ADAPTATION FUND

# CLIMATE CHANGE ADAPTATION THROUGH PROTECTIVE SMALL-SCALE INFRASTRUCTURE INTERVENTIONS IN COASTAL SETTLEMENTS OF CAMBODIA

**Submitted by the United Nations Human Settlements Programme (UN-Habitat)**

**REQUEST FOR PROJECT/PROGRAMME FUNDING FROM THE ADAPTATION FUND**

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UN HABITAT
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# PART I

ADAPTATION FUND

## PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

## PART I: PROJECT/PROGRAMME INFORMATION

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|---|---|
| **Project/Programme Category:** | Regular |
| **Country/Cities:** | Cambodia |
| **Title of Project/Programme:** | Climate change adaptation through protective small-scale infrastructure interventions in coastal settlements of Cambodia |
| **Type of Implementing Entity:** | Multilateral Implementing Entity |
| **Implementing Entity:** | United Nations Human Settlements Programme (UN-Habitat) |
| **Executing Entities:** | National Council for Sustainable Development (NCSD) |
| **Amount of Financing Requested:** | US$ 5,000,000 |

## Project Summary

The proposed project's main objective is "to enhance climate change adaptation and resilience of the most vulnerable coastal human settlements of Cambodia through concrete adaptation actions, particularly in areas where eco-tourism has the potential to sustain such interventions". It is structured around the following three components:

Component 1: Community-scale knowledge and capacity enhanced to sustain the adaptation benefits of the project's investments (US$ 275,000)

Component 2: Government planning and technical capacity enhanced and knowledge captured and disseminated to sustain and enhance the project's adaptation benefits (US$ 275,000)

Component 3: Resilience built through investment in small-scale protective and basic service infrastructure and natural assets (US$ 3,620,507)

# 1 PROJECT BACKGROUND

## The problem

### *Climate change is a major challenge for reaching national development goals*

In recent years, the Kingdom of Cambodia was among the countries most affected by extreme weather events in the Asia Pacific region.[1] Cambodia constantly ranks among the most vulnerable countries in the world according to the annually published Climate Risk Index[2], as well as the Climate Change Vulnerability Index[3]. Between 1991 and 2014, extreme hazards, floods and storms led to the deaths of over 1500 people[4] and caused economic losses amounting to more than US$235 million. Figures show that the country's vulnerability to extreme weather events such as floods, and cyclones cause most losses in terms of both mortality and economic losses.[5]

Cambodia's vulnerability stems from its geography, which exposes it to multiple hazards, and it's severely limited adaptive capacity in its physical infrastructure and institutions, stemming from limited financial, technical and human resources.[6] Coastal zones, as well as nationwide infrastructure are amongst the most affected in the country.[7] This also affects the fast-growing tourism sector, especially in coastal areas, on which the economy increasingly relies. Rising sea levels can potentially impact coastal systems in multiple ways, including flood and storm damage, inundation, loss of wetlands, erosion, saltwater intrusion, and rising water tables.[8]

In addition, there is growing risk that severe weather events will impact Cambodia. Climate Change therefore makes it more and more difficult for Cambodia to continue achieving its main national development priority, which is to significantly reduce poverty rates while simultaneously fostering economic growth at a yearly rate of seven per cent, as outlined in its National Strategic Development Plan (NSDP) 2014-2018.[9] And although Cambodia managed to graduate from the status of low income country to lower-middle income country in 2016[10] as intended by its

*1 Global Climate Risk Index, 2015. Online at https://germanwatch.org/en/9531*
*2 Global Climate Risk Index, 2016, p. 23. Online at https://germanwatch.org/fr/download/13503.pdf*
*3 Climate Change and Environmental Risk Atlas 2015. Online at https://maplecroft.com/portfolio/new-analysis/2014/10/29/climate-change-and-lack-food-security-multiply-risks-conflict-and-civil-unrest-32-countries-maplecroft/*
*4 Global Climate Risk Index, 2016, p. 23, online at https://germanwatch.org/fr/download/13503.pdf. UNISDR Global Risk Assessment 2017, online at http://www.preventionweb.net/countries/khm/data/. The International Disaster Database (EM-DAT), 2017, online at http://www.emdat.be/country_profile/index.html*
*5 Index for Risk Management (INFORM) Country Risk profile for Cambodia, 2017. Online at http://www.inform-index.org/Countries/Country-profiles/iso3/KHM*
*6 INFORM Country Risk profile for Cambodia, 2017. Online at http://www.inform-index.org/Countries/Country-profiles/iso3/KHM*
*7 Cambodia's Intended Nationally Determined Contributions, p. 2. Online at http://www4.unfccc.int/submissions/INDC/Published%20Documents/Cambodia/1/Cambodia's%20INDC%20to%20the%20UNFCCC.pdf*
*8 Second National Communication to the UNFCCC, p. xv. Online at http://unfccc.int/resource/docs/natc/khmnc2.pdf*
*9 National Strategic Development Plan 2014-2018, p. 4. Online at* http://www.mop.gov.kh/LinkClick.aspx?fileticket=XOvSGmpI4tE%3d&tabid=216&mid=705
*10 The World Bank, 2017. Online at http://data.worldbank.org/?locations=KH-XN*

NSDP[11], the uncertainty and intricacy of increasing climate change risks and threats significantly hampers economic growth and development potential in the future.[12]

## *Economic context*

### *Climate change is already causing economic losses but the government faces challenges in terms of financial resources and technical capacity to respond.*

According to most recent statistics published by the World Bank, in 2015 Cambodia's Gross National Income (GNI) amounted to US$1,070 per capita, growing at 7 per cent per year. This trend is slightly decreasing with forecasted GDP growth rates of 6.9 to 6.8 per cent for the years 2017 and 2018, respectively.[13]

Cambodia's economy is narrowly based however, and driven by four main sectors: garment manufacture for export, tourism, construction and agriculture, with three of those predominantly urban sectors, heavily dependent on building resilient settlements and infrastructure. Agriculture, which is heavily dominated by rice paddy cultivation, is critical to rural and peri-urban areas. The economy of the target communes reflects the national economy and is, due to its coastal location, especially dependent on the tourism, construction and agriculture sectors. Productive share in Cambodia is relatively evenly distributed, with its services sector as the largest contributor at 37.8% of total gross output, followed by the industry sector at 31.3% and the agriculture sector at 30.9%. Intermediate inputs as a share of total cost of production in Cambodia is on average almost equally divided, i.e. 50% comes from domestic resources while the other half is imported.

The tourism sector shows high annual growth rates with high shares in total GDP.[14] The direct contribution of the sector to GDP was around US$2.3 billion (13.5% of total GDP) in 2015, and is forecast to rise by 6.3% per annum between 2016-2025, to US$4.58 billion (12.4% of total GDP) in 2025. Total contribution to GDP amounted to US$5.09 billion (29.9% of GDP) in 2015, and is forecasted to rise by approximately 6.5% annually to US$10.32 billion (28.0% of GDP) in 2025. In 2014, the total contribution of tourism to employment, including jobs indirectly supported by the industry, was 26.4% of total employment (2,221,500 jobs). This is expected to rise by 3.3% per annum to 3,199,000 jobs in 2025 (32.6% of total).[15] In the same year tourism investment was US$0.4 billion, or 15.6% of total investment. It is expected to rise by 6.4% per year within the next decade to US$0.8 billion in 2025 (14.1% of total).

The share of foreign visitors in 2015 amounted to nearly 15% of total visitors to the coastal area.[16] Securing continued economic, employment as well as investment growth will heavily dependent on the country's resilience along its coastal lines. Visitors to Preah Sihanouk and Kep have increased year by year. Based on the Provincial Investment Programme report, 2,032,881 tourists visited Preah Sihanouk in 2016, a 16.65 percent increase compared to 2015. As for Kep, visitors increased from 761,206 in 2015 to 1,079,493 in 2016.

Both provinces recognize tourism as an important industry and both provinces have a great potential for eco-tourism, with nature, livelihood, and community-based tourism activities. However, the tourism sector is also affected by climate change, especially beach erosion, as described in the Environmental Section below. For adaptation to climate change, natural resource enhancement and preservation is therefore necessary, as well as improvement of drainage and the management of water supply, sewage and waste. This will benefit tourism potential directly but also the poor and vulnerable, especially from livelihoods and basic services perspective.

Since the initial concept note was developed however, there has been a substantial change in the tourism model in the municipal area of Sihanoukville. The city has attracted very rapid and substantial investment, primarily from

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*11 National Strategic Development Plan 2014-2018, p. 4.*
*12 Cambodia Climate Change Strategic Plan 2014-2023, p. xv. Online at http://www.bb.undp.org/content/dam/cambodia/docs/EnvEnergy/CCCAProjects/Cambodia%20climate%20change%20strategic%20plan%202014-2023.pdf*
*13 The World Bank, 2017. Per capita GNI is displayed using the World Bank's Atlas method, which smoothens a country's GNI per capita by price variations and exchange rate fluctuations, taking into account the year of observation and the two previous years. It further adjusts the country's own and the international rate of inflation, with the international inflation rate being the euro area, the United Kingdom, the United States and Japan since 2001. Online at http://databank.worldbank.org/data/reports.aspx?source=2&country=KHM*
*14 Cambodia Climate Change Strategic Plan 2014-2023, p. xv.*
*15 Word Travel and Tourism Council, Economic Impact 2015 Cambodia. Online at https://www.wttc.org/-/media/files/reports/economic%20impact%20research/countries%202015/cambodia2015.pdf*
*16 Cambodia Tourism Statistics Report, 2015, p. 5.*

China. This has had profound changes in land management in the city, with up to 100 new hotels and other tourist facilities either opened in the last two years or under development. The city has seen up to 78,000 new residents, primarily from China, move to the city in the last year.[17] Because of this rapid change, the proposal no longer focuses its activities on the city of Sihanoukville. This is because the situation is still developing, and UN-Habitat and the Royal Government of Cambodia see undue investment risk in Sihanoukville City. Surrounding districts (such as Prey Nob) are unaffected by the rapid development.

## *Social context*

***Although the government recognizes the importance of resilience to natural disasters in the poor communities, they face limited financial resources and human capacity as well as comprehensive data sets.***

Cambodia has a total population of 15.58 million (of which around 51.3 per cent are women) and this figure is growing at a rate of 1.6 per cent annually. Urban areas are growing much more rapidly at 2.6 per cent each year.[18] This is one of the main reasons for the country's increasing demographic pressures over the past years. According to the Fragile States Index, in 2016 Cambodia was one of the few countries in the region that were labelled a high warning status with regard to its state of development, which even marginally worsened within the last decade.[19] And although the country has a relatively high share of payments to labour in relation to its GDP compared to its neighbouring countries,[20] uneven economic development only shows slightly improving trends.[21] While household poverty rates are highest in the north-east of the country, overall poverty rates remain high in the coastal area (Figure 1, left), especially considering its higher population density.

The population density map (Figure 1, right) shows that along the coast the cities of Sihanoukville, Kampot and Kep (from left to right) are among the most populated areas. The country's coastal population faces challenges such as low levels of education and poor health and basic infrastructure services. It further shows an on-going deterioration of inequality between the mid-1990s and 2007, despite an overall poverty reduction.

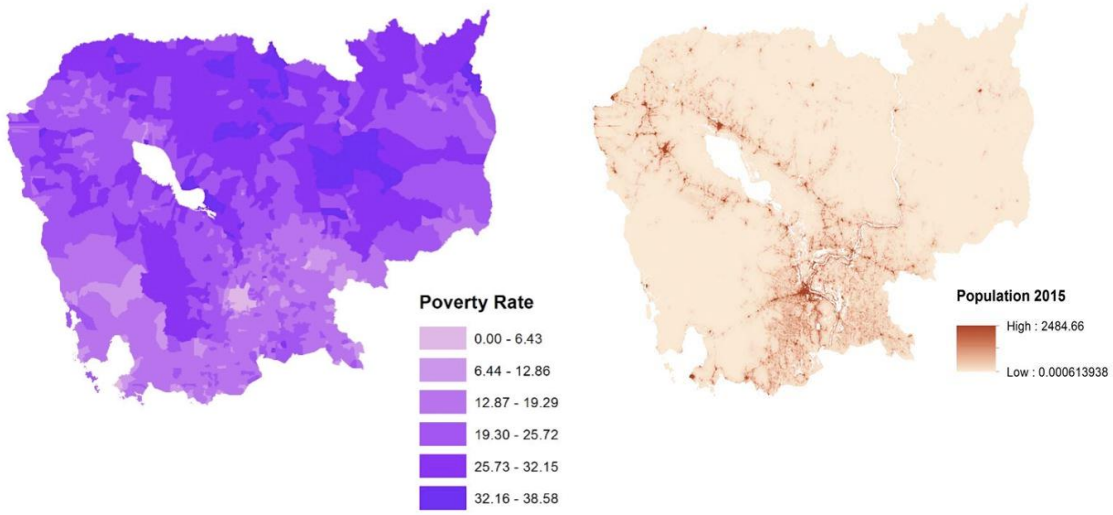


***Figure 1 "Distribution (%) of household poverty rates by districts and population density in 2015"*** [22]

[17] https://www.channelnewsasia.com/news/cnainsider/china-belt-road-casino-boom-sihanoukville-cambodia-phnom-penh-10846730

*18 Displays data for the most recent available year 2015. The World Bank, World Development Indicators, 2017. Online at http://databank.worldbank.org/data/reports.aspx?source=2&country=KHM*

*19 The Fund for Peace 2017. Online at http://library.fundforpeace.org/library/fragilestatesindex-2016.pdf*

*20 56% of its economic gains are invested into labour force. Secretario, F. et al. 2009, p. 9. Online at http://depocenwp.org/modules/download/index.php?id=62*

*21 The Fund for Peace 2017.*

*22 Left: own illustration based on the United Nations Office for the Coordination of Humanitarian Affairs, 2015. Online at Open Development Cambodia. Right: Own illustration based on adjusted UN data from World POP. Online at World POP.*

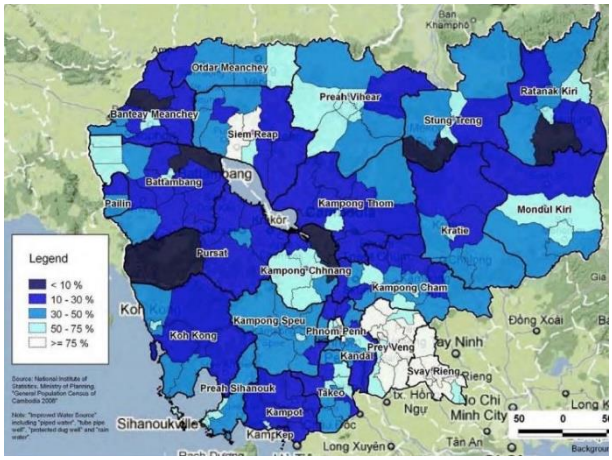


**Figure 2** ***"Percentage of households with improved water sources"***

[23]The expected impacts of climate change (discussed below), are likely jeopardize poverty reduction and health targets, because hazards are likely to increase in frequency and intensity. This is because poor communities predominantly live in high-risk areas and already lack access to basic services. More frequent storms, inundation and salt water incursion are likely to enhance the spread of water- and vector-borne diseases, limit access to clean water and food, flood and expose unsafe sanitation facilities, and isolate the population from health and other emergency services and responses.

