 of this proposal, pose a risk – particularly if the dry season continues to become longer and dryer and temperatures increase further. In Sayphouthong however, future declines in rain or an increasingly prolonged dry season will not diminish the water level in the Mekong to such a level that the infrastructure doesn't function. The structure requires surface water and the Mekong – Asia's 4<sup>th</sup> largest river by water volume – doesn't dry out at Sayphouthong. Even with the most extreme projections of climate change, there is no realistic risk that the river would run dry.</p> <p>See Pollution prevention and resource efficiency for provisions regarding waste</p>		<p>conducted that shows that at Sayphouthong the maximum amount of water taken from the river will be 0.002% of the daily total flow in the dry season (and substantially less in the rainy season)</p> <p>Climate Change policies and guidelines to be explained to understood by project personnel prior to implementation and monitored by implementing partners.</p>
<p><b>Pollution Prevention and Resource Efficiency</b></p>	<p><b>Yes</b></p> <p>Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance</p>	<p>Water infrastructure could be open to contamination, spreading water-borne diseases</p>	<p>Incorporating public health considerations (Especially relating to water contamination) into training under Component 2.</p> <p>The project will use local materials for construction where possible. The project will ensure that all waste materials generated in the course of construction are recycled where possible, and where this is not possible, they are disposed of in proper facilities according to the law and in compliance with guidance from the Ministry of Natural Resources and the</p>



<p><b>Public Health</b></p>	<p><b>Yes</b></p> <p>Water infrastructure could be open to contamination, spreading water-borne diseases. River water may not be clean because of upstream pollutants, beyond the control of project staff of NPSE Savannakhet.</p> <p>Neither the infrastructure at Sayphouthong or Sethamouak will create open pools of water or generate any stagnant water. As such, there is no discernable risk of increased vector-borne disease.</p>	<p>There are public health problems arising from climate change, as identified in the vulnerability assessment. This includes people currently sourcing poor quality, turbid water, and prevalence of disease.</p>	<p>Environment.</p> <p>The project includes an advanced filtration system that will ensure the water provided is of high quality, and in line with WHO standards.</p> <p>See also Protection of Natural Habitats</p>
<p><b>Physical and Cultural Heritage</b></p>	<p><b>No</b></p> <p>No risks to physical and cultural heritage were identified. The proposed infrastructure is on public land, that is not currently used for residential, livelihood or cultural activities. The amount of water being extracted from the river is so small that there will be no downstream impacts that could affect sites of cultural interest, and the consultations did not reveal any sites of intangible cultural heritage.</p>		<p>The proposed infrastructure will include a public space on the reinforced embankment that people can use for recreation</p>
<p><b>Lands and Soil Conservation</b></p>	<p><b>No additional risks to those identified under protection of natural habitats</b></p>	<p>See also protection of natural habitats</p>	

**Table 9 - Activity level safeguarding sheet for Sethamouak Town**

<b>District Name</b>	<b>Sethamouak</b>		
<b>Investment and Brief Description</b>	<p>“Construct a water infrastructure climate resilient with 1,200 m3/day WTP that serves 24/7 of 8,956 residents in Sethamouak Town.”  Further information about the technical design is presented in <a href="#">Annex 4</a>. Further screening can be found in Tables 12 and 13, below</p>		
<b>Environmental and Social Safeguard Principle</b>	<b>Yes/No and Specific Risks</b>	<b>Linkage in the VA</b>	<b>Risk Mitigation Actions incorporated in the design</b>
<b>Compliance with the law</b>	<p><b>No</b></p> <p>The project has assessed that there is no realistic risk under any of the project’s proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section E of this proposal.</p> <p>The main water supply facilities such as the intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way.</p>		<p>Relevant national, local authorities and engineers were consulted during the project design phase to ensure compliance with all relevant <b>laws and technical standards</b>.</p> <p>It will be ensured that each person associated with the subproject is aware of <b>domestic and international laws and compliance needs to 8<sup>th</sup> NSEDP, SDG and Lao technical standards requirements</b>.</p> <p>Engagement with Department of Land Management under the Provincial Department of Natural Resources and the Environment, Urban Planning and Construction under PWT at the provincial level  Integrating legal compliance into all training and awareness. Continued monitoring throughout the project</p> <p>UN-Habitat will work with executing entities to monitor developments and changes to the law and train partners, where appropriate.</p>
<b>Access and Equity</b>	<p><b>Yes</b></p> <p>That certain groups are denied access to infrastructure, or that preferential access is given to others.</p> <p>This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people (see below)</p>	<p>Indigenous people, women and female headed households tend to have higher level of vulnerability</p>	<p>Consultations have and will continue to capture all needs of the target communities/households and investments have been designed according to their ‘<b>access and equity</b>’ needs. A pro-poor tariff will be implemented to reduce the possibility that people can’t access the services.</p> <p>Mapping all the groups and their needs, planning/ management and monitoring process for implementing all components and community management with rules ensuring that equal ‘<b>access and equity</b>’ is guaranteed</p>

<p>Marginalised and Vulnerable Groups</p>	<p><b>Yes</b></p> <p>According to the feasibility study and IEE in the preparation of the proposal, 62 per cent of the residents of Sethamouak Town are indigenous people. They come from the Phoutong, Katang and Mangkone ethnic groups (all of which have languages from the Thai-Kadai ethnolinguistic family. Across the whole project area, 27,649 (49.8 per cent) of the beneficiaries are indigenous people.</p> <p>In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 30,567 will be women, meaning that 53.5% of the project’s beneficiaries are women. Further information can be found in <a href="#">Annex 2</a></p> <p>Approximately 30% of households are considered poor throughout the project area. There are higher rates of poverty in Sethamouak than in Sayphouthong</p> <p>Illiteracy rates are also high, especially in Sethamouak Town. Without mitigation measures there is a risk that the illiterate may be marginalised or disenfranchised if written information is the primary mode of communication between the project and beneficiary communities. Illiteracy is thought to be a more significant problem for women.</p> <p>Without mitigation measures each of the above could marginalise people</p>	<p>Indigenous people, women and female headed households tend to have higher level of vulnerability</p>	<p>Community management with rules ensuring that equal access is guaranteed, including for indigenous populations. This means that all consultations and meetings should be made accessible in indigenous languages, where people cannot, or do not wish to communicate in the Lao Language.</p> <p>Consultations have and will continue to capture all issues and needs of “<b>marginalized and vulnerable groups</b>” and particular impacts on- and needs of marginalized and vulnerable groups will be assessed throughout the project, as part of M&amp;E.</p> <p>The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water supply, despite their low incomes (see also – access and equity) Female headed households will be prioritised to receive connections first.</p> <p>Because of high rates of illiteracy (especially among women and indigenous people) information generated by the project will never be presented solely in writing. Village chiefs and other local elders will be responsible for providing information orally to people, if this is more suitable for them.</p>
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<p><b>Human Rights</b></p>	<p><b>No</b></p> <p>Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example.</p> <p>However, the risk of this is very low, under the proposed activities under component 2, as the project (and its supporting structures) are being created to provide continuity of clean water supply to people. All construction works are taking pace on public land, and water supplies will be provided to all people in the target towns.</p>	<p>In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 29,669 will be women, meaning that 53.5% of the project's beneficiaries are women.</p>	<p>See measures of other risk categories. The specific Human rights risks are negligible.</p>
<p><b>Gender Equity and Women's Empowerment</b></p>	<p><b>Yes</b></p> <p>Women could be denied access to infrastructure or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2.</p> <p>Further assessment of the risks to women arising from the project, as well as underlying vulnerabilities existing in the target area, are analysed further in <a href="#">Annex 2</a>.</p>	<p>The VA and gender assessment finds women more vulnerable to climate change because although the exposure they face to hazards is similar to men, they are more sensitive and have lower adaptive capacity because, for example, they are responsible for collecting water, are less likely to work in the formal economy, are not covered by social protection and on the whole have lower levels of educational attainment and literacy, <i>inter alia</i>. Further information in Annex 2.</p>	<p>Quotas for female participation in decision making at all levels. Engagement throughout the project with the Lao Women's Union and the Women's representative which exists in every village.</p> <p>The project will actively pursue of <b>Gender Equity and Women's Empowerment</b> participation in project activities and stakeholder consultation, e.g. through quota systems and /or organization of separate working groups during Components 1&amp;2.</p> <p>A comprehensive action plan has been presented in Annex 2. Further information can be found there.</p>