Notwithstanding advances in water, sanitation, and hygiene over recent years, climate change impacts are a present danger and cause loss of life and have long-lasting impacts on poverty and food security. People in the coastal area will be able to adapt to climate change when they have access to basic infrastructure services such as improved water management, drainage, coastal protection and sanitation.

As shown in Figure 2, the overall percentage of households that can access improved water sources is still low, ranging in most districts between 10 and 30 per cent. Prey Nob District, one of the two target areas for this project, is in-line with the national average, while Kep Province does not have any access to piped water.

Although the government intends to expand and improve basic infrastructure services throughout the country, the development and implementation of effective climate change strategies is constrained by limited financial resources and human capacity, a lack of reliable and comprehensive data sets, research to support greenhouse gas inventories, and vulnerability assessments. Natural disasters, intensified by climate change, have major impacts on basic services and need to be consequently addressed through adaptation measures as a means to alleviate poverty and foster economic growth.

In line with the government's Nationally Determined Contribution (NDC) under the Paris Agreement on Climate Change, an approach to establish this should focus on the resilience of coastal zones and infrastructure more generally as they are among the areas impacted most severely by climate change.

## Gender Conext

***Women have particular and specific vulnerabilities in the coastal areas of Cambodia. However, these can become opportunities with effectively targeted adaptation actions***

There is an emerging body of evidence that women and children face greater vulnerability to climate change than men, as a result of greater sensitivity and less adaptive capacity. Evidence suggests that in the 2013 floods, when over 377,000 households were affected throughout the country, women were more severely affected. Women were more likely to be in the home when floods hit, or unable to leave the home because of domestic care responsibilities. The resulting disruption to health care infrastructure and service left pregnant women to deliver in very critical conditions As demonstrated elsewhere in this concept note, the coastal area of Cambodia, including the areas targeted by this proposal such as flooded delivery rooms or worse, at home where immediate medical care was not available[24]., are especially at risk from flooding from inland waterways, heavy rain and coastal flooding from storm surges and sea-level rise.

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*23 Japan International Cooperation Agency, 2010, p. iv. Online at JICA*

[24] http://www.kh.undp.org/content/cambodia/en/home/presscenter/articles/2016/03/08/women-in-the-face-of-climate-change-the-driving-force-for-any-solution.html

Compared with some other least developed countries, women in Cambodia face comparatively little discrimination; they have equal protections under the law for example, and there are few if any formal restrictions on women's ability to work[25].

However, women's livelihoods, access to resources and capacity to adapt are different from men, and in many cases women face a more challenging landscape for social reasons. In Cambodia, women often have role in earning income for the household as well as domestic responsibilities such as care giving for the sick and elderly and raising and educating children.

Women in Cambodia are usually responsible for water collection, domestic tasks described above, small scale gardening, cropping rice, trade and rearing livestock – which is a greater range of responsibilities than men. Investment 3.7 of this proposed project, described in Part II, Section A, and here specifically targets the ability of women to continue trading – vital for their livelihoods – despite the increasing possibility of flooding in the future as a result of climate change.


*Figure 1 - The roles of women in Cambodian society (the icons, from left to right, mean Water collection and domestic tasks; farming and marketing crops; Small scale gardening; and rearing livestock.*

The same analysis showed that women often have access to water (as well as responsibility for sourcing it), and markets. However, they often lack support in terms of access to financial resources and access to educational services (men in rural Cambodia also struggle to access finance). Women in Cambodia tend to have lower literacy rates than men with 70.5 per cent of women literate nationwide, compared with 84 per cent of men[26]. This correlates with high school completion rates, which are lower for women compared to men. In many cases, this is because families do not feel it is safe for girls to travel to schools, though in some cases it is still because girls are encouraged to marry before they have completed senior high school.

In some areas, women have potential to increase their adaptive capacity. Analysis by UNDP shows that women tend to have strong informal and semi-formal social networks with one another in Cambodia (such as networks of women who sell goods in the market or process shrimp and crabs (a particularly important industry in Kep province).

As shown in Table 2, below, the proposal targets an equal number of males and female beneficiaries in its overall target area. However, there are several ways in which this project will have specific benefits for women. The activities under investment 3.7 will specifically benefit women who make up as many as 90% of traders in the market. Adapting the market to flooding so that it can function continuously year-round, even in during heavy rain events, will primarily benefit women – increasing their ability to trade and earn income. Numerous proposed investments (3.2a&b, 3.4a&b and 3.6) are designed to improve water access. As the above analysis shows, it is primarily the task of women in Cambodia to access water. These activities will ensure they have greater access to water in the dry season, that water quality improves, and that they have to travel less distance to get water. The remaining activities (investments 3.1, 3.3, 3.5 and 3.8) provide services to the general population, providing benefits to men and women equally. Wherever information is provided to the communities, it will be provided orally, through commune chiefs and radio broadcasts (in addition to any written information provided), recognising that

[25] https://www.adaptation-undp.org/sites/default/files/downloads/ccaf_info_1-gender_and_climate_change-7dec.pdf

[26] http://www.undp.org/content/dam/undp/library/Climate%20and%20Disaster%20Resilience/Climate%20Change/CCAF-Gender-Responsive-Adaptation.pdf

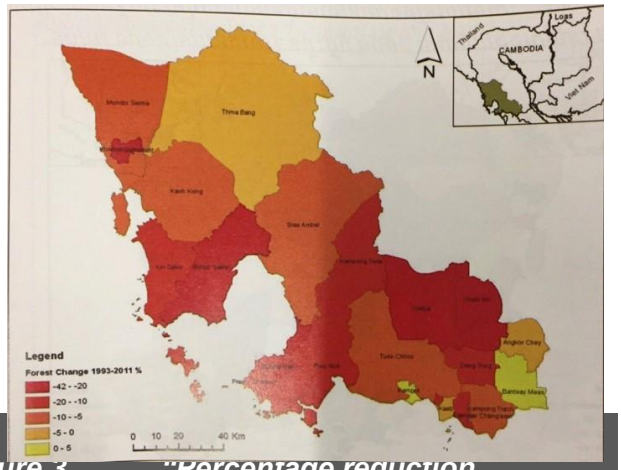


***Figure 3 "Percentage reduction in forest area at the district level from 1993 to 2011"***

women's literacy rates are lower than men's. Other provisions for mainstreaming gender are highlighted throughout this project proposal.

## *Environmental context*

***Sea level rise due to climate change and changes of the mangrove systems accelerate coastal erosion and reduce the climate change resilience.***

The Ministry of Environment has identified forests, including mangrove forest, as vital in maintaining the country's ecosystems as well as a source of various non-timber forest products. 27 per cent of Cambodian land is categorized as protected forest area. In Preah Sihanouk, 26 per cent of the land is categorized as protected forest area. In Kep this figure is 7 per cent[27].

Deforestation is taking place in the coastal area, and the cutting of mangrove forests is a particularly pressing issue. IUCN has identified up to 4,000 hectares of former mangrove that has been converted into salt farms in Kep Province and neighbouring Kampot province alone. A study by the Ministry of Environment (MoE et al. 2014) shows that mangroves in Prey Nob District in Preah Sihanouk Province are under threat by salt, charcoal use, and industrial development, as shown in Figure 3[28].

An estimated 3,446 hectares of land area in Preah Sihanouk Province and 343 hectares of Kep Province will be below mean sea level if the sea level rises by 1 metre in the future. The study by the Ministry of Environment also estimated that 3,530 hectares of mangroves in Preah Sihanouk Province and 13 hectares in Kep Province are located within 1 metre above today's mean sea level. Therefore, simultaneous occurrence sea-level rise and mangrove cutting for land use change will accelerate coastal erosion as well as reduce the adaptive capacity to climate change of the coastal ecosystem.[29]

Severe environmental degradation has taken place throughout the coastal area of Cambodia – especially in areas where there has been investment in infrastructure and tourism. Besides that, the often-informal nature of the target settlements creates environmental problems, especially in waste management. Moreover, the combined effects of sea-level rise, coastal flooding and on-shore development issues (especially disposal of wastewater) are causing coastal erosion.

*27 MoE, GEF and UNEP (2013), p. 31.*
*28 3rd State of the Coastal Environment, Climate Change and Socio-Economy Report 2013*
*29 MoE, GEF and UNEP (2013), p. 190.*

## *Climate change projections and expected impacts in the target area*

### *Climate change projections*

Cambodia's climate is governed by a monsoon weather cycle, with a wet season between May to November that is dominated by heavy rainfall and average temperatures of 28ºC and a dry season from November to May, with an average maximum temperature of 38ºC in April and an average minimum temperature of 17ºC in January. Over the last decades, mean temperatures in Cambodia have increased significantly, a trend that is predicted to continue with projected increases in monthly averages between 0.013ºC and 0.036ºC per year by 2099 with higher predictions for locations at low latitudes.[30][31]

Rainfall varies within the country and is strongly influenced by topography, declining in the central plains, and increasing in the upland areas. However, rainfall is heaviest along the 435km coastline stretching from Koh Kong Province bordering Thailand in the west, Sihanoukville Municipality which contains Cambodia's largest deep-water sea port, Kampot Province bordering Vietnam to the East, and Kep Province (see Figure 4). While lowlands may receive average annual rainfall of 1400mm per year, data shows that rainfall within coastal areas can be as high as 4000mm per year or higher (see Figure 5).[32]

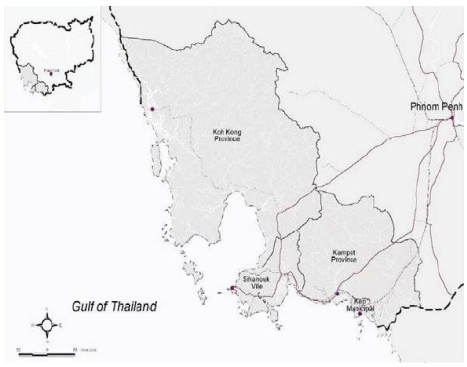


***Figure 4 "Cambodia's Coastal Provinces"***

*30 Cambodia Climate Change Strategic Plan 2014-2023, p. 8.*
*31 Caption: Cambodia Coastal Situation Analysis, 2011, p. 6. Online at http://cms daa.iucn.org/downloads/cambodia_coastal_situation_analysis_final.pdf*
*32 Heng Chan Thoeun, 2015, p. 63. Online at http://dx.doi.org/10.1016/j.wace.2015.02.001*

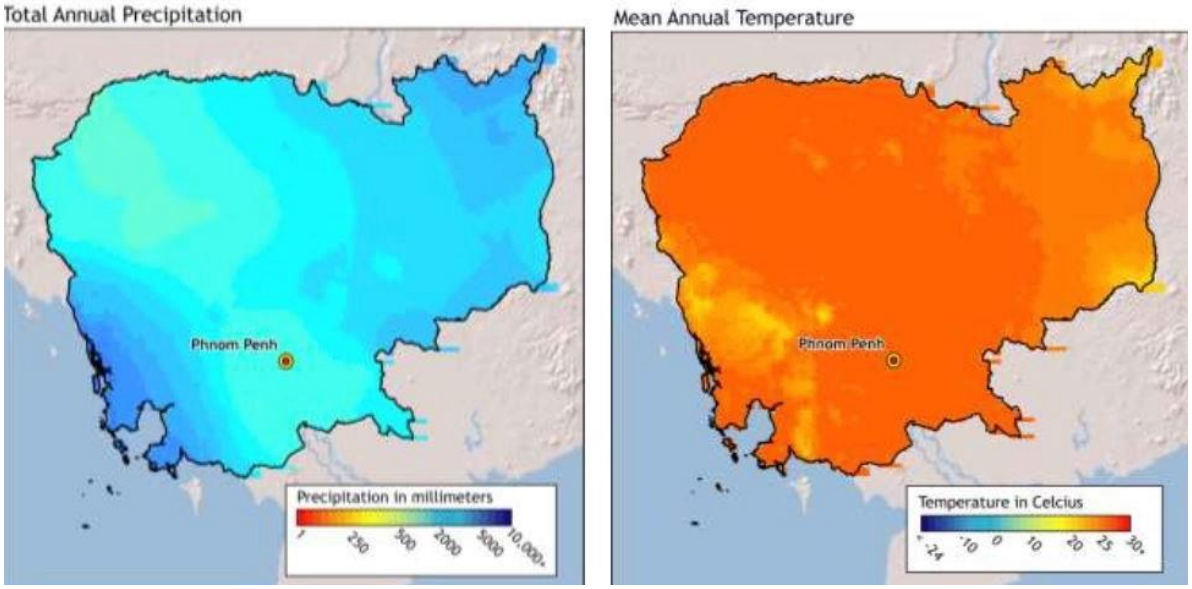


***Figure 5 "Rainfall and Temperature Baseline Situation in Cambodia"***

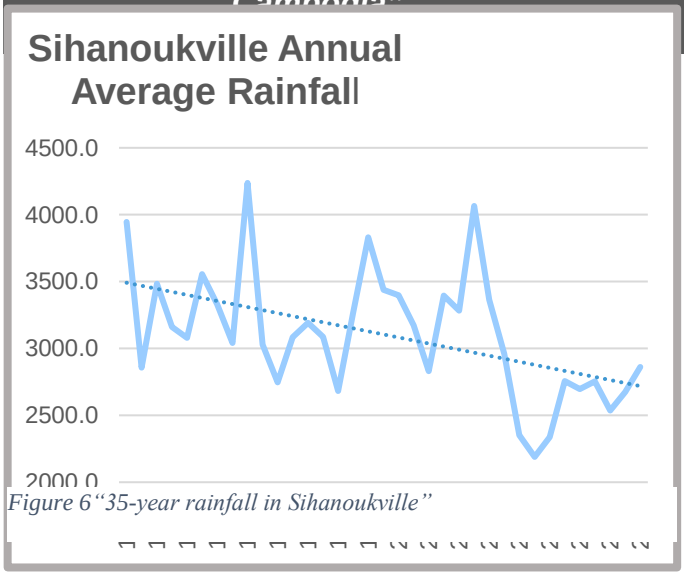


*Figure 6 "35-year rainfall in Sihanoukville"*

## *Observed Trends, Hazards and Impacts*

Due a history of civil conflict, there are only very few long-term historical datasets available for climate observations in Cambodia. However, a long-term dataset for Sihanoukville (the capital of Preah Sihanouk Province) was obtained, and it shows that annual average rainfall has substantially decreased in the last 35 years; the average rainfall in 2017 is now 20 per cent lower and if current trends continue, rainfall will continue to decline by 0.76% per cent per year, as shown in Figure 6.