<p><b>Core Labour Rights</b></p>	<p><b>Yes</b></p> <p>The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.</p>	<p>Jobs are often low-paid, temporary or informal. There is a high dependency rate, meaning many people are outside the formal economy (especially women).</p>	<p>All community contracts must be scrutinised to ensure they comply with both national law and international standards.</p> <p>The project will monitor that international and national labour laws are respected, for any work that may be carried out in relation to the project.</p> <p>AoCs stipulate the need to respect core labour rights in line with international norms/ILO standards.</p>
<p><b>Indigenous People</b></p>	<p><b>Yes</b></p> <p>See Marginalised and Vulnerable Groups, above</p>	<p>Indigenous people tend to be more vulnerable to climate change because they are, in many cases, poorer, are more likely to live in low-quality housing, less likely to have access to basic services such as water supply, and are more likely to be illiterate.</p>	<p>The State pursues the policy of promoting Unity and Equality among all ethnic groups. All ethnic groups have the rights to protect, preserve and promote the fine customs and cultures of their own tribes and the nation. All Acts of creating Division and Discrimination among ethnic groups are forbidden. The State implements every measure to gradually develop and upgrade the economic and social level of all ethnic groups".</p> <p>Consultations have and will continue to capture all issues and needs of all communities (as the indigenous people, make up the majority of the population nationwide and in the target areas) and particular impacts on and needs of indigenous people and other communities will be monitored throughout the project</p>
<p><b>Involuntary Resettlement</b></p>	<p><b>No</b></p> <p>Eviction arising from conflicts over land ownership is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project. There is currently no one living on or immediately adjacent to the project's construction sites, and the sites are not being used for livelihood activities like agriculture or informal markets.</p>	<p>Land ownership is not a major source of vulnerability in the target area. Rates of privately held, owner-occupied land are high. The few people living informally are generally more vulnerable, but these people were not found to be living on, or immediately adjacent to the site of the project intervention.</p> <p>See also 'Marginalised and Vulnerable Groups, above'</p>	<p>No activity will be implemented where there is the possibility, however small, of forced eviction. AoCs and contracts will include standard clauses stating that target communities will not be '<b>involuntary resettled</b>', also after the project.</p> <p>The status of the land will be checked again before the start of construction. Land ownership and occupation can change quickly in growing settlements. Construction can only begin once it is clear that no one is living on or adjacent to the land, or dependent on it for their livelihood.</p>
<p><b>Protection of Natural Habitat</b></p>	<p><b>Yes</b></p> <p>There is a risk of damage to local ecosystems, including forests, and rivers from infrastructure construction. This risk is low significance, under the</p>	<p>Damage to local ecosystems, including forests, and rivers from infrastructure construction. This risk is low significance, under the proposed</p>	<p>The investment also includes bank protection and stabilisation works to ensure that the riverbank is not damaged, doesn't collapse and is not prone to erosion.</p> <p>The check dam structure spans the width of the Sethamouak river, but is only 1.5m high. As shown in Annex 4, the water will therefore flow</p>

	<p>proposed activities under component 2, but not impossible, considering that water the be supplied will be sourced from the river in both towns.</p> <p>There is a small risk that the check dam structure on the Sethamouak River which is to be 65m wide in total (about 42 metres bank to bank). Without specific design provisions this could cause risk to downstream water flow, affecting downstream livelihoods and water access, fish and causing upstream flooding See right-hand column and table 13, below, for further information on design measures.</p>	<p>activities under component 2, but not impossible, considering that water be supplied will be sourced from the river in both towns.</p>	<p>over the check dam structure during the rainy season and the early months of the dry season, when the water level is high. Accordingly, there is no disruption to the water flow in the rainy season as the water flows over the dam, while the intake only takes a small proportion – estimated at less than 0.1% of the water flow.</p> <p>In the dry season, the water level can drop below the height of the check dam. To ensure continued water flow during the dry season, a 1.5m wide weir has been added to the dam design to ensure continuity of water flow downstream and to prevent flooding upstream. The weir will remain open for at least 16 hours per day, and will only be closed at night when the system is drawing water. Nam Papa staff will be responsible for opening and closing the weir. The IEE assesses that there is no risk of upstream flooding, or downstream lack of water, affects to livelihoods, river ecology of the ability of fish to traverse the river with the addition of the weir.</p> <p>Further information about the entire structure, including the weir, including the design and images, can be found in Annex 4</p>
<b>Conservation of Biological Diversity</b>	<p><b>No additional risk, other than that described above</b></p> <p>See protection of natural habitats, above</p>	See Protection of Natural Habitats	See Protection of Natural Habitats
<b>Climate Change</b>	<p><b>Yes</b></p> <p>The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal.</p> <p>The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal.</p> <p>The construction activities are not anticipated to generate large scale emissions. Where possible, materials will be sourced locally (and where this is not possible, nationally) to avoid</p>	See Part I and Annex 1 for analysis of the impacts of climate change	<p>Incorporating waste management and disposal into design and operating procedures for the construction.</p> <p>The infrastructure has been designed to avoid ‘maladaptation’ by ensuring that hazards are not shifted onto other locations not covered by the project. The IEE determines that the check dam structure will not affect the ability of people downstream to access water and will not increase the likelihood of upstream flooding.</p> <p>Climate Change policies and guidelines to be explained to understood by project personnel prior to implementation and monitored by implementing partners.</p> <p>The infrastructure at Sethamouak is designed to continue functioning at 30cm river depth. This is less than half the estimated known lowest point of the river during the dry season, meaning the infrastructure can</p>

	<p>emissions arising from unnecessary transportation. The operation of the equipment does not involve fossil fuel burning or any other activity that generates emissions.</p> <p>Long-term changes in the climate, as discussed on Part I and Annex 1 of this proposal, pose a risk – particularly if the dry season continues to become longer and dryer and temperatures increase further. In Sethamouak the estimated lowest depth point of the river is between 60-90cm, so there is a risk from further decreases in the river flow. However, this structure also requires surface water.</p> <p>See Pollution prevention and resource efficiency for provisions regarding waste</p>		<p>continue functioning, even if the trend of a prolonged dry season continues – unlike ground water systems that are already becoming inviable in the area.</p>
<b>Pollution Prevention and Resource Efficiency</b>	<p><b>Yes</b></p> <p>Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance</p>	<p>Water infrastructure could be open to contamination, spreading water-borne diseases</p>	<p>Incorporating public health considerations (Especially relating to water contamination) into training under Component 2</p> <p>The project will use local materials for construction where possible. The project will ensure that all waste materials generated in the course of construction are recycled where possible, and where this is not possible, they are disposed of in proper facilities according to the law and in compliance with guidance from the Ministry of Natural Resources and the Environment.</p>
<b>Public Health</b>	<p><b>Yes</b></p> <p>Water infrastructure could be open to contamination, spreading water-borne diseases. River water may not be clean because of upstream pollutants, beyond the control of project staff of NPSE Savannakhet.</p> <p>Neither the infrastructure at Sayphouthong or Sethamouak will create open pools of water or generate any stagnant water. As such, there is</p>	<p>There are public health problems arising from climate change, as identified in the vulnerability assessment. This includes people currently sourcing poor quality, turbid water, and prevalence of disease. The Sethamouak river has particular problems with</p>	<p>The project includes an advanced filtration system that will ensure the water provided is of high quality, and in line with WHO standards.</p>

	no discernable risk of increased vector-borne disease.	turbidity in the dry season.	
<b>Physical and Cultural Heritage</b>	<p><b>No</b></p> <p>No risks to physical and cultural heritage were identified. The proposed infrastructure is on public land, that is not currently used for residential, livelihood or cultural activities.</p> <p>The amount of water being extracted from the river is negligible and no downstream impacts that could affect sites of cultural interest were found. The consultations undertaken in the preparation of this proposal didn't reveal any sites of intangible cultural heritage.</p>		The area surrounding the check dam will be a public space
<b>Land and Soil Conservation</b>	<b>No risk beyond those identified for protection of natural habitats</b>	See also Protection of Natural Habitats	See also Protection of Natural Habitats



**Table 10 - Environmental and social assessment of investments under Component 2**

Investment		Target District/ Town	Estimated number of beneficiaries	Risk Assessment		
				Impact description of potential risk (considering the 15 AF principles)	Significance of impact of potential risk*	Proposed risk mitigation / justification of risk reduction / mitigation incorporated within design
2.1	Construct a water infrastructure climate resilient with 3,600 m <sup>3</sup> /day WTP that serves 24/7 of 48,188 residents in Sayphouthong Town	Sayphouthong	48,188	<p><b>Compliance with the Law.</b> The project has assessed that there is no realistic risk under any of the project's proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section E of this proposal.</p> <p>The main water supply facilities such as the intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way.</p> <p><b>Access and Equity</b> That certain groups are denied access to infrastructure, or that preferential access is given to others.</p> <p>This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people (see below)</p>	<p>None</p> <p>Medium</p>	<p>Relevant national, local authorities and engineers were consulted during the project design phase to ensure compliance with all relevant <b>laws and technical standards</b>.</p> <p>It will be ensured that each person associated with the subproject is aware of <b>domestic and international laws and compliance needs to 8<sup>th</sup> NSEDP, SDG and Lao technical standards requirements</b>.</p> <p>Engagement with Department of Land Management under the Provincial Department of Natural Resources and the Environment, Urban Planning and Construction under PWT at the provincial level Integrating legal compliance into all training and awareness. Continued monitoring throughout the project</p> <p>UN-Habitat will work with executing entities to monitor developments and changes to the law and train partners, where appropriate.</p> <p><i>Consultations have and will continue to capture all needs of the target communities/households and the activities have been designed according to their 'access and equity' needs.</i></p> <p><i>Mapping all the groups and their needs, planning/ management and monitoring process for implementing all components and community management with rules ensuring that equal 'access and equity' is guaranteed. A pro-poor tariff will be implemented to reduce the possibility that people can't access the services.</i></p> <p><i>Community management with rules ensuring that equal access is guaranteed, including for indigenous populations.</i></p>

				<p><b>Marginalised and vulnerable groups</b> According to the feasibility study and IEE in the preparation of the proposal, 49 per cent of Sayphouthong District are indigenous people. In each case, they come from the Phoutong, Katang and Mangkone ethnic groups (all of which have languages from the Thai-Kadai ethnolinguistic family. In total, 27,649 (49.8 per cent) of the beneficiaries are indigenous people.</p> <p>In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 30,567 will be women, meaning that 53.5% of the project's beneficiaries are women. Approximately 30% of households are considered poor throughout the project area.</p> <p>Given the presence of marginalised and vulnerable groups, there is medium risk under the proposed activities under component 2 to them as a result of the project, however, they are the intended beneficiaries.</p> <p>There is some illiteracy in Sayphouthong. Without mitigation measures there is a risk that the illiterate may be marginalised or disenfranchised if written information is the primary mode of communication between the project and beneficiary communities. Illiteracy is thought to be a more significant problem for women.</p> <p>Without mitigation measures each of the above could marginalise people</p> <p><b>Human Rights:</b> Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example.</p> <p>However, the risk of this is very low, under the proposed activities under component 2, as the project (and its supporting structures) are being created to provide continuity of clean water supply to people. All construction works are taking pace on public land, and water supplies will be provided to all people</p>	<p>Low</p> <p>None</p>	<p><i>This means that all consultations and meetings should be made accessible in indigenous languages, where people cannot, or do not wish to communicate in the Lao Language.</i></p> <p><i>Consultations have and will continue to capture all issues and needs of “marginalized and vulnerable groups” and particular impacts on- and needs of marginalized and vulnerable groups will be assessed throughout the project.</i></p> <p><i>The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water supply, despite their low incomes.</i></p> <p><i>Female headed households will be prioritised to receive connections first.</i></p> <p><i>Because of high rates of illiteracy (especially among women and indigenous people) information generated by the project will never be presented solely in writing. Village chiefs and other local elders will be responsible for providing information orally to people, if this is more suitable for them,</i></p> <p>The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water supply, despite their low incomes;</p>
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			<p><b>Gender Equality and Women's Empowerment</b> Women could be denied access to infrastructure or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2.</p> <p>Further assessment of the risks to women arising from the project, as well as underlying vulnerabilities existing in the target area, are analysed further in Annex 2.</p>	Low	<p><i>Quotas for female participation in decision making at all levels. Engagement throughout the project with the Lao Women's Union and the Women's representative which exists in every village.</i></p> <p><i>The project will actively pursue of <b>Gender Equity and Women's Empowerment</b> participation in project activities and stakeholder consultation, e.g. through quota systems and /or organization of separate working groups during the implementation of components 1&amp;2.</i></p> <p><i>A comprehensive action plan has been presented in Annex 2. Further information can be found there.</i></p>
			<p><b>Core Labour Rights</b> The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.</p>	Low	<p>All community contracts must be scrutinised to ensure they comply with both national law and international standards.</p> <p>The project will monitor that international and national labour laws are respected, for any work that may be carried out in relation to the project.</p>
			<p><b>Indigenous People</b> See marginalised and vulnerable groups, above</p>	Low	<p>The Government of Laos pursues the policy of promoting Unity and Equality among all ethnic groups. All ethnic groups have the rights to protect, preserve and promote the fine customs and cultures of their own tribes and the nation. All Acts of creating Division and Discrimination among ethnic groups are forbidden. The State implements every measure to gradually develop and upgrade the economic and social level of all ethnic groups".</p> <p>Consultations have and will continue to capture all issues and needs of all communities (as the indigenous people, make up the majority of the population nationwide and in the target areas) and particular impacts on- and needs of indigenous people and other communities will be assessed throughout the project.</p>
			<p><b>Involuntary Resettlement</b> Eviction arising from conflicts over land ownership is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project. There is currently no one living on or immediately adjacent to the project's construction sites, and the sites are not being used</p>	None	<p>No activity will be implemented where there is the possibility, however small, of forced eviction. AoCs and contracts will include standard clauses stating that target communities will not be '<b>involuntary resettled</b>', also after the project.</p>