[33]Temperatures have too shown a significant increase in recent years. As shown in Figure 7, average annual maximum temperatures increased about 1.3°C between 1985 and 2008. This correlates with community level discussions with local people during the formulation of this proposal, where increased temperatures were the most frequently cited observable impact of climate change along the coastal area. Increasing temperatures also combined with decreasing rainfall to create pressure on water resources, as greater amounts of water evaporate into the atmosphere.

*33 The authors, based on data provided by the Provincial Department of Water Resources and Meteorology, Preah Sihanouk Province*

## *Figure 7 "Annual Maximum Air Temperatures in Cambodia"*

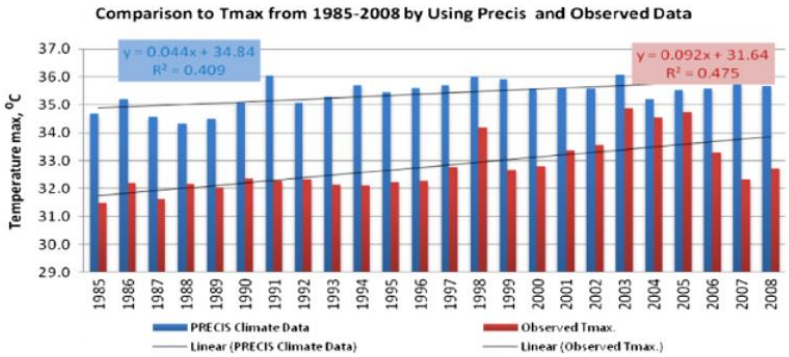


**Fig. 5.** Observed and predicted annual maximum air temperatures.

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The Intergovernmental Panel on Climate Change (IPCC), however, provides an overview of forecasting trends from 21 climate models for Southeast Asia. This summary states that i) for the period 2081-2100 temperatures will likely increase in the range of 1.5ºC to 3.7ºC; ii) while the number of hot days and nights will increase, cold days and nights will likely to become less frequent; iii) rainfall will most likely increase with projections ranging from a decrease of 2% to increases of up to 15%, with projected increases in the intensity of precipitation; iv) sea-levels in the region are forecasted to rise between 0.18 and 0.56cm by the year 2100, though some research has projected sea-level rises in the region of around 1 metre.[35]

### *Current and Expected Future Impacts*

Cambodia is vulnerable to droughts, floods and sea-level rise. The coastal area is also increasingly affected by strong winds, which are often associated with the onset of thunderstorms.

In 2011, floods resulted in the loss of around 4 per cent of gross domestic product[36]. Likewise, the 2013 floods caused economic losses of around US$356 million, of which US$153 million was the estimated value of the destruction of physical assets (damage) in the affected areas, and US$203 million the estimated losses in production and economic flows.[37]

Increases in sea levels are especially alarming for Cambodia's coastal areas that are already experiencing severe seawater intrusion, beach erosion, high tides, and frequent storm surges. Additional impacts such as land subsidence in the region may even further intensify its effects.[38] Especially low-lying areas such as coastal settlements, seaports, coastal fisheries, mangrove forests, and tourism facilities are increasingly affected. The effects of sea-level rise are also being exacerbated by the declining trend in rainfall, as in dry years less water in the rivers allows for greater sea-water incursion.

Figure 8 shows that numerous areas along Cambodia's coast, including Prey Nob District and Kep Province, are likely to be affected by 1 metre sea-level rise. This area includes all eleven of the communes targeted by the investment component of this project.

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*34 Heng, CT (2015) Observed and projected changes in temperature and rainfall in Cambodia, Weather and Climate Extremes, 7, pp61-72, p.66*
*35 See for example Rahmstorf, S., 2007 and Ananthaswamy, A., 2009.*

*36 2011 GDP (current US$) amounted to US$12.83 billion (World Bank, online at http://data.worldbank.org/country/cambodia). The 2011 flood resulted in total economic losses of around US$0.521 billion (EM-DAT country profile).*
*37 Cambodia's Intended Nationally Determined Contributions, p. 3.*
*38 Erban, L.E., Gorelick, S.M. and Zebker, H.A., 2014, p. 1. Online at http://iopscience.iop.org/article/10.1088/1748932 6/9/8/084010/pdf*

In addition, substantial salt water incursion and coastal erosion has been observed throughout the coastal area, including in all eight of the target communes. Considering the topography of the area; primarily flat coastal plain, characterised by rice paddy and poor settlements, erosion and seawater incursion is having a substantial impact on the ability of people to source their livelihoods. Figures 9 and 10 show coastal erosion in the target areas of the project.

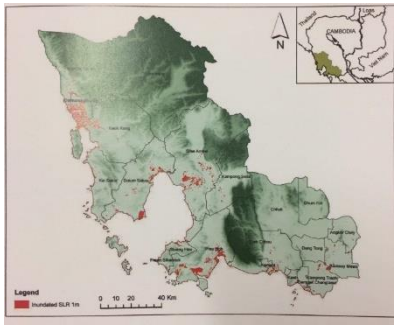


*Figure 8"Areas that would be critically affected by 1-metre sea-level rise"*[39]

Moreover, the government wants to promote the entire coastline, and especially Kep Province and Prey Nob District as areas for eco-tourism development. The ongoing problems of flooding, coastal erosion and sea-level rise threaten to severely hamper this aspiration in the future. Moreover, these coastal climate impacts also threaten the already severely limited provision of basic services such as water supply, both for domestic and agricultural use; lack of water consistently arose as a community priority in all communes surveyed during the full proposal development – either because water is lacking, or because otherwise abundant water supplies are increasingly being contaminated with salt water.

*Figure 9* ***"Coastal Erosion in Kep Province"***[40]

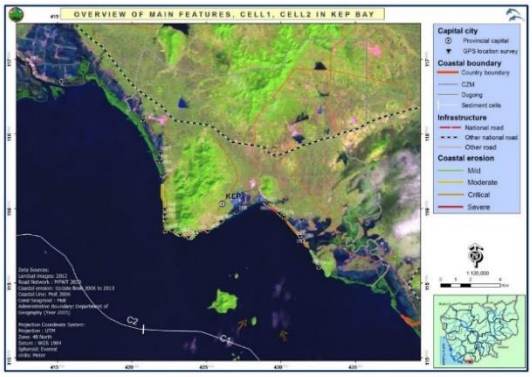
*Figure 10 "Areas that would be critically affected by 1-metre sea-level rise"* [1]

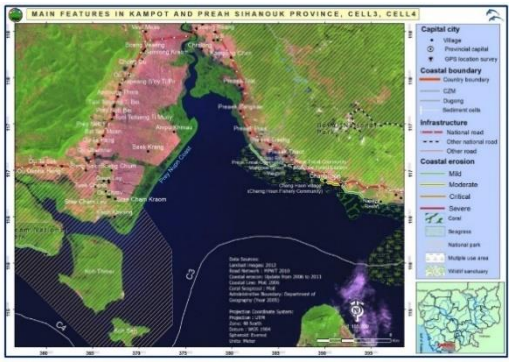
## *Focus of the Proposal*

As described detail in the following section, the main objective of the proposed project is to enhance climate change adaptation and resilience of the most vulnerable coastal human settlements of Cambodia through concrete climate change adaptation actions, particularly in areas where eco-tourism has the potential to sustain such interventions.

To achieve this objective, the project focuses its actions on highly vulnerable settlements in Kep Province and Prey Nob District of Preah Sihanouk Province. All areas are along Cambodia's coastal area, a priority area for adaptation defined by the Ministry of Environment. In Kep Province, the project will target four sangkats/communes[41], with a total of 28,021 direct beneficiaries of the project's interventions. In Prey Nob District (in Preah Sihanouk Province), the project will target seven communes, with a total of 34,500 beneficiaries. Further in-depth information about the proposed beneficiaries can be found in Annex 1.

There are numerous climate hazards in the project's target area, as alluded to above. Sea-levels are rising, which, coupled with declining water flow (partially as a result of reduced rainfall), means that salinity in encroaching ever further in land. Commune leaders and individual households indicated that within the last few years, in many areas salinity has penetrated all the way to the main Kep to Preah Sihanouk highway – an unprecedented condition.




Meanwhile, storm surges in the rainy season can affect the low coastal plains that characterise much of the project's target area.

Linked to this, surface and ground water

39 3rd State of the Coastal Environment, Climate Change and Socio-Economy Report 2013

40 MoE and UNEP (2014) - VULNERABILITY ASSESSMENT AND ADAPTATION PROGRAMME FOR CLIMATE CHANGE WITHIN THE COASTAL ZONE OF CAMBODIA CONSIDERING LIVELIHOOD IMPROVEMENT AND ECOSYSTEMS, p.8

41 Note that sangkats and communes are the same level of local government. A unit of local government is referred to as a Sangkat in urban areas and a commune in rural areas.

availability is decreasing. In Kep Province, for example, inadequate reservoirs mean that people have insufficient water access and water is being wasted. A lack of distribution infrastructure also means that there is no water supply. In Teuk Thla, Teuk La'k and Samaki Communes in Prey Nob District, ground water wells have either gone dry or have been permeated with sea-water, while in the remaining five communes of Prey Nob, water is also either saline or heavily polluted. Declining rainfall is driving the reduction in water availability, and poor management is exacerbating the problem.

Also linked to rising sea-levels and various land-based human factors such as salt farming is coastal erosion. The flat coastal plains that characterise the project area are all experiencing coastal erosion to some degree, with the problem being especially pressing in areas that are not protected by mangrove, and or those that have poor water management, such as Angkaol Commune in Kep Province.

Meanwhile strong winds associated by thunderstorms damage houses. In each of the 11 communes surveyed by the project formulation team, up to 200 houses are destroyed by strong winds every year and many more are damaged. While observed wind speeds in the target area are not high (registering highest recorded wind speeds of between 60-80 kilometres per hour), the resilience of housing is very low – people often use basic construction techniques and poor-quality materials.

The target areas for the project can be viewed through two interactive maps, for Kep Province and Prey Nob District

The following table gives a brief overview of the main climate hazards that impact the target area and the hard investments proposed by the project to adapt to them. It also relates these to the underlying vulnerabilities/barriers to adapt. This table summarises information derived from the consultations that took place in formulating the proposal. These consultations are detailed further in Part II, Section H. More details can be found in the action planning documents provided in Annex 1 and in the investments proposed under Component 3, introduced in Part II, Section A and detailed in full in here.