			<p>for livelihood activities like agriculture or informal markets.</p> <p><b>Protection of Natural Habitats</b> - There is a low risk of damage to local ecosystems, including forests and rivers from infrastructure construction under Component 2.</p> <p>There is no risk to the river ecology or downstream livelihoods for the investment at Sayphouthong because of the negligible amount of water being extracted from the river at that point. At Sayphouthong the Mekong river never goes below 6.5m deep in the dry season (and can be over 13m in the rainy season) and is about 1.16km wide from bank to bank at the point where construction will take place. Minimum river flow around Sayphouthong is about 2,000m<sup>3</sup> per second in the dry season (and as much as 7 times this in the rainy season), meaning the maximum daily usage of river water for the system is equal to less than 2 seconds of river flow or about 0.002% of the daily flow – a miniscule amount that will not have affects on the downstream hydrology or ecology of the river.</p> <p><b>Conservation of biological diversity</b> See protection of natural habitats, above</p> <p><b>Climate Change</b> - The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal. The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal.</p> <p>The construction activities are not anticipated to generate large scale emissions. Where possible, materials will be sourced locally (and where this is not possible, nationally) to avoid emissions arising from unnecessary transportation. The operation of the equipment does not involve fossil fuel burning or any other activity that generates emissions.</p> <p>Long-term changes in the climate, as discussed on Part I and Annex 1 of this proposal, pose a risk – particularly if the dry season continues to become longer and dryer and temperatures increase further. In Sayphouthong, future declines in rain or an increasingly prolonged dry seasons will</p>	<p>Medium</p> <p>None</p> <p>Low</p>	<p>The status of the land will be checked again before the start of construction. Land ownership and occupation can change quickly in growing settlements. Construction can only begin once it is clear that no one is living on or adjacent to the land, or dependent on it for their livelihood. Incorporating protection of habitats and ecosystems into action planning.</p> <p>The water supply system design includes river bank protection and stabilisation. This is designed to ensure that the construction of the intake and associated infrastructure doesn't destabilise the banks, which may have knock-on impacts on the riverbank protection.</p> <p>Further information on the design aspects can be found in Annex 3</p> <p>See protection of natural habitats, above</p> <p>Incorporating waste management and disposal into design and operating procedures for the construction.</p> <p>The infrastructure has been designed to avoid 'maladaptation' by ensuring that hazards are not shifted onto other locations not covered by the project. The project will not cause upstream flooding, downstream water shortage or detract from the ability of any other towns or villages to access water for drinking, domestic or agricultural purposes. Analysis has been conducted that shows that at Sayphouthong the maximum amount of water taken from the river will be 0.002% of the daily total flow in the dry season (and substantially less in the rainy season)</p> <p>Climate Change policies and guidelines to be explained to understood by project personnel prior to implementation and monitored by implementing partners.</p>
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			<p>not diminish the water level in the Mekong to such a level that the infrastructure doesn't function. The structure requires surface water and the Mekong – Asia's 4<sup>th</sup> largest river by water volume – doesn't dry out at Sayphouthong.</p> <p>See Pollution prevention and resource efficiency for provisions regarding waste</p> <p><b>Pollution prevention and resource efficiency</b> - Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance</p> <p><b>Public Health</b> - Water infrastructure could be open to contamination, spreading water-borne diseases. River water may not be clean because of upstream pollutants, beyond the control of project staff of NPSE Savannakhet.</p> <p>Neither the infrastructure at Sayphouthong or Sethamouak will create open pools of water or generate any stagnant water. As such, there is no discernable risk of increased vector-borne disease.</p> <p><b>Physical and Cultural Heritage</b> - No risks to physical and cultural heritage were identified. The proposed infrastructure is on public land, that is not currently used for residential, livelihood or cultural activities. The amount of water being extracted from the river is so small that there will be no downstream impacts that could affect sites of cultural interest, and the consultations did not reveal any sites of intangible cultural heritage.</p> <p><b>Lands and Soil Conservation</b> – See protection of natural habitats</p>	<p>Low</p> <p>Low</p> <p>None</p> <p>None</p>	<p>The project will use local materials for construction where possible. <i>The project will ensure that all waste materials generated in the course of construction are recycled where possible, and where this is not possible, they are disposed of in proper facilities according to the law and in compliance with guidance from the Ministry of Natural Resources and the Environment.</i></p> <p>The project includes an advanced filtration system that will ensure the water provided is of high quality, and in line with WHO standards.</p> <p>See also Protection of Natural Habitats</p> <p>Incorporating public health considerations (Especially relating to water contamination) into training under Component 2.</p> <p>The proposed infrastructure will include a public space on the reinforced embankment that people can use for recreation</p> <p>See protection of natural habitats</p>
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2.2	Construct a water infrastructure climate resilient with 1,200 m3/day WTP that serves 24/7 of 8,956 residents in Sethamouak Town	Sethamouak	8,956	<p><b>Compliance with the Law</b></p> <p>The project has assessed that there is no realistic risk under any of the project's proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section E of this proposal.</p> <p>The main water supply facilities such as the intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way.</p> <p><b>Access and Equity</b></p> <p>That certain groups are denied access to infrastructure, or that preferential access is given to others.</p> <p>This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people (see below)</p> <p><b>Marginalised and Vulnerable Groups</b></p> <p>According to the feasibility study and IEE in the preparation of the proposal, 62 per cent of the residents of Sethamouak Town are indigenous people. They come from the Phoutong, Katang and Mangkone ethnic groups (all of which have languages from the Thai-Kadai ethnolinguistic family. Across the whole project area, 27,649 (49.8 per cent) of the beneficiaries are indigenous people.</p> <p>In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 30,567 will be women, meaning that 53.5% of the project's beneficiaries are women. Further information can be found in <a href="#">Annex 2</a></p> <p>Approximately 30% of households are considered poor throughout the project area. There are higher rates of poverty</p>	None	<p>Relevant national, local authorities and engineers were consulted during the project design phase to ensure compliance with all relevant <b>laws and technical standards</b>.</p> <p>It will be ensured that each person associated with the subproject is aware of <b>domestic and international laws and compliance needs to 8<sup>th</sup> NSEDP, SDG and Lao technical standards requirements</b>.</p> <p>Engagement with Department of Land Management under the Provincial Department of Natural Resources and the Environment, Urban Planning and Construction under PWT at the provincial level</p> <p>Integrating legal compliance into all training and awareness. Continued monitoring throughout the project</p> <p>Low</p> <p>Consultations have and will continue to capture all needs of the target communities/households and investments have been designed according to their '<b>access and equity</b>' needs. A pro-poor tariff will be implemented to reduce the possibility that people can't access the services.</p> <p>Mapping all the groups and their needs, planning/ management and monitoring process for implementing all components and community management with rules ensuring that equal '<b>access and equity</b>' is guaranteed</p> <p>Medium</p> <p>Community management with rules ensuring that equal access is guaranteed, including for indigenous populations. This means that all consultations and meetings should be made accessible in indigenous languages, where people cannot, or do not wish to communicate in the Lao Language.</p> <p>Consultations have and will continue to capture all issues and needs of "<b>marginalized and vulnerable groups</b>" and particular impacts on- and needs of marginalized and vulnerable groups will be assessed throughout the project, as part of M&amp;E.</p> <p>The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water</p>
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			<p>in Sethamouak than in Sayphouthong</p> <p>Illiteracy rates are also high, especially in Sethamouak Town. Without mitigation measures there is a risk that the illiterate may be marginalised or disenfranchised if written information is the primary mode of communication between the project and beneficiary communities. Illiteracy is thought to be a more significant problem for women.</p> <p>Without mitigation measures each of the above could marginalise people</p> <p><b>Human Rights</b> - Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example.</p> <p>However, the risk of this is very low, under the proposed activities under component 2, as the project (and its supporting structures) are being created to provide continuity of clean water supply to people. All construction works are taking pace on public land, and water supplies will be provided to all people in the target towns.</p> <p><b>Gender Equality and Women's Empowerment</b> - Women could be denied access to infrastructure or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2.</p> <p>Further assessment of the risks to women arising from the project, as well as underlying vulnerabilities existing in the target area, are analysed further in Annex 2.</p> <p><b>Core Labour Rights</b></p> <p>The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.</p>	<p>None</p> <p>Low</p> <p>Low</p>	<p>supply, despite their low incomes (see also – access and equity) Female headed households will be prioritised to receive connections first.</p> <p>Because of high rates of illiteracy (especially among women and indigenous people) information generated by the project will never be presented solely in writing. Village chiefs and other local elders will be responsible for providing information orally to people, if this is more suitable for them.</p> <p>See measures of other risk categories, particularly marginalised and vulnerable groups. The specific Human rights risks are negligible.</p> <p>Quotas for female participation in decision making at all levels. Engagement throughout the project with the Lao Women's Union and the Women's representative which exists in every village.</p> <p>The project will actively pursue of <b>Gender Equity and Women's Empowerment</b> participation in project activities and stakeholder consultation, e.g. through quota systems and /or organization of separate working groups during Components 1&amp;2.</p> <p>A comprehensive action plan has been presented in Annex 2. Further information can be found there.</p> <p>All community contracts must be scrutinised to ensure they comply with both national law and international standards.</p> <p>The project will monitor that international and national labour laws are respected, for any work that may be carried out in relation to the project.</p> <p>AoCs stipulate the need to respect core labour rights in line with international norms/ILO standards.</p>
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			<p><b>Indigenous People</b> – See marginalised and vulnerable groups, above</p>	Low	<p>The State pursues the policy of promoting Unity and Equality among all ethnic groups. All ethnic groups have the rights to protect, preserve and promote the fine customs and cultures of their own tribes and the nation. All Acts of creating Division and Discrimination among ethnic groups are forbidden. The State implements every measure to gradually develop and upgrade the economic and social level of all ethnic groups".</p> <p>Consultations have and will continue to capture all issues and needs of all communities (as the indigenous people, make up the majority of the population nationwide and in the target areas) and particular impacts on- and needs of indigenous people and other communities will be monitored throughout the project</p>
			<p><b>Involuntary Resettlement</b> - Eviction arising from conflicts over land ownership is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project. There is currently no one living on or immediately adjacent to the project's construction sites, and the sites are not being used for livelihood activities like agriculture or informal markets.</p>	None	<p>No activity will be implemented where there is the possibility, however small, of forced eviction. AoCs and contracts will include standard clauses stating that target communities will not be '<b>involuntary resettled</b>', also after the project.</p> <p>The status of the land will be checked again before the start of construction. Land ownership and occupation can change quickly in growing settlements. Construction can only begin once it is clear that no one is living on or adjacent to the land, or dependent on it for their livelihood.</p>
			<p><b>Protection of Natural Habitats</b> There is a low risk of damage to local ecosystems, including forests and rivers from infrastructure construction under Component 2.</p> <p>On the Sethamouak River, the embankment is about 65 metres in total, while the check dam structure is about 42 metres across the river. Without specific design provisions this could cause risk to downstream water flow, affecting downstream livelihoods and water access, fish and causing upstream flooding.</p> <p>See right-hand column and table 13, below, for further information on design measures.</p>	Medium	<p>The investment also includes bank protection and stabilisation works to ensure that the riverbank is not damaged, doesn't collapse and is not prone to erosion.</p> <p>The check dam structure spans the width of the Sethamouak river, but is only 1.5m high. As shown in Annex 4, the water will therefore flow over the check dam structure during the rainy season and the early months of the dry season, when the water level is high. Accordingly, there is no disruption to the water flow in the rainy season as the water flows over the dam, while the intake only takes a small proportion – estimated at less than 0.1% of the water flow.</p> <p>In the dry season, the water level can drop below the height of the check dam. To ensure continued water flow during the dry season, a 1.5m wide weir has been added to the dam design to ensure continuity of water flow downstream and to prevent flooding upstream. The weir</p>



				<p><b>Conservation of Biological Diversity</b> – See protection of natural habitats. No additional risk, beyond that described above</p> <p><b>Climate Change</b> –</p> <p>The hazards caused by and vulnerability arising from climate change is presented in Part I and Annex 1 of this proposal.</p> <p>The construction activities are not anticipated to generate large scale emissions. Where possible, materials will be sourced locally (and where this is not possible, nationally) to avoid emissions arising from unnecessary transportation. The operation of the equipment does not involve fossil fuel burning or any other activity that generates emissions.</p> <p>In Sethamouak the estimated lowest point of the river is between 60-90cm, so there is a risk from further decreases in the river flow. However, this structure also requires surface water</p> <p><b>Pollution prevention and resource efficiency</b> - Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance</p> <p><b>Public Health</b> - Water infrastructure could be open to contamination, spreading water-borne diseases. River water may not be clean because of upstream pollutants, beyond the control of project staff of NPSE Savannakhet.</p> <p>Neither the infrastructure at Sayphouthong or Sethamouak will</p>	<p>None</p> <p>Low</p> <p>Low</p> <p>Low</p>	<p>will remain open for at least 16 hours per day, and will only be closed at night when the system is drawing water. Nam Papa staff will be responsible for opening and closing the weir. The IEE assesses that there is no risk of upstream flooding, or downstream lack of water, affects to livelihoods, river ecology of the ability of fish to traverse the river with the addition of the weir.</p> <p>The infrastructure has been designed to avoid 'maladaptation' by ensuring that hazards are not shifted onto other locations not covered by the project. The IEE determines that the check dam structure will not affect the ability of people downstream to access water and will not increase the likelihood of upstream flooding.</p> <p>Climate Change policies and guidelines to be explained to understood by project personnel prior to implementation and monitored by implementing partners.</p> <p>The infrastructure at Sethamouak is designed to continue functioning at 30cm river depth. This is less than half the estimated known lowest point of the river during the dry season, meaning the infrastructure can continue functioning, even if the trend of a prolonged dry season continues – unlike ground water systems that are already becoming inviable in the area.</p> <p>Incorporating waste management and disposal into design and operating procedures for the construction. The project will use local materials for construction where possible. The project will ensure that all waste materials generated in the course of construction are recycled where possible, and where this is not possible, they are disposed of in proper facilities according to the law and in compliance with guidance from the Ministry of Natural Resources and the Environment.</p> <p>Incorporating public health considerations (Especially relating to water contamination) into training under Component 2</p> <p>The project includes an advanced filtration system that will ensure the water provided is of high quality, and in line with</p>
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			<p>create open pools of water or generate any stagnant water. As such, there is no discernable risk of increased vector-borne disease.</p> <p><b>Physical and Cultural Heritage</b> - No risks to physical and cultural heritage were identified. The proposed infrastructure is on public land, that is not currently used for residential, livelihood or cultural activities.</p> <p>The amount of water being extracted from the river is negligible and no downstream impacts that could affect sites of cultural interest were found. The consultations undertaken in the preparation of this proposal didn't reveal any sites of intangible cultural heritage.</p> <p><b>Lands and Soil Conservation</b> - <i>No risk beyond those identified for protection of natural habitats</i></p>	<p>None</p> <p>None</p>	<p>WHO standards.</p> <p>The area surrounding the check dam will be a public space</p>
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**Table 11 - Potential risks, mitigation measures and monitoring for investments under Component 2**