## Table 1

### *Summary of Climate hazards and underlying vulnerabilities in the target area*

| Climate Change Hazard | Impact at Community Level | Underlying Vulnerability/Barriers to Adaptation | Target Communes Affected | Investments Proposed |
|---|---|---|---|---|
| Strong wind | Destroyed or damaged houses<br><br>Damage to crops<br><br>Coastal erosion<br><br>Limited ability to find shelter<br><br>Fishing boats capsize | Poor house construction<br><br>Limited education, skills and capacity to make housing more resilient<br><br>Limited access to finance<br><br>Lack of weather information, broadcasts/early warning systems<br><br>Deforestation | **Prey Nob District:** Teuk Thla, Teuk La'k, Samaki<br><br>**Kep Province** Angkaol and Pong Teuk | Train local people on resilient housing construction techniques (Output 3.5)<br><br>Install tide gauge and broadcast system (Output 3.8) |
| Sea level rise and saline instruction | Unusable ground water | Poor water management and insufficient infrastructure | **All target communes** | Mangrove restoration (Output 3.1) |

| | | | | |
|---|---|---|---|---|
| | Declining agricultural output/inability to grow crops<br><br>Coastal erosion, including the loss of beach and productive land along the coast<br><br>Soil infertility | Loss of mangrove forest<br><br>Salt farming and other damaging land use practices | | Raised sea-wall, embankment and Watergate repair (Output 3.6) |
| Drought | Lack of water in reservoirs – leading to a lack of water for drinking and agricultural purposes<br><br>Poor crop yields, leading to low incomes<br><br>Poor soil quality | Old and insufficiently maintained reservoirs<br><br>Lack of supporting infrastructure, such as canals and water gates<br><br>No water supply/distribution system | **Kep Province –** Pong Teuk and Angkaol Communes | Rehabilitation of O Thmar Reservoir **and** Bank strengthening work at Roness Reservoir to provide additional water retention and safety. (Output 3.4a and b)<br><br>Channels and Embankments construction (Output 3.3)<br><br>Water gate repairs (Output 3.2 (a) |
| Flooding | Inundation of urban areas, especially markets, infrastructure and houses<br><br>Contamination with dirty water<br><br>Health issues<br><br>Loss of income | Lack of drainage<br><br>Lack of other water management<br><br>Pollution from waste water and solid waste | **Kep Province** Angkaol and Pong Teuk Communes<br><br>**Prey Nob District**<br><br>Veal Rinh, Ou Ohkna Heng and Prey Nob Communes | Channels and Embankments construction (Output 3.3)<br><br>Water gate repairs[42] and canal rehabilitation (Output 3.2a and b)<br><br>Market Rehabilitation (Veal Rinh) (Output 3.7)<br><br>Raised sea-wall, embankment and |

42 Please note that the channels and embankments construction and water gate repairs are designed to adapt to both floods and droughts

| | | | | |
|---|---|---|---|---|
| | | | | Watergate repair[43] (Output 3.6) |

**Table 2**

*Population of the Target Communes*

| Municipality/ District | No. | Name of Sangkat/Commune | Total Population * | Female Population | Location |
|---|---|---|---|---|---|
| Prey Nob District | 1 | Tuek Thla | 5,455 | 2,720 | Coastal |
| | 2 | Tuek L'ak | 4,413 | 2,198 | Coastal and River |
| | 3 | Samakki | 3,641 | 1,919 | Coastal and River |
| | 4 | Veal Rinh | 10,717 | 5,636 | Coastal and River |
| | 5 | O Chrou | 6,053 | | Coastal and River |
| | 6 | Prey Nob | 7,944 | 3,976 | Coastal and River |
| | 7 | Ou Oknha Heng | 9,006 | 4,559 | Coastal and River |
| | | **Sub-Total** | **47,229** | **24,332 (50.85%)** | |
| Kep Province | 1 | Angkaol | 8,566 | 4,280 | Coastal |
| | 2 | Pong Tuek | 10,987 | 5,574 | Coastal |
| | 3 | Prey Thom | 8,521 | 3,994 | Coastal |
| | 4 | Kep | 4,917 | 2,358 | Coastal |
| | **11** | **Sub-total** | **32,991** | **16,206 (48.92%)** | |

Table 3 below, shows the poverty rate and the percentage of people whose primary water source is considered unsafe, for communes in Prey Nob District and Kep Province, according to the vulnerability assessment carried out by the Ministry of Environment in 2015. It clearly shows that a lack of access to safe water is a critical underlying vulnerability.

**Table 3**

*Poverty level and people with unsafe water.*

| | | | Sensitivity | | | | |
|---|---|---|---|---|---|---|---|
| Municipality/ District | No | Name Of Sangkat/ Commune | Poverty (%) | Unsafe Water (%) | No. With Unsafe Water | Total Sensitivity | Over-All Vulnerability |
| Prey Nob District | 1 | Tuek Thla | 20.2 | 50.5 | 2,754 | 67 | 5 |
| | 2 | Tuek L'ak | 20.1 | 47.6 | 2,100 | 62 | 5 |
| | 3 | Samakki | 19.2 | 70.3 | 2,559 | 61 | 5 |
| | 4 | Veal Rinh | 26.3 | 24.5 | 2,625 | 47 | 3 |
| | 5 | O Chrou | 19.8 | 91.8 | 6,134 | 73 | 3 |
| | 6 | Prey Nob | 18.6 | 96.1 | 7,634 | 56 | 5 |
| | 7 | Ou Oknha Heng | 18.0 | 71.0 | 6,394 | 76 | 5 |
| Kep Province | 1 | Angkaol | 18.5 | 77.1 | 6,604 | 67 | 5 |
| | 2 | Pong Tuek | 18.5 | 88.5 | 9,723 | 66 | 4 |
| | 3 | Prey Thom | 14.3 | 90.9 | 7,745 | 57 | 4 |
| | 4 | Kep | 6.4 | 99.1 | 4,872 | 50 | 3 |
| | | **TOTALS** | **17,528 (below poverty line)** | | **73,043** | | |

*43 Please note that the raised sea wall, embankment and water gate repair is designed to prevent both flooding and salt water incursion*

# 2.0 PROJECT OBJECTIVES

## *Main objective*

The proposed project's main objective is to enhance climate change adaptation and resilience of the most vulnerable coastal human settlements of Cambodia through concrete adaptation actions, particularly in areas where eco-tourism has the potential to sustain such interventions.

To accomplish this, and to respond to the previous comments of the Adaptation Fund secretariat, the project proposes three specific objectives, or 'components', which are also summarised below in Table 4. For more detail of how the project's activities benefit women, please see the results framework in Part III, Section E.

**Component 1:** Community-scale knowledge and capacity enhanced to sustain the adaptation benefits of the project's investments

- This is in line with:
    - Adaptation Fund Outcome 3 – Strengthened awareness and ownership

of adaptation and climate risk reduction processes at local level

**Component 2:** Government planning and technical capacity enhanced and knowledge captured and disseminated to sustain and enhance the project's adaptation benefits

- This is in line with:
    - Adaptation Fund Outcome 2 – Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses

To a lesser extent, this component also addresses:

- Outcome 4 – Increased adaptive capacity within relevant development and natural resource sectors
- Outcome 7 – Improved integration of climate-resilience strategies into country development plans

**Component 3:** Resilience built through investment in small-scale protective and basic service infrastructure and natural assets

- This is in line with:
    - Adaptation Fund Outcome 2 – Increase adaptive capacity with relevant development and natural resource sectors,
    - Adaptation Fund Outcome 5 – Increase ecosystem resilience in response to climate change and variability-induced stress,
    - Adaptation Fund Outcome 6 – Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted area.

# 3.0 PROJECT COMPONENTS AND FINANCING

## Table 4

*Project Components and Finance*

| Project Components | Expected Concrete Outputs | Expected Concrete Outcomes | Amount (US$) |
|---|---|---|---|
| **Component 1**<br><br>Community-scale knowledge and capacity enhanced to sustain the adaptation benefits of the project's investments | **Output 1.1.**<br>Community capacity built to collect and manage solid waste and waste water | **Outcome 1.**<br><br>Communities in the target areas are able to manage their infrastructure, maintain its functionality and autonomously adapt to the future impacts of climate change | **$106,145** |
| | **Output 1.2.**<br>Communities in target areas have been trained on resilient house construction techniques | | $82,995 |
| | **Output 1.3.**<br>Communities have been organised to manage, monitor and maintain the infrastructure investments under Component 3 | | $95,569 |
| | | **TOTAL** | **$284,709 (6.83%)** |
| **Component 2**<br><br>Government planning and technical capacity enhanced and knowledge captured and disseminated to sustain and enhance the project's adaptation benefits | **Output 2.1.**<br>Government officers at the provincial and district levels trained to plan effectively for sustaining and enhancing the project's adaptation benefits | **Outcome 2.**<br><br>Capacity enhanced at the provincial and district level to manage, monitor and maintain the project's benefits, as well as enhance and replicate its approach. | $76,734 |
| | **Output 2.2**<br>Government officers at the provincial and district provided with comprehensive technical training to manage, operate and maintain the infrastructure | | $123,845 |
| | **Output 2.3**<br>Institutional systems strengthened to monitor adaptation investments and replicate their benefits | | $91,656 |
| | **Output 2.4** | | **$76,256** |

| | | | |
|---|---|---|---|
| | Knowledge from the project implementation is captured and disseminated to local and national stakeholders, focusing on sustainable adaptation actions and policy enhancement | | |
| | | **TOTAL** | **$368,491 (8.84%)** |
| **Component 3**<br><br>Resilience built through investment in small-scale protective and basic service infrastructure and natural assets | **Output 3.1.**<br>285ha of Mangroves restored in Kep and Angkaol Communes, Kep Province | **Outcome 3.**<br><br>At least 62,521 people, at least 50% of whom women, have access to protective natural and social assets and/or benefit from physical infrastructure to reduce the climate vulnerability. (AF outcome 4 and 5) | $208,704 |
| | **Output 3.2**<br>Water gates repaired in 3 locations in Pong Teuk and Angkaol (a)<br><br>2 canals rehabilitated in Pong Teuk and Angkaol Communes, Kep Province (b) | | $5,328 (a)<br><br>$76,050 (b) |
| | **Output 3.3**<br>Prevention of salt water ingress through improved channels | | $~~246~~185,000 |
| | **Output 3.4**<br>3.4a O Thmar Reservoir rehabilitated to increase water storage capability Kep Province<br><br>3.4b Bank strengthening work at Roness Reservoir to provide additional water retention and safety.<br><br>3.4c Coastal flood protection embankment in Kep and Angkoal constructed | | $660,040<br><br>$1,304,000<br><br>$126,150 |
| | **Output 3.5**<br>Resilient Housing designs developed and demonstrations constructed (Both provinces | | $89,000 |
| | **Output 3.6**<br>Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province | | $97,750 ~~266,100~~ |
| | **Output 3.7**<br>Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province | | $712,905 |

| | | | |
|---|---|---|---|
| | **Output 3.8**<br>Tide gauge with early warning system broadcast capabilities installed (Tide Gauge in Ou Okhna Heng Commune, Prey Nob District) | | $52,380 |
| | | **TOTAL COMPONENT 3** | **$3,517,307 (83.34%)** |
| | 5. Project/Programme Execution cost (9.5 %) | | **437,788** |
| | 6. Total Project/Programme Cost | | **4,608,295** |
| | 7. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable) (8.5 %) | | **391,705** |
| | | **Amount of Financing Requested** | **5,000,000** |

## Projected Calendar:

| MILESTONES | EXPECTED DATES |
|---|---|
| Start of Project/Programme Implementation | 09-2019 |
| Project/Programme Closing | 09-2023 |
| Terminal Evaluation | 12-2023 |

# PART II: PROJECT / PROGRAMME JUSTIFICATION

## A. PROJECT COMPONENTS

As the introduction to this proposal notes, Kep Province and Prey Nob District, the target areas of this proposal, are highly exposed to multiple hazards; sea-level rise, increasing temperatures and dramatically changing rainfall patterns, which in turn cause drought, strong winds and flooding, salt water incursion and coastal erosion. Underlying vulnerability to those hazards, in the form of poverty, inadequate infrastructure, a lack of basic services, ecosystem degradation and mismanagement of water resources exacerbate their impacts and make the target area highly vulnerable to climate change.

To achieve the project's overall objective; ''to enhance climate change adaptation and resilience of the most vulnerable coastal human settlements of Cambodia through concrete adaptation actions, particularly in areas where eco-tourism has the potential to sustain such interventions'. The project works with national and sub-national government to achieve adaptation through improved protective and basic service infrastructure, ecosystems, and capacity at the community and local government level.

The actions proposed by the project have been designed to target the poorest and most vulnerable people in two of Cambodia's most vulnerable areas; Kep Province and Prey Nob District (in Preah Sihanouk Province). To do this, an interdependent set of soft and hard measures has been proposed to ensure that resilience at the household and commune level is strengthened sustainably. The soft measures focus on increasing community capacity and the capacity of officials and institutional systems at the sub-national level. All capacity building activities are designed to support, enhance and sustain the 'hard' investments that the project will make. Such an approach is also in line with Cambodia's Nationally Determined Contribution of "promoting and improving the adaptive capacity of communities, especially through community-based adaptation actions (..) and, "strengthening technical and institutional capacity… and mainstreaming of climate change into sector and sub-sector development plans".

The hard investments made by the project will all be in small-scale protective and basic service infrastructure and ecosystems. These investments have been fully identified, costed and through a comprehensive environmental and social safeguard compliance analysis. They are presented in brief below and in full in Annex 3.

The specific needs of women, people with disabilities and youths will be considered at all stages of the project. Extensive consultations have been conducted in formulating the project proposal, which are detailed in Part II, Section H and in Annex 1, while the implementation will use, where possible, the people's process, where community groups are formed and sustained throughout all stages of the project and through which communities participate in project implementation and monitoring.[44] At the community level, women will have a decisive stake in the implementation of the project. All commune level committees and groups working under the People's Process will be made up of 50% women. Women will also contribute their labour equally at the community level, and will be encouraged to participate in the physical works. Women will make up at least 30 per cent seats on the national and provincial level committees. In Cambodia, data suggests that women are still very underrepresented in government positions. In 2015 it was estimated that only 16.5 per cent of commune councillors, 11.3 per cent of undersecretaries of state and 19.5 per cent of parliamentarians were women.[45]In this regard, 30% women in decision-making positions represents a high watermark of representation

The components of the project are as follows:

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*44 Development driven by people/Support Paradigm: when people stays at the centre of development planning process, the resource can be optimized with greater utility impacting larger number of people: http://sopheapfocus.com/wp-content/uploads/2010/06/Picture-31.png People's process of development can be witnessed through the evolvement of people's desire to improve their lives. Humans developed their settlement from living in caves, then building shelters, and now home. Along this settlement evolution, they had also established certain norms, standards, and a mutual understanding surrounding their community. That is called the people's process of development.*

[45] UN-Habitat (et al), 2017, Mainstreaming Gender into Adaptation Investments, p.13

**Component 1:** Community-scale knowledge and capacity enhanced to sustain the adaptation benefits of the project's investments

- This is in line with:
    - Adaptation Fund Outcome 3 – Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level

This component is made up of three outputs, which are also shown in Table 4:

1.1) Community capacity built to collect and manage solid waste and waste water
1.2) Communities in target areas have been trained on resilient house construction techniques
1.3) Communities have been organised to manage, monitor and maintain the infrastructure investments under Component 3

This component works directly with the communities in the target areas and is critical to the sustainability of the investments planned under Component 3.

Activities under Output 1.1. are critical because waste water and especially solid waste are ongoing problems in the target area. In several communes in the target areas, communities and commune leaders reported that their drainage or water management infrastructure was inadequate. However, upon inspection by the project team this infrastructure was completely blocked by solid waste, much of which had originated from the local area. With this in mind, management of solid waste becomes a critical issue; critical infrastructure, and especially activities to repair water gates, canals and embankments (see Output 3.2a, 3.2b and 3.6), can't function to its full potential if it is blocked or the water it manages is polluted with solid waste. Effective community scale management of solid waste is, therefore, both a critical sustainability activity and an enabler of enhanced adaptation effectiveness.