Output	AF triggered, risk of potential impact and significance score	Measure to avoid or mitigate potential risks	Monitoring indicator	Frequency and responsibility monitoring
<p>2.1 Construct a water infrastructure climate resilient with 3,600 m3/day WTP that serves 24/7 of 48,188 residents in Sayphouthong Town</p>	<ul style="list-style-type: none"> <li>The project has assessed that there is no realistic risk under any of the project's proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section 5 of this proposal;</li> <li>That certain groups are denied access to infrastructure, or that preferential access is given to others. This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people;</li> <li>According to the Feasibilities study conducted in the preparation of this proposal, in total, 27,649 (49.8 per cent) of the beneficiaries are indigenous people. In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 29,669 will be women, meaning that 53.5% of the project's beneficiaries are women;</li> <li>Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example;</li> <li>However, the risk of this is very low, under the proposed activities under component 2, as the project (and its supporting structures) are being created to provide continuity of clean water supply to people.</li> <li>Women could be denied access to infrastructure, or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases;</li> <li>The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2;</li> <li>Possible eviction arising from conflicts over land ownership. However, this is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project;</li> <li>Damage to local ecosystems, including forests, and rivers from infrastructure construction. This risk is low significance, under the proposed activities under component 2, but not impossible, considering that water be supplied will be sourced from the river in both towns;</li> </ul>	<ul style="list-style-type: none"> <li>The main water supply facilities such as intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way;</li> <li>Consultations have and will continue to capture all issues and needs of "marginalized and vulnerable groups" and particular impacts on- and needs of marginalized and vulnerable groups will be assessed throughout the project</li> <li>The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water supply, despite their low incomes;</li> <li>The project will actively pursue of Gender Equity and Women's Empowerment participation in project activities and stakeholder consultation, e.g. through quota systems and /or organization of separate working groups during the implementation of Components 1&amp;2 of the project.</li> <li>The project will monitor that international and national labour laws are respected, for any work that may be carried out in relation to the project;</li> <li>Consultations have and will continue to capture all issues and needs of all communities (as the indigenous people, make up the majority of the population nationwide and in the target areas) and particular impacts on- and needs of indigenous people and other communities will be monitored throughout the project;</li> <li>No unidentified subproject will be approved where there is the possibility, however small, of forced eviction. AoCs and contracts will include standard clauses stating that target communities will not be 'involuntary resettled', also after the project;</li> <li>Maladaptation 'triggers' have been mitigated in the infrastructure design by ensuring, for example, that resources will not be diverted away from other areas not in the project.</li> <li>Climate Change policies and guidelines to be explained to understood by project personnel prior to implementation and monitored by implementing partners;</li> <li>The project will use local materials for construction where possible.</li> </ul>	<ul style="list-style-type: none"> <li>Number of AoCs that fully incorporate the 15 ESP principles;</li> <li>Number of project partners trained in planning</li> <li>Percentage of women, men, youth, elderly, people with disabilities, varying ethnic groups participating in planning and construction activities;</li> <li>Number of participatory workshops held in each community; and</li> <li>Number of target population benefiting from provided services water infrastructure</li> </ul>	<p>Baseline, mid-term and end</p>

	<ul style="list-style-type: none"> <li>• Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance;</li> <li>• Water infrastructure could be open to contamination, spreading water-borne diseases;</li> <li>• Women could be denied access to infrastructure, or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2;</li> <li>• The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.</li> </ul>			
<p>2.2 Construct a water infrastructure climate resilient with 1,200 m3/day WTP that serves 24/7 of 8,956 residents in Sethamouak Town</p>	<ul style="list-style-type: none"> <li>• The project has assessed that there is no realistic risk under any of the project's proposed activities because the interventions are to be built by government, on public land, and in compliance with the laws outlined in Part II, Section 5 of this proposal;</li> <li>• That certain groups are denied access to infrastructure, or that preferential access is given to others. This risk is of medium significance for construction activities under component 2. This is because there is a high number of indigenous people;</li> <li>• According to the Feasibilities study conducted in the preparation of this proposal, in total, 27,649 (49.8 per cent) of the beneficiaries are indigenous people. In both towns, women substantially outnumber men. In total, the project has 57,144 beneficiaries, of which 29,669 will be women, meaning that 53.5% of the project's beneficiaries are women;</li> <li>• Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example;</li> <li>• However, the risk of this is very low, under the proposed activities under component 2, as the project (and its supporting structures) are being created to provide continuity of clean water supply to people.</li> <li>• Women could be denied access to infrastructure, or prevented from making critical decisions. Women</li> </ul>	<ul style="list-style-type: none"> <li>• The main water supply facilities such as the check a dam, intake, water treatment plant, and reservoir will be located on public land; the transmission and distribution mains and reticulation pipes will be laid within road rights-of-way;</li> <li>• Consultations have and will continue to capture all issues and needs of "marginalized and vulnerable groups" and particular impacts on- and needs of marginalized and vulnerable groups will be monitored throughout the project.</li> <li>• The domestic tariff is a rising 3-block structure to ensure affordability by the low-income group (LIG), this special tariff measures will be created to ensure that poor indigenous households have continued access to water supply, despite their low incomes;</li> <li>• The project will actively pursue of Gender Equity and Women's Empowerment participation in project activities and stakeholder consultation, e.g. through quota systems and /or organization of separate working groups during the implementation of Components 1&amp;2;</li> <li>• The project will monitor that international and national labour laws are respected, for any work that may be carried out in relation to the project;</li> <li>• Consultations have and will continue to capture all issues and needs of all communities (as the indigenous people, make up the majority of the population nationwide and in the target areas) and particular impacts on- and needs of indigenous people and other communities will be monitored throughout the project.</li> <li>• No activity will be implemented where there is the possibility, however small, of forced eviction. AoCs and contracts will include standard clauses stating that target communities will not be 'involuntary resettled', also after the project;</li> <li>• Maladaptation 'triggers' have been mitigated in the</li> </ul>	<ul style="list-style-type: none"> <li>• Incorporate the 15 ESP principles;</li> <li>• Number of project partners trained in planning</li> <li>• Percentage of women, men, youth, elderly, people with disabilities, varying ethnic groups participating in planning and construction activities;</li> <li>• Number of participatory workshops held in each community; and</li> <li>• Number of target population benefiting from provided services water infrastructure</li> </ul>	<p>Baseline, mid-term and end</p>

	<p>outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases;</p> <ul style="list-style-type: none"> <li>• The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2;</li> <li>• Possible eviction arising from conflicts over land ownership. However, this is very unlikely. All infrastructure investments are being made on land currently owned by the government. No land acquisition is required by the project;</li> <li>• Damage to local ecosystems, including forests, and rivers from infrastructure construction. This risk is low significance, under the proposed activities under component 2, but not impossible, considering that water be supplied will be sourced from the river in both towns;</li> <li>• Construction of infrastructure generates waste, as part of the activities under component 2. However, as waste generation will be highly localised, and systems in place for proper disposal, this is low significance;</li> <li>• Water infrastructure could be open to contamination, spreading water-borne diseases;</li> <li>• Women could be denied access to infrastructure, or prevented from making critical decisions. Women outnumber men in the project area and have 'more to gain' from continuity of clean water supply because they are, at present, often responsible for collecting water, are the primary users of water in the home, and the primary givers of care when people become sick with water-borne diseases. There is low risk but medium significance of this under the proposed activities under component 2;</li> <li>• The project will contract communities themselves to provide labour, meaning there is a chance that labour rights may not be respected. Low significance under the proposed activities under component 2.</li> </ul>	<p>infrastructure design by ensuring, for example, that resources will not be diverted away from other areas not in the project. Climate Change policies and guidelines to be explained to understood by project personnel prior to implementation and monitored by implementing partners;</p> <p>The project will use local materials for construction where possible.</p>		
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ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ  
 ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ  
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ຜະແນກ ໂຍທາທິການ ແລະ ສົນສົ່ງ  
 ລັດວິສະຫະກິດ ວິສະວະກຳ ແລະ ສິ່ງແວດລ້ອມ  
 ໂທ: (856-21) 255 430, P.O Box 2571  
 ແຟັກ: (856-21) 264815

ເລກທີ: 499-ປອນສ໌  
 ລົງວັນທີ: 02.06.2017

**INITIAL ENVIRONMENTAL EXAMINATION**  
**ໂຄງການກໍ່ສ້າງ ລະບົບນໍ້າປະປາ ເມືອງ ໄຊຊຸທອງ**  
**ແຂວງ ສະຫວັນນະເຂດ ດ້ວຍກຳລັງການຜະລິດ 3,600 ມ<sup>3</sup>/ມື້**



ຖະໜົນ ໄຊເສດຖາທິລາດ, ບ້ານ ຕົ້າຍອດ  
 ເມືອງ ສີສິດຕະນາກ, ນະຄອນຫຼວງວຽງຈັນ, ສປປ ລາວ  
 ໄປສະນີ: 4041

ັນຍາ 2017

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ  
 ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ  
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ຜະແນກ ໂຍທາທິການ ແລະ ສົນສົ່ງ  
 ລັດວິສະຫະກິດ ນໍ້າປະປາແຂວງ  
 ໂທ: (+856-41) 212047

2930  
 ເລກທີ: .....ນປປ.ສອ.ປ  
 ລົງວັນທີ: 07.DEC.2018

**IEE SETHAMOUAK TOWN**

**ການປະເມີນ ຜົນກະທົບສິ່ງແວດລ້ອມ ເບື້ອງຕົ້ນ**  
**ໂຄງການກໍ່ສ້າງ ລະບົບນໍ້າປະປາ ເມືອງ ເຊທ່າມອກ**  
**ແຂວງ ສະຫວັນນະເຂດ ດ້ວຍກຳລັງການຜະລິດ 1,200 ມ<sup>3</sup>/ມື້**

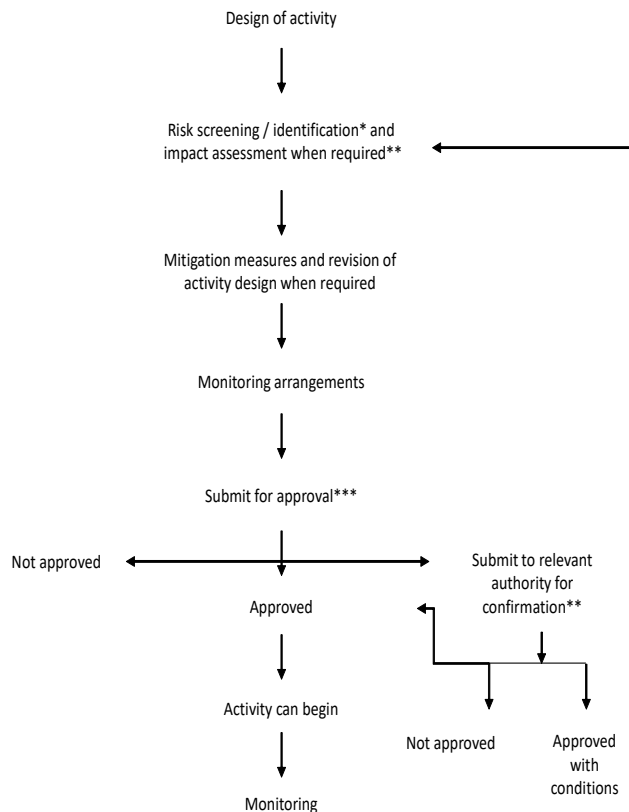


ຖະໜົນ ລາດສະວິງເສີກ, ບ້ານ ນາເຫລົ້າ  
 ເມືອງ ນາຄອນໄກສອນພົມວິຫານ, ສປປ ລາວ

ັນຍາ 2018

Front covers of the Initial Environmental Examinations for Sayphothong and Sethamouak, which were conducted in support of the formulation of this proposal and inform the risk assessment in this Annex. The full documents are available on request

## Screening Process



\* For all activities against the 15 ESP principles.  
Use of Risk Assessment Sheet where necessary

\*\* In consultation with Technical Advisory Group

\*\*\* All after activities to be approved by Project Management Committee

## Environmental and social management plan

### 1. Introduction

The ESMP is designed to list the risks and preventative/mitigation measures outlined above in table 5 and outline how they will be monitored and managed, and by whom, throughout the project.

### 2. Risks management arrangements

- (i) Responsibilities: direct management responsibility of the ESMP will be under the project Team Leader. The team leader will have oversight/final compliance responsibility. Any changes or additional activities that are required during the project implementation, and that fall within allowable limits set by the Adaptation Fund, will need to be approved by the project team leader and presented to the PSC, depending on the scale of the activity. This plan, as well as any changes in the risk landscape, will also be presented to the PSC.
- (ii) Management and implementation of the investments: All project activities have been screened against the 15 environmental and social risks areas during project preparation phase (See above). Outcomes will be presented during the project inception to all stakeholders to confirm the management and monitoring arrangements and to agree on the detailed steps required to develop management plans for each activity covering detailed engineering studies, but also risks mitigation measures to comply to national technical standards in line with [Part II, Section E](#)

Budget: there are no specific budget requirements for project compliance to the ESP and GP.

### 3. General environmental and social risks management reduction measures

In addition to the risk management measures identified above, the following elements will be put in place to ensure the compliance with the ESP:

- (i) The project MoU and the three Agreements of Cooperation with the Executing Entities will include a detailed reference to the ESMP and the necessary safeguarding measures, particularly Compliance with the Law, Indigenous People, Gender Issues and Labour and Safety Standards (Principles, 1, 5, 6 and 7).
- (ii)
  - Principle 1: References to standards and laws to which the activity will need to comply will be included in all legal agreements with all sub-contractors, including steps and responsibilities for compliance.
  - Principle 4: References to relevant Human rights declarations will be included in all legal agreements with all sub-contractors.
  - Principle 6: Employment and working conditions following ILO standards will be included in legal agreements with all sub-contractors.
  - Principle 7 Indigenous people's rights must be safeguarded by ensuring equal access to resultant services and ensuring that all dialogue is accessible
  - Principle 13: Ensure that ICSC international health and safety standards are clearly accessible and understood. e.g. by putting clearly visible signs detailing health and safety standards to be located at projects sites and by supplying protective equipment.
- (iii) UN-Habitat's Project Review Committee will check the compliance of the project with the ESP on inception and the gender focal point at UN-Habitat headquarters can check compliance throughout the project's implementation
- (iv) Continuous coordination will take place with focal points in MoNRE, MPWT and NPSE Savannakhet to ensure compliance with the ESP and national laws, standards and policy priorities.
- (v) Capacity building and awareness raising; the project team leader, executing entity partners and target communities, will receive training / capacity development to understand and manage the 15 Principles, the ESMP and in particular their responsibilities. This will be done during inception.

### 4. Risks monitoring arrangements:

- (i) This monitoring program commensurate with actions identified above and will report on the monitoring results to the Fund in the mid-term, annual, and terminal performance reports. Monitoring will be done to ensure that actions are taken in a timely manner and to determine if actions are appropriately mitigating the risk / impact or if they need to be modified in order to achieve the intended outcome.
- (ii) Annual reporting will include information about the status of implementation of this ESMP, including those measures required to avoid, minimize, or mitigate environmental and social risks. The reports shall also include, if necessary, a description of any corrective actions that are deemed necessary.
- (iii) Direct monitoring responsibilities will be under the project team leader. The team leader will have oversight / final compliance responsibility. When changes or additional activities are



required, monitoring indicators will be changed or added as well.

#### 5. Grievance mechanism

- (i) UN-Habitat will implement a grievance mechanism in the target areas, which will allow an accessible, transparent, fair and effective means of communicating if there are any concerns regarding project design and implementation. Employees, and people benefitting / affected by the project will be made aware of the grievance mechanism for any criticism or complaint of an activity.
- (ii) This mechanism considers the special needs of different groups as well as gender considerations and potential environmental and social risks. A combination of mailboxes (at community level), confidential persons in the community and telephoning options offer an immediate way for employees and people affected by the project to safely express their concerns. The options will allow local languages and offer the opportunity for and people affected by the project to complain or provide suggestions on how to improve project design and implementation, which will be reviewed and taken up by the project implementation team.
- (iii) Project staff will be trained in procedures for receiving messages and on the reporting of any grievances. Community chiefs will also be briefed how to obtain feedback from community members on a regular basis. In addition, monitoring activities allow project participants to voice their opinions or complaints as they may see fit.
- (iv) The address and e-mail address of the Adaptation Fund will also be made public (i.e. project website, Facebook and mailbox) for anyone to raise concerns regarding the project:

Adaptation Fund Board secretariat  
Mail stop: MSN P-4-400  
1818 H Street NW  
Washington DC



ADAPTATION FUND

## ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Full Proposal

Country/Region: **Laos PDR**

Project Title: **Building climate and disaster resilience capacities of vulnerable small towns in Lao PDR**

Thematic Focal Area: **Disaster Risk Reduction**

Implementing Entity: **UN-Habitat**

AF Project ID: **LAO/MIE/DRR/2018/1**

IE Project ID:

Requested Financing from Adaptation Fund (US Dollars): **5,500,000**

Reviewer and contact person: **Daniel Gallagher**

Co-reviewer(s): **Saliha Dobardzic**

IE Contact Person:

Review Criteria	Questions	Comments <u>on 14 February 2019</u>	Proposed response <u>11 April 2019</u>
Country Eligibility	1. Is the country party to the Kyoto Protocol?	Yes.	
	2. Is the country a developing country particularly vulnerable to the adverse effects of climate change?	Yes, Laos PDR is a country particularly vulnerable to climate change, experienced predominantly through extreme events, droughts, and floods that impact on water supplies.	
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	Yes, Designated Authority signed endorsement letter on 26 December 2018.	