At present, formalised waste collection is available in Prey Nob and Kep only on the major roads. This means that, in communities away from the major roads, there is no formalised waste collection at the present time. This largely explains why so much waste ends up in canals and streams. With the awareness raising and capacity building provided under output 1, communities will have increased awareness of the damage caused by solid waste disposal in canals and streams and will be organised to transport waste the short distance required to collection points on the main road.

Activities under Output 1.3. are critical to ensuring that communities have the capacity required to monitor the use of and maintain their ecosystems and infrastructure. Much of the recurring maintenance of the infrastructure will be technically straightforward and will not require specialist labour or equipment. This will therefore be most effectively managed by the communities that benefit from the protection and services that the infrastructure provides. This also includes the mangroves, to be planted or restored under the investments in Output 3.1 To do this, activities under this output will organise communities and provide selected community members with the basic training required to perform basic monitoring and maintenance of the infrastructure. In the case of the mangrove planting and restoration, the specific nature of the training will be outlined in the Mangrove Planting and Monitoring Plan (MPMP), described further in the Investment Sheet. In particular, this relates to the infrastructure and ecosystem investments under the following outputs: 3.1, 3.2a, 3.2b, 3.4a, 3.6, 3.7. The investments are presented in more detail below.

Activities under 1.3 will be implemented in close collaboration with the Communes through the Local Commune Committee (See Part III, Section A for the management structure). Moreover, the engagement of government at the commune, provincial and national level will make ensure that the government has the ownership of and responsibility for maintenance beyond the life of the project. In the past, some projects, including in the target area, have failed to sufficiently engage both the ~~communtiies~~communities and the local and national government, which has resulted in infrastructure falling into disrepair after the period of the project implementation

**Component 2:** Government planning and technical capacity enhanced and knowledge captured and disseminated to sustain and enhance the project's adaptation benefits

- This is in line with:

- Adaptation Fund Outcome 2 – Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses

To a lesser extent, this component also addresses

- Outcome 4 – Increased adaptive capacity within relevant development and natural resource sectors
- Outcome 7 – Improved integration of climate-resilience strategies into country development plans

This component is comprised of ~~three~~ four outputs:

2.1. Government officers at the provincial and district levels trained to plan effectively for sustaining and enhancing the project's adaptation benefits

2.2. Government officers at the provincial and district provided with comprehensive technical training to manage, operate and maintain the infrastructure

2.3. Institutional systems strengthened to monitor adaptation investments and replicate their benefits

~~2.3.~~2.4. Knowledge from the project implementation is captured and disseminated to local and national stakeholders, focusing on sustainable adaptation actions and policy enhancement.

Activities under Output 2.1 will work with officials involved in sub-national planning and budgeting, particularly from the National Committee for Sub-national Democratic Development (NCDD), Department of Economy and Finance, Department of Planning, Department of Environment and Department of Water Resources and Meteorology. It will focus on how the adaptation infrastructure constructed or repaired under the investment programme in Component 3 can be incorporated into sub-national budgets and new infrastructure can be constructed at the subnational level in the future.

Output 2.2 will increase government technical capacity. This technical capacity will focus on maintenance and management of infrastructure and ecosystems that is beyond the technical capabilities of the community. That said, activities under Output 2.2 should be seen as complementary to activities under Output 1.3. In particular, the technical capacity built will be in support of the infrastructure and ecosystem investments described in Component 3. This output includes training for government officials on the technical nature of mangrove planting and maintenance. The specific nature of the training will be outlined in the Mangrove Planting and Monitoring Plan (MPMP), described further in the investment sheet.

Output 2.4 will capture successful practices at the local level, based on the project's implementation. It will document lessons learned and make recommendations about where improvements can be made in the future. The primary target audiences of this improved knowledge management are twofold. Communities and local government will benefit from the demonstration of successful adaptation practices, especially where these can be replicated with little or no cost, while on the other the national government will benefit from knowledge management that influences future policy direction and strategic planning.

As in Component 1, government engagement at all levels is of critical importance. Ensuring that government has the capacity – defined as the ability and willingness – at the commune, provincial and national level to support the continued management and maintenance of the infrastructure is critical to the sustainability of the project.

Finally, activities under Output 2.3 are designed to build institutional capacity. This both distinguishes them from, and makes the complementary to, activities under Output 2.1. Activities under Output 2.1 focus on individual capacity, whereas those under Output 2.3 focus on institutions. To that end, this activity works more closely with the national level through the Project Management Committee and the National Council for Sustainable Development to increase vertical integration and coordination between the sub-national and national levels. This will contribute to ensuring that the adaptation benefits provided by the investments under Component 3 are sustained and can be replicated beyond the two provinces targeted by the project. These activities therefore make a linkage to national level adaptation.

**Component 3:** Resilience built through investment in small-scale protective and basic service infrastructure and natural assets

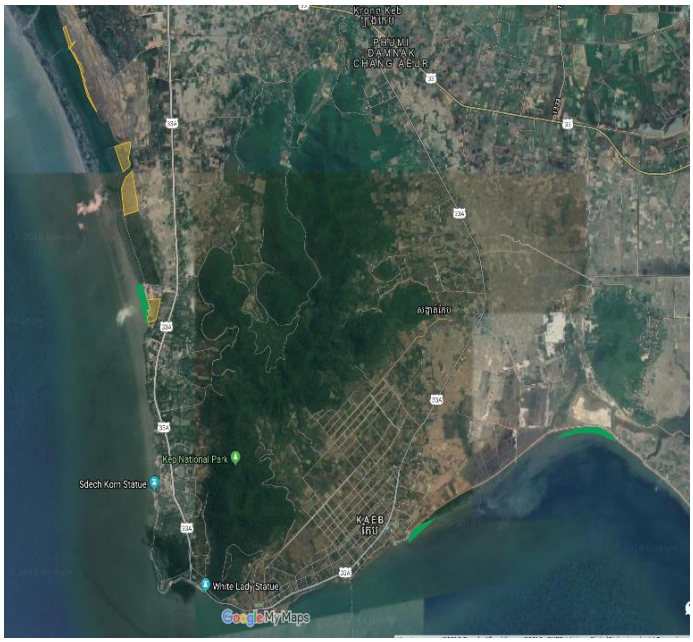
- This is in line with:
    - Adaptation Fund Outcome 2 – Increase adaptive capacity with relevant development and natural resource sectors,
    - Adaptation Fund Outcome 5 – Increase ecosystem resilience in response to climate change and variability-induced stress,
    - Adaptation Fund Outcome 6 – Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted area.

This component is comprised of eight outputs[46]. Each output is the result of one investment. The investments are summarised below and further detail is presented in here.

## Output 3.1

***285ha of Mangroves restored in Kep and Angkaol Communes, Kep Province***

| | |
|---|---|
| Location | Prey Thom, Kep and Angkaol Communes, Kep |
| Issues | Coastal land is unprotected, salt water incursion damages water sources and livelihoods |
| Brief Activities | Planting and protecting mangrove areas |
| Adaptation Benefits | Land and water sources protected from salt water, increased fish population, Eco-tourism potential |
| Budget | $208,704 |

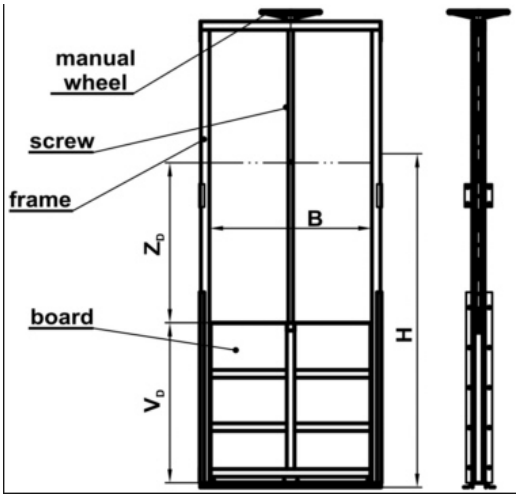



## Output 3.2

46 Note that two of the outputs contain two investments. This is where two separate investments are interdependent; one can't succeed without the other.

***Water gates repaired in 3 locations in Pong Teuk and Angkaol (a),***

| | |
|---|---|
| Location | Pong Teuk and Angkaol Communes, Kep |
| Issues | Water gates are broken leading to ineffective water storage |
| Brief Activities | Repairing the water gates with climate-resilient designs |
| Adaptation Benefits | Local people enhance their ability to store and manage water |
| Budget | $5,328 |




## Output 3.2b

***2 canals rehabilitated in Pong Teuk and Angkaol Communes, Kep Province***

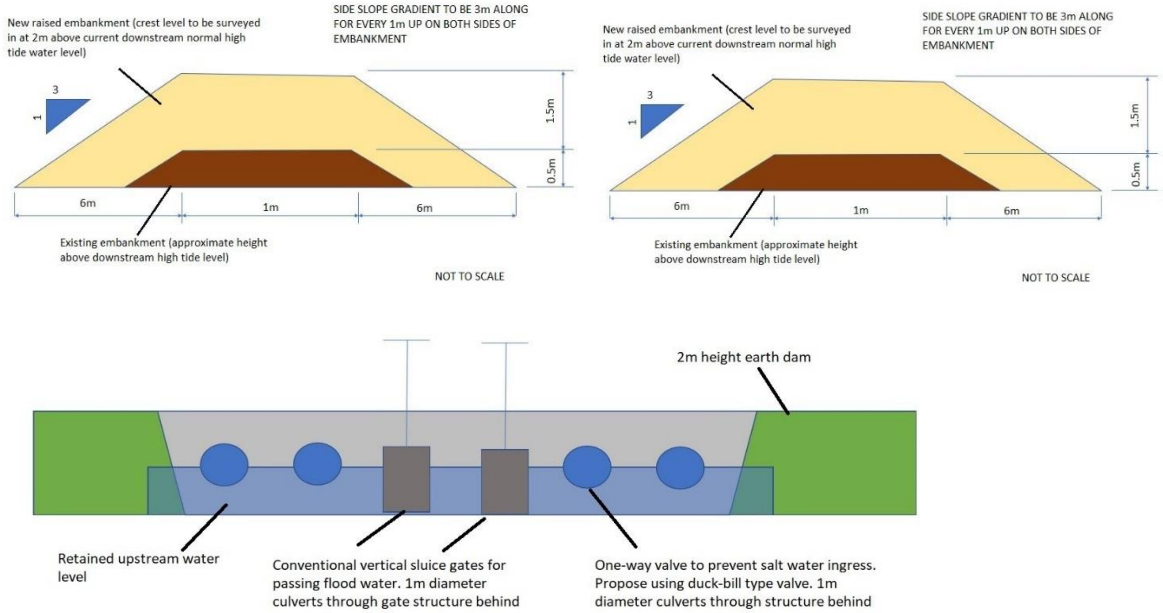
| | |
|---|---|
| Location | Pong Teuk and Angkaol Communes, Kep |
| Issues | Canals are overgrown, filled with waste, prone to erosion and unable to effective story and transport water |
| Brief Activities | Dredging the canals |
| Adaptation Benefits | More effective water storage and management |
| Budget | $76,050 |

## Output 3.3

***Prevention of salt water ingress through improved channels***

| | |
|---|---|
| Location | Pong Teuk and Angkaol Communes, Kep |

| | |
|---|---|
| Issues | Sea-level ride and salt water affects rice paddies and in-land water sources |
| Brief Activities | Fill the embankments and re-design the water gates |
| Adaptation Benefits | 3,500 people benefit from land and water sources that are protected from salt-water incursion and SLR |
| Budget | $246,000 |




## Output 3.4a

***O Thmar Reservoir rehabilitated to increase water storage capability Kep Province***

| | |
|---|---|
| Location | Pong Teuk Commune, Kep |
| Issues | O Thmar Reservoir is unable to effectively store and distribute water |
| Brief Activities | Repairing the water gates with climate-resilient designs, dredging and lining |
| Adaptation Benefits | All people living in Pong Teuk and Angkaol Communes benefit from increased water storage and distribution in the dry season |
| Budget | $660,040 |

## Output 3.4b

***Bank strengthening work at Roness Reservoir to provide additional water retention and safety***

| | |
|---|---|
| Location | Pong Teuk Commune, Kep |
| Issues | Roness Reservoir is unable to effectively store and distribute water, and its embankment is unsafe |
| Brief Activities | Reinforcing the embankment and detailed technical investigation |
| Adaptation Benefits | All people living in Pong Teuk and Angkaol Communes benefit from increased water storage and distribution in the dry season |
| Budget | $1,304,000 |

**Output 3.4c Coastal flood protection embankment in Kep and Angkoal constructed**

| | |
|---|---|
| Location | Kep and Angkaol Communes, Kep |
| Issues | Sea level rise and storm surges combine to cause flooding on the coastal road and surrounding area. Mangrove areas are not effectively demarcated |
| Brief Activities | Construct an approximately 6km embankment between the road and mangrove area for additional protection |
| Adaptation Benefits | People living in the immediate vicinity will be protected from storm surges and sea-level rise. Mangroves will also benefit from greater demarcation |
| Budget | $126,150 |

### Output 3.5

***Resilient Housing designs developed and demonstrations constructed (Both provinces)***

| | |
|---|---|
| Location | Kep and Prey Nob |
| Issues | Strong winds frequently damage houses – especially those of the poor |
| Brief Activities | Piloting designs and training local people on resilient construction techniques |
| Adaptation Benefits | People can adapt autonomously through improved house construction |
| Budget | 89,000 |

## Output 3.6

***Raised embankment and Watergate repair in Ou Ohkna Heng Commune, Prey Nob District, Prey Sihanouk Province***

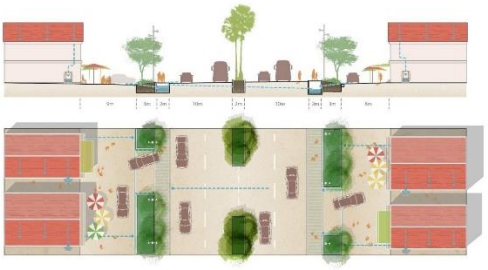
| | |
|---|---|
| Location | Ou Okhna Heng Commune, Prey Nob District |
| Issues | The existing sea-wall has sunk and provides inadequate protection |
| Brief Activities | Raising the embankment at key points and repairing two water gates |
| Adaptation Benefits | All people in 3 communes (Approx 20,000 people) benefit from protection from sea water, increased agricultural production and more access to fresh water |
| Budget | $266,100 |

## Output 3.7

***Drainage and Rainwater Harvesting installed at Veal Rinh Market, Prey Nob District, Prey Sihanouk Province***

| | |
|---|---|
| Location | Veal Rinh Commune, Prey Nob District |
| Issues | The market floods when it rains. Run off is polluted, causes local flooding |
| Brief Activities | Building a storage and draining system, and installing rainwater harvesting |

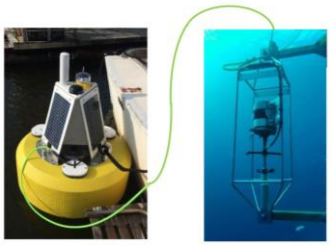
| | |
|---|---|
| Adaptation Benefits | The market doesn't flood and the downstream water quality is improved. Better water access and livelihoods |
| Budget | $712,905 |



## Output 3.8

***Tide gauge with early warning system broadcast capabilities installed in Ou Okhna Heng Commune, Prey Nob District, Prey Sihanouk Province***

| | |
|---|---|
| Location | Ou Okhna Heng and Teuk La'k Communes, Prey Nob District |
| Issues | Local government and people have inadequate access to weather information and EWS |
| Brief Activities | Install tide gauge and broadcast facilities |
| Adaptation Benefits | Local people are equipped with greater information and have more ability to protect their houses and property from severe climate conditions |
| Budget | $52,380 |



## Table 5

*Interventions, costs and beneficiaries of the proposed project*

| Concrete Interventions | | Target Commune | Estimated Cost (US$) and Cost-Effectiveness of Direct Beneficiaries (Area Within the Commune) | AF Environmental and Social Principle Triggered |
|---|---|---|---|---|
| **Adaptation to Main Climate Hazards** | **Investment (For More Detail, Please See Link)** | | | |
| Adaptation to strong winds | Output 3.5 - Resilient Housing designs developed and demonstrations constructed | All target communes | Total Cost $89,000. Total beneficiaries 9,720. Cost per beneficiary $9.12 | AF Principle 2,3,4,5,6,13 |
| | Output 3.8<br><br>Tide gauge with early warning system Ou Okhna Heng Commune, Prey Nob District | The tide guage will be located in Ou Okhna Heng Commune | Total cost $52,380. Total beneficiaries 30,000. Cost per beneficiary $1.75 | AF Principle 2, 3, 6, 12, |
| Adaptation to droughts | Output 3.2 Water gates repaired in 3 locations in Pong Teuk and Angkaol | 2 Communes in Kep Province; Pong Teuk and Angkaol | Total cost: $5328. Total beneficiaries – 19,553.<br><br>$76,050. | AF Principles 2, 3, 6, 12, 15 |
| | 2 canals rehabilitated in Pong Teuk and Angkaol Communes, Kep Province | 2 Communes in Kep Province; Pong Teuk and Angkaol | Total $81,378. 19553 beneficiaries, cost per beneficiary (a+b) $4.16 | |
| | Output 3.3. Prevention of salt water ingress through improved channels | | Total Cost: $246,000. Total beneficiaries – 3500. $70.29 per beneficiary | AF Principles 2, 5, 9, 10, 12, 15 |

| | | | | |
|---|---|---|---|---|
| | Output 3.4 O Thmar Reservoir rehabilitated to increase water storage capability Kep Province<br><br>3.4b<br>Bank strengthening work at Roness Reservoir to provide additional water retention and safety. | Located in Pong Teuk, benefitting Pong Teuk and Angkaol Communes | Total Cost: $660,040. Total beneficiaries – 14,060.<br><br>Total Cost: $1,304,000. Total beneficiaries 24,470<br><br>Cost per beneficiary = $80.26*<br><br>(*assumes that there will be a minimum of 24,470 beneficiaries between these two investments) | AF Principles; 2, 5, 6, 10, 12, 15 |
| Adaptation to Sea-level rise and salt water incursion | Output 3.1 285ha of Mangrove planted/restored in Kep | 4 Communes in Kep Province (Angkaol, Kep, Prey Thom and Ou Krassar) and 1 in Prey Nob (Prey Nob Commune | Total Cost $208,704. Total ha 285. Cost per ha $959. Total Beneficiaries 177,54 Beneficiaries. Cost Per beneficiary = $11.76 | AF Principles 2, 5, 9, 10 |
| | Output 3.6 Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province | The location is in Ou Okhna Heng Commune. Beneficiaries in Ou Oukhna Heng, Boeung Taprom, Prey Nob and Samrong Communes | Total Cost $266,100. Total Beneficiaries 20,000. Cost Per beneficiary - $13.31 | AF Principles 2, 3, 5, 9, 10, 12, |
| Adaptation to Floods | Output 3.7 – Drainage and Rainwater Harvesting installed at Veal Rinh Market, Preah Sihanouk Province | Veal Rinh Commune, with Potential secondary benefits to all communes in Prey Nob | Total Cost $712,905. Total Direct Beneficiaries; 4500, Cost per beneficiary $158.42. 55,776 Direct and Indirect beneficiaries. Cost per all beneficiaries $12.81 | AF Principles 1, 2, 6, 12 |

# B. ECONOMIC, SOCIAL AND ENVIRONMENTAL BENEFITS

According to the consultations undertaken in the development of this concept note and full proposal, people face serious economic challenges as a result of salt water incursion, inability to access water and flood and storm damage. The investments listed in Part II, Section A are designed to bring economic, as well as adaptation benefits. A more detailed analysis and quantification of economic benefits is provided below, in Part II Section C.

Meanwhile, a lack of protective infrastructure and high exposure to storms and coastal flooding means that people regularly lose assets and/or productive capabilities. Damage to houses is common in all 11 of the target communes, while damage to agricultural lands was also frequently highlighted by both local government officials and communities themselves. People often invest their minimal savings into home repairs and reconstruction after being damaged by storms.

The project will bring numerous social benefits. Activities implemented under Component 3 will specifically include women because communities themselves will be in charge of construction and maintenance. This means that instead of using external contractors, the project will hire communities where unskilled labour is required for construction. In this regard, the project can guarantee that 50% of those engaged in the project at the community level will be women. Activities under Output 3.7, which will undertake flood management and rainwater harvesting at Veal Rinh Market are specifically designed to benefit women. The consultations undertaken in the formulation of the proposal estimate that 90% of the vendors in the market are women. This activity will specifically support their adaptation to climate change and make a direct contribution to improving their livelihoods by reducing the number of days on which they are unable to earn.

The project will also bring substantial environmental benefits. By planting 285 hectares of mangrove, the project will provide environmental benefits over and above the adaptation benefits of the mangrove provides. Large, healthy mangrove areas have been shown to benefit fish and crab populations (Kep is famed for its crab fishing) and boost the growth of sea-grass on the near-shore area. By preventing salt water incursion, the mangroves will also support the protection of the land-side environment.

### Table 6

***Economic, Social and Environmental Benefits***

| Type of Benefit | Baseline | With/After Project |
|---|---|---|
| *Economic* | Tourism, which provides employment to over a quarter of Cambodia's workforce, is threatened by climate change | Areas with significant potential for tourism development will be protected, more resilient and have more robust ecosystems that are necessary to continue to support tourism development and thus greater levels of employment |
| | Households face damage and financial losses as a result of various climate change related hazards, primarily floods and storms | Households will not have to invest their savings in repairs to their homes |
| | People's land and productive capacity is damaged by sea-water and/or a lack of fresh water | Target areas will have access to year-round, water, are less likely to have to buy bottled water and increase their productive capacity<br><br>Flood defences, will contribute to reducing and eliminating loss and damage occurring because of |

| | | |
|---|---|---|
| | | climate change hazards |
| | Skill levels are low, and employment largely restricted to the agricultural sector | Using the people's process as a means to implement the project's investments will directly contribute to higher incomes and have the co-benefit of improving vocational skill levels, which will enable people to earn higher wages.<br><br>Improved protective infrastructure will have the co-benefit of protecting agricultural areas and other service infrastructure, which will also benefit livelihoods. |
| *Social* | Regular droughts, sea-water incursion, storm damage and floods due to climatic impacts cause, and make worse pre-existing drivers of vulnerability, such as disease, poverty and migration | Improved protective infrastructure will have the co-benefit of protecting agricultural areas and other service infrastructure, which will also benefit livelihoods. |
| | Poor quality housing and infrastructure in the target areas further drives vulnerability and create additional challenges such as a lack of safety, while facilitating the spread of disease. | Alignment with the commune/district investment plans and increased capacity for officials at those levels to plan for and manage climate resilient investments will ensure that infrastructure and settlements are more resilient in the long term. |
| | Increasing inequality in Cambodia, including in coastal areas shows that the poorest are not sharing in the proceeds of the country's rapid economic growth | The communities including the poor and vulnerable areas increase capacities and opportunities to gain income from eco-tourism. |
| *Environmental* | Severe environmental degradation has taken place throughout the coastal area of Cambodia – especially in areas where there has been investment in infrastructure and tourism | Interventions in mangrove prioritise the environment, while other investments made by the project aim to strengthen the ability of people to live symbiotically with their environment<br><br>The soft intervention of improving solid waste and waste water management is designed to rectify a local environmental problem and prevent further damage to the environment from a lack of solid waste management and waste water issues. |
| | The combined effects of sea-level rise, coastal flooding and on-shore development issues (especially disposal of wastewater) is causing coastal erosion | Better onshore management of water will contribute to reducing coastal erosion effects |

# C. COST EFFECTIVENESS

***Maximising concrete over soft***

The project will maximise the amount of investment in concrete interventions over soft ones. 86% of the project's implementation budget will be directed to the investments proposed under Component 3. Where the project makes investments in soft activities, these will be either a) directly supportive of the concrete investments (i.e. training in installation or operation and maintenance), or b) investments to strengthen commune/district level planning – which will help to sustain and replicate the benefits of the project, and make more effective use of national finance in the future. This approach maximises the adaptation benefits per dollar invested; a greater soft component focus would risk not translating into adaptation benefits, while a greater concrete focus may risk not building sufficient capacity to sustain or replicate them.

***Choosing Cost effective investments***

A cost effectiveness and basic cost-benefit analysis has been conducted in the preparation of this proposal, and as a means to select investments that bring economic benefits in addition to their adaptation benefits. The cost per beneficiary figures are presented in Table 5. A more detailed cost effectiveness analysis is presented below in Table 7.

## Table 7

*Cost Effectiveness and Economic Benefits*

| Investment (Output) | No of Beneficiaries | Cost Per Beneficiary | Economic Benefit | Logic |
|---|---|---|---|---|
| Output 3.1 | 17,754 | $11.65 | Increased rice yield and greater fish production: $96 per household per year according to the conservative scenario or $400 per household per year according to the more ambitious scenario | Currently most agricultural land yields 2.5 tonnes per hectare and achieves US$245 per tonne. Conservative scenario assumes 1142 hectares of land will be protected by the mangrove investment and there will be US$600 benefit in the fishery sector per hectare of additional mangrove[47] |
| Output 3.2 | 19,553 (of which 9,526 are paddy farmers) | $0.27 (a)<br><br>$3.89 (b) | Increased yield will generate $245 per HH per year over the business as usual scenario. The total value of the investment is $480,200, based purely on increased agricultural yields | Only calculates based on the agricultural families (no economic value assigned to water availability for non-agricultural families) |
| Output 3.3 | 3,500 | $70.29 | Increased yield will generate $245 per HH per year over the business as usual scenario. The total value of the investment is $176,400, based purely on increased agricultural yields | Only calculates based on the agricultural families (no economic value assigned to water availability for non-agricultural families) |

47 Statistics provided by the Fishery Administration, Kep Province

| | | | | |
|---|---|---|---|---|
| Output 3.4 | 14,060 (from water), 600 households benefitting from increased production | $46.94 | Those households depending on the reservoir for irrigation will gain $735 per household relative to a business as usual scenario. | Assumes that the 600ha of agricultural land will benefit from increasing from 1 to 2 rice crops per year at the same yield (2.5 tonnes per hectare). The BAU is that 1 crop per year will decline to 2 tonnes per hectare. The cost of rice is assumed to be constant. |
| Output 3.5 | 9720 | $9.16 | Each household who benefit from this intervention will save on average $1,100 each over the next five years from avoiding repairs due to damage | Assumes that there will be a steady increase in the number of homes damaged and destroyed. Assumes that a damaged home costs on average $500 to repair and a destroyed home costs $1,500 to re-build (a conservative estimate) |
| Output 3.6 | 20,000 | $13.31 | Increased yield will generate $245 per HH per year over the business as usual scenario. The total value of the investment will be $1,008,230 once complete | Assumes that 4115ha will benefit. Only rice production is calculated. Other adaptation benefits are not estimated. |
| Output 3.7 | 4500 (Direct) | $173 | Avoided loss of $300pp per yr. Total benefit = $1,350,000<br><br>Payback period = 210 days | The analysis conducted by the formulation team found that about 9% of the market's annual income is lost to floods.<br><br>The investment will ensure that the market is operational 365 days per year, allowing people to make $300 per person more, and bringing a total benefit of $1,350,000 |

***Cost effective implementation***

UN-Habitat will ensure that the unskilled labour required to construct the investments described in Part II Section A will use the People's Process. This implementation approach has been shown to reduce implementation costs by 20-30 per cent over the life of the project by using community labour instead of external contractors, and by procuring local materials where they are available. The alternative implementation model to the People's Process is to use external contractors, which, as highlighted above, is more expensive and less likely to foster local ownership.

Table 7, above, demonstrates the cost-effectiveness logic of the selection of investments to be implemented under the project. This shows that the benefits provided, especially in terms of improved livelihood was a key consideration in the selection of investments that would be carried forward to the proposal.