	2. Does the length of the proposal amount to no more than Fifty pages for the project/programme concept, including its annexes; or One hundred pages for the fully-developed project document, and one hundred pages for its annexes?	<u>CAR1: Addressed</u>	
	3. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?	<u>CAR2: Addressed.</u>	

	<p>4. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?</p>	<p><u>CAR3: Addressed as per information on consultative processes (p.52-53) in conjunction with the vulnerability assessments in Annex 1.</u></p>	
	<p>5. Is the project / programme cost effective?</p>	<p><u>CR1: Addressed as per information on p.45, 129-130, 155. The tariff will be kept below 5% (with the aim of achieving 3%) in line with the national Water Law and updated guidance from the Department of Housing and Urban Development. Tariff increase rate is limited at 0.2% per three years. Water rates and implementation will be discussed with communities using their willingness to pay as a cornerstone.</u></p>	

	6. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?		
	7. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund??	<u>CR2: Addressed as per information on consultative processes (p.52-53) in conjunction with the vulnerability assessments in Annex 1.</u>	
		<u>CR3: Addressed as per information on p. 139-140. Design flow allowance is 100 liters per person per day, in line with relevant Dept. of Water Supply guidance.</u>  <u>CAR4: Mostly addressed. In the proposal document reviewed, there are still inconsistencies referencing Table 14, 15 which do not exist. It is assumed the references relate to Table 12, 13.</u>	<p style="text-align: right;">Deleted: ¶</p> <p><u>This information has been updated, and all table numbers have been clarified. Please see CAR8 for more detailed information.</u></p>

	8. Is there duplication of project / programme with other funding sources?		
	9. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	<a href="#">CAR5: Addressed, as per information on p. 29-30, 50-52.</a>	
	10. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations in compliance with the Environmental and Social Policy and Gender Policy of the Fund?		
	11. Is the requested financing justified on the basis of full cost of adaptation reasoning?	Yes.	
	12. Is the project / program aligned with AF's results framework?	Yes.	
	13. Has the sustainability of the project/programme outcomes been taken into account when designing the project?	See CR1.	
	14. Does the project / programme provide an	The project has been classified as Category B and a checklist prepared	

	overview of environmental and social impacts / risks identified, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	based on preliminary consultations. An Environmental and Social Management Plan has been prepared.	
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	Yes.	
	2. Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project/programme budget before the fee?	Yes.	
	3. Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?	Yes.	
Eligibility of IE	4. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	Yes, UN HABITAT is an accredited MIE.	

Implementation Arrangements	1. Is there adequate arrangement for project / programme management, in compliance with the Gender Policy of the Fund?	<a href="#">CR4: Addressed as per information on p. 74-75, 110-121.</a>	
	2. Are there measures for financial and project/programme risk management?	<a href="#">CAR6: Addressed as per information on p. 129</a> <a href="#">CAR7: Addressed as per information on p. 129.</a>	



	3. Are there measures in place for the management of for environmental and social risks, in line with the Environmental and Social Policy and Gender Policy of the Fund?	<u>CAR8: Not fully addressed. Information on risk management is provided (p.187-189, 192-194) as well as Initial Environmental Assessments required by national laws. However, it is not demonstrated that comprehensive environmental and social impact assessment has taken place for the dam and intake structures for the water treatment plants, to ensure that any adverse impacts on fishing livelihoods, river transportation, cultural heritage, and the balance of the river ecosystem are fully mitigated, managed and monitored.</u>	<u>A comprehensive environmental and social risk assessment took place, with information derived from the initial environmental examination (required by Lao law, and prepared in the Lao language, in accordance with the law – though screenshots of the cover are given), the feasibility studies (Annexes 3&amp;4), and the rapid vulnerability assessments.</u>  <u>Annex 5 has been comprehensively re-developed and Part II, Section K enhanced to provide greater information about the risks in the proposal and the risk mitigation measures that have been factored into the design of the infrastructure. In support of this, further technical design information has been incorporated in Annex 3 and particularly Annex 4 to demonstrate how the infrastructure will function in such a way that does not cause damage to the upstream or downstream ecosystem, the livelihoods of people nearby or cultural heritage.</u>
	4. Is a budget on the Implementing Entity Management Fee use included?	<u>CAR9: Addressed as per information on p.92</u>	
	5. Is an explanation and a breakdown of the execution costs included?	<u>CR5: Addressed as per information on p.68-70</u>	

Deleted:

	6. Is a detailed budget including budget notes included?	<a href="#">CAR10: Addressed as per information on p.89-92</a>	
	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators, in compliance with the Gender Policy of the Fund?	<a href="#">CAR11: Addressed as per information on p.78-83</a>	
	8. Does the M&E Framework include a break-down of how implementing entity IE fees will be utilized in the supervision of the M&E function?	<a href="#">CAR12: Addressed as per information on p.74-77</a>	
	9. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results framework?	Yes.	
	10. Is a disbursement schedule with time-bound milestones included?	Yes.	

Deleted: ¶

	11. Does the current proposal comply with the Adaptation Fund's page-limit for proposal documents (Decision B.32/6)?	During the twenty-third meeting of the Board, Decision B.32/6 came into effect, which sets a page-limit for proposal documents.	
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Technical Summary	<p><u>In addition to the responses above, the board made three recommendations</u></p> <p><u>1) The proposal should demonstrate that comprehensive environmental and social impact assessments have taken place for the dam and intake structures for the two water treatment plants and related infrastructures, to ensure that all adverse impacts are fully identified and mitigated in project design, as well as managed and monitored in an Environmental and Social Management Plan.</u></p> <p><u>This has been addressed through the enhancements to Part II, Section K and particularly Annex 5, as described above for CAR8.</u></p> <p><u>2) The proposal should include a comprehensive gender assessment specific to the project and target area</u></p> <p><u>Annex 2 has been completely re-written (note, it is not in track changes to keep the document readable) with new data specific to the target areas (and which compares the target areas to other parts of Laos). This leads into a newly developed gender action plan, also in Annex 2.</u></p> <p><u>3) The financial sustainability of the project and the infrastructure and services it will create is not clear and should be demonstrated in the proposal</u></p> <p><u>More information has been provided on financial sustainability in Part II, Section J. This includes a revenue forecast model. This model uses the water demand forecasts, provided in Annexes 3&amp;4, and assumes every household pays according to the pro-poor tariff. It then assumes expenses based on the actual balance sheet accounts of three other NPSEs in Savannakhet district and shows that each district can return a modest gross profit – even at the pro-poor tariff rate.</u></p>
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	<u>Track change and clean versions of the proposal. Note that there are some format differences between the track and clean versions, primarily in the annex, to ensure the clean version stayed below 100+100 pages. The substance of both versions is the same</u>
Date:	11 <sup>th</sup> April 2019