The procurement of all materials required according to the investments in Outputs 3.1 to 3.8 of the project will be conducted according to Ministry of Economy and Finance guidelines to ensure that equipment is procured transparently and at the lowest possible cost. Re-evaluating the actions proposed under this project through a comprehensive vulnerability assessment and action planning process also ensures that investments are the most appropriate, with the greatest adaptation benefits, which also ensures their cost-effectiveness.

**Table 8**

*Brief cost and alternatives analysis of proposed adaptation options.*

| Proposed Action | Cost Effectiveness Criteria | | Alternative Action | Cost Effectiveness Criteria | |
|---|---|---|---|---|---|
| 3.1 285ha of Mangroves restored in Kep City and Angkaol Communes, Kep Province | Future cost of climate change | ✓ | Building sea-walls | 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 |
| 3.2a Water gates repaired in 3 locations in Pong Teuk and Angkaol<br><br>3.2b 2 canals rehabilitated in Pong Teuk and Angkaol Communes, Kep Province | Future cost of climate change | ✓ | New water treatment plant | 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 | ✓ |
| 3.3 Prevention of salt water ingress through improved channels | Future cost of climate change | ✓ | Building a sea wall | 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 |
| 3.4a O Thmar Reservoir rehabilitated to increase water storage capability Kep Province<br><br>3.4b Bank strengthening work at Roness Reservoir to provide additional water retention and safety.<br><br>3.4c Department of Water Resources and | Future cost of climate change | ✓ | New reservoir | 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 | ✗ |

| | | | | | |
|---|---|---|---|---|---|
| Meteorology - Kep Province | | | | | |
| 3.5 Resilient Housing designs developed and demonstrations constructed (both provinces | Future cost of climate change | ✓ | Relocation | 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 | Greater risk |
| 3.6 Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province | Future cost of climate change | ✓ | Building sea walls | 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 |
| 3.7 Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province | Future cost of climate change | ✓ | Relocating the market/constructing a new market | 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 |
| 3.8 Tide gauge with early warning system broadcast capabilities installed Tide Gauge in Ou Okhna Heng Commune, Prey Nob District | Future cost of climate change | ✓ | Taking no Action | 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 | Greater risk |

# D. CONSISTENCY WITH NATIONAL OR SUB-NATIONAL STRATEGIES

The project has been designed to align with national and sub-national development policies, strategies and plans on development, climate change and disaster resilience and decentralization reform.

As Goal 13 of the Sustainable Development Goals and Article 1-5 of the Paris Agreement on Climate Change[48] indicate, global society is committed to adapt to climate change and reduce its impact. In support of this aspiration, the Royal Government of Cambodia also adopted several policies and strategies to reduce the impact of climate change by enhancing the adaptive capacity and resilience of climate change, such as the Cambodia Climate Change Strategic Plan (CCCSP) (2014-2023), the Climate Change Action Plan (CCAP), and the Nationally Determined Contribution (NDC). To align with these global and national climate goals and plans, the proposed project aims to enhance climate change adaptation and resilience of the most vulnerable coastal human settlements of Cambodia through concrete adaptation actions, particularly in areas where eco-tourism has the potential to sustain such interventions.

The Rectangular Strategy for Growth, Employment, Equity and Efficiency: Building the Foundation Toward Realizing the Cambodia Vision 2050. The Rectangular Strategy outlines prioritised policies in its Rectangular Strategy Phase IV (See Figure 11). This strategy puts acceleration of governance reform at its core, along with contributing elements: i) Human Resource Development, ii) Private Sector and Job Development, iii) Inclusive and Sustainable Development, and iv) Economic Diversification.

The Cambodian government has also set environmental sustainability as one of their prioritized actions. Actions on environmental sustainability include reducing the impact of climate change by enhancing the adaptive capacity and resilience to climate change, particularly through the implementing the Cambodia Climate Change Strategic Plan (CCCSP) (2014-2023).

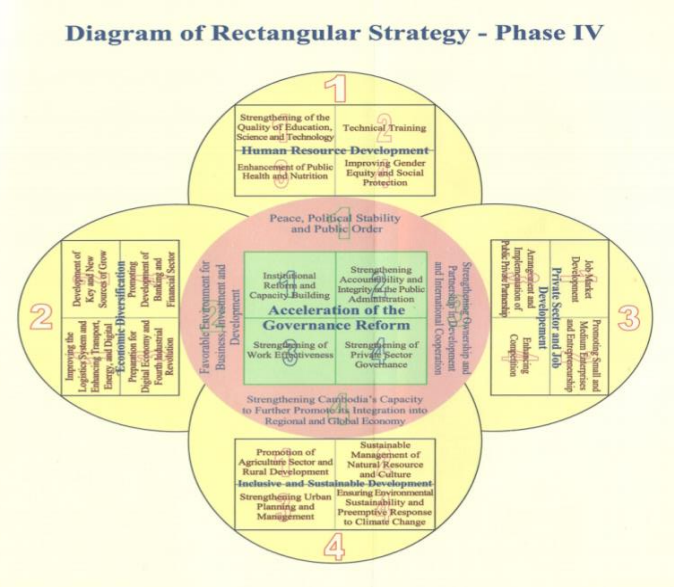



*Figure 11 - The Rectangular Strategy*

The CCCSP details Cambodia's strategic response to climate change, and forms the basis of the Nationally Determined Contribution. It will be implemented, in the initial stage, through the Climate Change Action Plan (CCAP). The CCCSP's vision is to develop "towards a green, low-carbon, climate-resilient, equitable, sustainable and knowledge-based society". To achieve its vision, Royal Government of Cambodia (RGC) sets eight strategic objectives. Among the eight strategic objectives, this project aligns with strategic objectives (SO) 2, 3, 5, and 7. Strategic Objective 2 aims to reduce sectoral, regional, gender vulnerability and health risks to climate change impacts through existing and new vulnerability and risk assessments (strategy a). It also aims to improve coastal zones and protected areas (strategy g). Strategic Objective 3 pursues climate resilience of specific locations including protected areas. Encouraging eco-tourism is highlighted as one of the most cost-effective approaches for addressing climate change (strategy b). Strategic Objective 5 aims to improve capacities, knowledge and awareness on climate change

48 Cambodia entered the Paris Agreement on Climate Change into force on 18th of March 2017. See. http://unfccc.int/paris_agreement/items/9444.php

responses through trainings, while Strategic Objective 7 targets strength of "institutions and coordination frameworks for national climate change responses" through mainstreaming climate change into national and sub-national development plans (strategy a).

The overarching CCAP was finalized in 2016 to guide the initial phase of implementation of the CCCSP, with 17 initial actions identified by the Ministry of Environment. Action 2 of the CCAP is to implement national and sectoral climate change vulnerable assessment. Testing specific management options to handle climate change is also included in Action 3. Action 11 aims to promote and improve the adaptive capacity of communities to respond to climate change. Finally, Action 13 is capacity building of national institutions coordinating the implementation of climate change response. These actions (2, 3, 11 and 13) are addressed by this project.

There are 15 sector CCAPs as of 2018. In many cases, the first phases of these expire in 2018 and updates are currently being developed. However, this project is in line with the Climate Change Action Plan for Water Resources and Meteorology, for example, which prioritises, *inter alia,* reservoirs, dams and weirs, and river bank and coastal areas[49]. All the sector CCAPs can be found here.

The Nationally Determined Contribution (NDC) refers back to the CCCSP as the means of implementation of Cambodia's goals. The NDC identifies that national vulnerability to climate change is caused not only by geography and high reliance on agriculture sector but also by lack of financial, technical, and human capacities. Infrastructure and coastal zones are recognized as one of most vulnerable sectors by climate change. The NDC also raises the profile of increased adaptive capacity to address climate change as a priority.[50] Cambodia has therefore selected a number of 'priority actions', giving prominence to ones with climate change impact mitigation co-benefits. The project address the following priorities through its components as follows:

**Table 9**

***Aligning NDC Priorities with Proposed Project Components***

| NDC – Priority Actions | Project Component/Output |
|---|---|
| Promoting and improving the adaptive capacity of communities, especially through community-based adaptation actions. | Component 1, Outputs 1.1, 1.2 and 1.3 and Output 3.5 will lead to strengthened community capacity.<br><br>All investments implemented by the project under Component 3 will be locally-driven. |
| Restoring the natural ecology system to respond to climate change. | Component 3, Output 3.1 will restore 285 hectares of mangrove along Kep's coastline that will strengthen the ability of the coastal ecological system to respond to climate change, as well as provide co-benefits such as defending agricultural land near the coast and increasing fish and crab populations. |
| Implementing management measures for protected areas to adapt to climate change. | Component 2, Output 2.3 will strengthen the institutional capacity to manage the investments, including the green investment in mangrove described above and in Output 3.1. |
| Strengthening early warning systems and climate information dissemination. | Component 3, Output 3.8, Tide gauge with early warning system broadcast capabilities to be installed will contribute towards enhanced early warning capabilities. |
| Developing and rehabilitating the flood protection dykes for agricultural and urban development. | Component 3, Outputs 3.3 and 3.6 will improve embankments that will benefit a combined 23,500 people. |

[49] MoWRAM (2014) Climate Change Action Plan for Water Resources and Meteorology, pp3-4

*50 Cambodia's NDC to the UNFCCC, p.4*

In addition to its comprehensive development and climate change policy framework, the Cambodian government has placed significant emphasis on decentralization and deconcentration (D&D) reform, which promotes transformation of responsibilities and functions of government from national level to sub-national level. In Cambodia's NSDP, the government aims at the "[p]rovision of power and duties to manage and perform all respective functions in line with the principles of local autonomy and local accountability to the maximum level". In accordance with this focus on D&D, the project will be executed through an Agreement of Cooperation with the NCSD, who will work with the Provincial Halls of Kep and Preah Sihanouk Provinces. Further details are provided in Part III, Section A.

In terms of plans at the sub-national level, 6 cities, including Kep and Sihanoukville, are starting to work with the Global Green Growth Institute (GGGI) to develop green city strategic plans, under the framework of the emerging national strategic plan for green secondary cities. The project will coordinate with GGGI to ensure the alignment of this initiative with the proposed project.

The table below summarises how the project aligns with policies, strategies and plans of the Cambodian government. The main objective of the project is to enhance climate change adaptation and resilience of the most vulnerable coastal human settlements of Cambodia through concrete adaptation actions, particularly in areas where eco-tourism has the potential to sustain such interventions.

**Table 10**

*Project alignment with government priorities*

| | NSDP (2014-2018) | CCCSP (2014-2023) | NDC | CCAP | THE ORGANIC LAW | IP3-III (2018-2020) | The National Strategic Plan For Green Secondary Cities |
|---|---|---|---|---|---|---|---|
| Community-scale knowledge and capacity enhanced to sustain the adaptation benefits of the project's investments | | X | X | X | | | X |
| Government planning and technical capacity enhanced to sustain and enhance the project's adaptation benefits | X | | X | | X | X | |
| Resilience built through investment in small-scale protective and basic service infrastructure and natural assets | X | | X | X | | | |

# E. COMPLIANCE WITH RELEVANT NATIONAL TECHNICAL STANDARDS AND THE ENVIRONMENTAL AND SOCIAL POLICY OF THE ADAPTATION FUND

## Table 11

***Compliance with National Technical Standards***

| Expected Concrete Output/Intervention | Relevant Rules, Regulations, Standards and Procedures | Compliance, Procedure and Authorizing Offices | AF ESP Principles at Risk, if National Technical Standards are Not Applied. | Mitigation of Risk |
|---|---|---|---|---|
| Output 1.1<br>Community capacity built to collect and manage solid waste | Sub-decree on Urban Solid Waste Management (2015)<br><br>Sub-decree on Plastics bags Management (2017) | As there is no national technical standard defining capacity building at the community level | Principle 2, 3, and 5 | All principles will be taken into account when developing vulnerability assessment and action planning |
| Output 1.2.<br>Communities in target areas have been trained on resilient house construction techniques | National housing policy (2014)<br><br>Anukret # 86 on Construction Permit | The Provincial Halls of Kep ad Preah Sihanouk Provinces will work with the respective Provincial Departments of Provincial and Municipal Administration | As above | |
| Output 1.3.<br>Communities have been organised to manage, monitor and maintain the infrastructure investments under Component | The Organic Law (2001)<br><br>Commune planning and investment project guidelines for infrastructure projects<br><br>Guidelines for Commune Development Plans and Investment Plans (NCDD) | The Provincial Halls of each province will be responsible for overseeing alignment with commune development planning. Both the Provincial Halls and the National Committee for Sub-National Democratic Development are under the Ministry of Interior | No risk | |

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| Output 2.1.<br>Government officers at the provincial and districts/cities trained to plan effectively for sustaining and enhancing the project's adaptation benefits | Guidelines for Integrating Climate Change into Commune Development Planning (MoE/CCCA) | MoE will take a lead to ensure that the guidelines are followed | No Risk | |
| Output 2.2<br>Government officers at the provincial and district provided with comprehensive technical training to manage, operate and maintain the infrastructure | Guidelines on provincial/district/commune project operations<br><br>Other relevant guidelines are identified in Outputs 3.1 to 3.8, below | MoE and the Provincial Halls will work together to ensure compliance | No Risk | |
| Output 2.3. Institutional systems strengthened to monitor adaptation investments and replicate their benefits | Commune planning and investment project guidelines for infrastructure projects<br>Guidelines for Integrating Climate Change into Commune Development Planning (MoE/CCCA)<br><br>Close alignment with IP3-III | MoE and the Provincial Halls will work together to ensure compliance | No Risk | |
| Output 2.4 Knowledge from the project implementation is captured and disseminated to local and national stakeholders, focusing on sustainable adaptation actions and policy enhancement. | There are no relevant laws or guidelines or knowledge management, but at the national level, knowledge management aims to influence the future development or revision of the Cambodia Climate Change Strategy and the NDC | NCSD Will ensure compliance, as it works with MoE on the development of climate policy. | No risk | |
| Output 3.1.<br>285ha of Mangroves restored in Kep City and Angkaol Communes, Kep Province | Law on environmental protection and natural resources management (1996)<br><br>National Strategic Plan on Green Development 2013-2030 | For all outputs 3.1 – 3.8, the Provincial Halls of the two respective provinces will be responsible for ensuring the construction/maintenance is implemented in accordance with national laws and technical standards. The respective | | AF Principles 2, 5, 9, 10 |

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| | | provincial departments that will engage in the investments are listed below - Kep Province | |
| Output 3.2<br>Water gates repaired in 3 locations in Pong Teuk and Angkaol<br><br>2 canals rehabilitated in Pong Teuk and Angkaol Communes, Kep Province | Law on Water Resource Management Article 5-11 (also applies to outputs 3.2b, 3.3, 3.4, 3.6) | Department of Water Resources and Meteorology - Kep Province | AF Principles<br>2, 3, 6, 12, 15 |
| Output 3.3<br>Prevention of salt water ingress through improved channels | Technical Guidelines for Commune/Sangkat (2009). Fund's projects which consist of 3 parts (Part 1: Assessment and designs; Part 2: Technical designed standard, construction, equipment /materials and works; Part 3: Monitoring and Evaluation) (2009)<br><br>Law on Water Resource Management Article 5-11 | Department of Water Resources and Meteorology - Kep Province | AF Principles<br>2, 3, 6, 12, 15 |
| Output 3.4<br>O Thmar Reservoir rehabilitated to increase water storage capability Kep Province<br><br>Output 3.4b<br>Bank strengthening work at Roness Reservoir to provide additional water retention and safety. | Law on Water Resource Management Article 5-11<br><br>Drinking Water Quality Standards (Ministry of Industry, Mines and Energy) | Department of Water Resources and Meteorology - Kep Province | AF Principles; 2, 5, 6, 10, 12, 15 |

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|---|---|---|---|---|
| Output 3.4C<br>Coastal flood protection embankment in Kep and Angkoal constructed | Law on environmental protection and natural resources management (1996)<br><br>National Strategic Plan on Green Development 2013-2030 | Department of Water Resources and Meteorology - Kep Province | | |
| Output 3.5<br>Resilient Housing designs developed and demonstrations constructed (both provinces | National Housing Policy (to provide general people, especially low and medium income households and vulnerable groups with access to decent housing or improving a house to ensure the right to adequate housing) | Department of Land Management, Urban Planning and Construction - Preah Sihanouk Province and Kep Province | | AF Principle 2,3,4,5,6,13 |
| Output 3.6<br>Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province | Law on Water Resource Management Article 5-11 | Department of Water Resources and Meteorology - Preah Sihanouk Province | | AF Principles 2, 3, 5, 9, 10, 12, |
| Output 3.7<br>Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province | Anukret # 86 on Construction Permit | Department of Land Management, Urban Planning and Construction - Preah Sihanouk Province | | AF Principles 1, 2, 6, 12, |
| Output 3.8<br>Tide gauge with early warning system broadcast capabilities installed (Tide Gauge in Ou Okhna Heng Commune, Prey Nob District | Not relevant | Department of Water Resources and Meteorology – Preah Sihanouk Province | No risk | AF Principle 2, 3, 6, 12, |

Ensuring effective and successful compliance with National Technical Standards is a vital component of ensuring effective implementation of environmental and social safeguard measures. National technical standards do not give the project all the tools to comply with the Adaptation Fund's Environmental and Social Policy, or UN-Habitat's Environmental and Social Safeguard system. As such, additional safeguarding measures are outlined in Section K, below. These safeguarding measures, outlined in Section K, will complement the national technical standards, where they exist, and augment them where they do not.

Please note that the hierarchy of laws from national to local level in Cambodia is as follows: The Constitution of the Kingdom of Cambodia (the "Constitution") is the supreme law in Cambodia. All laws, legal documents and state body decisions must adhere to it. Laws are adopted by the National Assembly, the Senate and promulgated by the King. A sub-decree ('Anukret') is used to clarify provisions within existing laws, set out the functions and duties of Royal Government of Cambodia bodies and appoint senior government officials. It is drafted by relevant ministries, approved by the Council of Ministers and endorsed by the Prime Minister. It is the most common governmental decision and is applicable in the above table. Ministerial Orders or Proclamations (Prakas) are executive regulations made at the ministerial level to implement and clarify specific provisions within higher-level legislative documents and give instructions. Their scope is limited to the focus and subject matter of the ministry that enacted them.

At the sub-national level, local Regulations or by-laws ('Decas') are approved by Commune Councils at sub-national level. They have force of law within the territorial authority of the Commune Councils, thereby cannot conflict with other regulations at the national level.

# F. DUPLICATION WITH OTHER FUNDING SOURCES

The sites selected for this project were chosen because of their high vulnerability and inability to adapt to climate change, as well as because the Royal Government of Cambodia has identified the coastal zone as a priority area. However, the target sites are also characterised by minimal other work by development partners in climate change (other donor initiatives were discussed during national and local consultations and are summarised in Part II Section H, below).

Nevertheless, projects have been identified through the consultation mission and through institutional knowledge of UN-Habitat, thanks to its long history of operations in Cambodia. Table 12 below summarises other relevant projects that are either ongoing, recently completed, or about to start in Cambodia. Historical projects are not included.

**Table 12**

*Relevant Projects/Programmes in the Target Area*

| Relevant Projects/ Programme | Lessons Learned | Complimentary Potential | Project Timeline and Budget |
|---|---|---|---|
| Vulnerability Assessment and Adaptation Programme for Climate Change in the Coastal Zone of Cambodia Considering Livelihood Improvement and Ecosystems, implemented by UNEP, executed by Ministry of Environment, funded by GEF-LDCF. | There is a feeling from a number of stakeholders that this VA is insufficient for planning of local investments for adaptation. | The current project has utilised findings of the vulnerability assessment carried out by the UNEP project in Prey Nob district (this is the only overlapping target district) in its formulation | $1.6 million, 2012-2015 |

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| Building climate resilience of urban systems through Ecosystem-based Adaptation (EbA) in the Asia-Pacific region, implemented by UNEP, executed by Ministry of Environment, funded by LDCF. | The UNEP EbA project has not yet started, and will likely begin implementation sometime in 2018. It is proposed to keep a 'green/brown complementarity' between these two projects. | UN-Habitat is an implementing partner on the UNEP project, which enables it to ensure complementarily potential. | To begin in 2018. $1.5 million (Cambodia component). |
| "Strengthening Climate Information and Early Warning Systems to Support Climate-Resilient Development in Cambodia", implemented by UNDP, executed by Ministry of Water Resources and Meteorology, funded by GEF-LDCF. | The UNDP project does not work in the same target areas as this project. The UN-Habitat concept note formulation mission met UNDP to discuss this project (section H). | While MoWRAM is the main stakeholder at the national level the project works with NCDD at the national level. NCDD and MoWRAM will sit on this project's steering committee | $4.9 million, 2014-2017. |
| Reducing the Vulnerability of Cambodian Rural Livelihoods through Enhanced sub-national Climate Change Planning and Execution of Priority Actions, implemented by UNDP, executed by Ministry of Environment and Ministry of Planning, funded by GEF-LDC | As above. | The project works with NCDD at the national level. NCDD will sit on this project's steering committee | $4.5 million, 2017-2019. |
| Pilot Programme for Climate Resilience (PPCR), Implemented and funded by ADB, executed by Ministries of Environment, Rural Development and Planning. | The implementation/infrastructure component of PPCR doesn't overlap target areas with the proposed project. | UN-Habitat is a partner in a small component of PPCR, so is well placed to coordinate lessons learned at the national level. | $85 million, 2009-2019. |
| Cambodia Climate Change Alliance, implemented by UNDP, executed by Ministry of Environment and funded by the EU, SIDA and DANIDA.<br><br>Green Secondary City Planning, implemented by GGGI. | The UN-Habitat concept note formulation mission met with the CCCA programme and agreed full information sharing (see Section H, below).<br><br>This project will be implemented in Kep and Sihanoukville. GGGI will be a non-resource partner in this project, and will also take an observer position on the board, to ensure coordination. | The proposed project will invite a representative of the CCCA programme to be on the management board, as CCCA is the largest project that supports NSCD in its coordination of all climate change related projects in Cambodia.<br><br>The actions taken in this project will be shared with GGGI, who will incorporate their lessons learned in the overall city plans for Kep and Sihanoukville. | $>20 million, 2010-2019<br><br>Unknown, 2015-2019 |
| Fishery Conservation and Mangrove Protection in Preah | IUCN is currently working with MoE to establish a protected | IUCN partners with the Ministry of Environment | 2016 to |

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|---|---|---|---|
| Sihanouk and Kep Provinces, implemented by the International Union for the Conservation of Nature (IUCN). | karst landscape in Kampot Province and its first marine protected area around the Koh Rong Archipelago. | in May 2017, through a memorandum of understanding, providing complementarity potential. | |
| Partnerships for Environmental Management in the Seas of Southeast Asia, an intergovernmental organization operating in East Asia to foster and sustain healthy and resilient oceans, coasts, communities and economies across the region. | The activities have focused on a different area of Preah Sihanouk city than this project, as well as water use and supply management in Stung Hav District, which neighbours the target district of this project. PEMSEA has also established protection and management of 1,060 hectares of mangrove areas, including in Prey Nob District. | UN-Habitat has worked with PEMSEA previously, including during the Sihanoukville climate change vulnerability assessment work undertaken in 2011, and has good relationships with the organisation and its work. | 2006 to ongoing |
| Mangrove planting in Fishery Communities – implemented by the Fisheries Action Coalition Team (FACT). | FACT is implementing small-scale mangrove works in Prey Nob district. | The work is small scale and limited to mangrove, however, FACT has lengthy experience which the project can draw upon. | 2016 to Ongoing |
| Marine Protected Area related activities on Koh Rong island (Implemented by a coalition of NGOs, including Fauna and Flora International, CARE, SONGSA Foundation and IUCN. | The Marine Protected Area was established by Government Declaration No. 364 dated 16 June 2016. | The experience of implementing these projects will inform activities implemented in Koh Rong. However, this project does not directly work on strengthening the marine protected area around Koh Rong, and therefore there is no direct overlap. | 2016 to Ongoing |
| Small scale NGO Actions in the Tumnup Rolok area. | Three small NGOs: Peur un Sourire d'Enfant (PSE), Operation Enfant du Cambodia (OEC) and M'lob Tapang have small scale education programmes in the area. | These projects are small scale and primarily relate to education, thus no direct linkage exists. | Ongoing |

# G. LEARNING AND KNOWLEDGE MANAGEMENT

Components 1&2 of the project address knowledge management and sustainability. Activities under this component are designed to increase community and local government capabilities to manage solid waste, resilient housing (at the community scale) and planning and maintenance capacity at the institutional level.

The participatory approach to implementation will promote building knowledge at the local level, including on planning (at local government level) and on technical/vocational skills for constructing and maintaining small-scale resilient infrastructure (both at local government and community level). There will be direct and ongoing sharing of lessons from the project implementation sites, while the project will also use a participatory monitoring process,

which will enable the beneficiary communities under Component 3 to work directly with the project's monitoring and evaluation officer, to highlight issues in delivery and to strengthen adaptation benefits, including in replication and sustaining the project's gains.

At the national level, other vulnerable districts and communes will be able to derive lessons learned from the project. Information will be consolidated in reports and the project investment will support the development or refinement of tools and guidelines will be for developing resilient infrastructure[51]. The project will be executed through the Ministry of Environment/National Committee for Sustainable Development and the two Provincial Halls, however, this structure will be supported by forging links with other relevant government bodies, particularly the NCDD at the national level and the Provincial Departments of Water Resources and Meteorology and Land Management, Urban Planning and Construction in both provinces.

As part of the sustainability/exit strategy, the project will develop participatory monitoring processes, which will trigger institutional learning processes, participation, knowledge exchange and replication and scale-up of good practices.

UN-Habitat is part of a number of international dissemination mechanisms. The Knowledge Centre on Cities and Climate Change (in short: K4C) provides a knowledge management platform for Climate Change and Human Settlements interventions. It is proposed to use this platform (as well as the UN-Habitat website) to disseminate the lessons learned from this project. UN-Habitat will also work to integrate knowledge generated from the project with the knowledge management component of the CCCA programme, and through the 'camclimate' website[52]. The agency is also coordinating the UN System representation on human settlements at the Conference of the Parties (CoPs).

To ensure lessons and experiences of the project can reach target audiences at the local, national and international levels, a communication plan will be established in the inception phase of the project. This will create a larger vision of which stakeholders the project will reach and how and through which channel(s) to reach them. For example, local people can be effectively reached through leaflets and local radio, which is popular in Cambodia, while social media can reach more broadly citizens all over Cambodia, in addition to printed media (articles in national and local newspapers), non-printed medias (television, national radio). The use of social media would be particularly relevant to reach the youth population (aged 15-24), which represents 20.6% of the total population of Cambodia.[53]

## Table 13

***Learning and knowledge management***

| Expected Concrete Outputs | Learning Objectives (Lo) & Indicators (I) | Knowledge Products |
|---|---|---|
| **Output 1.1.**<br>Community capacity built to collect and manage solid waste<br><br>**Output 1.2.**<br>Communities in target areas have been trained on resilient house construction techniques<br><br>**Output 1.3.** | LO – Community members trained to have the knowledge on organising community scale solid waste collection, resilient house construction and on the organisation | Community level training materials |

[51] See for example the Climate Resilient Irrigation Guidance Paper, 2013 - http://webcache.googleusercontent.com/search?q=cache:WOyCVifS69IJ:www.unepdhi.org/-/media/microsite_unepdhi/publications/documents/unep_dhi/carp-resilient%2520irrigation-final%2520ud.pdf%3Fla%3Den+&cd=1&hl=en&ct=clnk&gl=th

*52 http://www.camclimate.org.kh*

*53http://cambodia.unfpa.org/sites/default/files/pub-pdf/Flyer_Cambodia_Youth_Factsheet_final_draft_%28approved%29.pdf*

| | | |
|---|---|---|
| Communities have been organised to manage, monitor and maintain the infrastructure investments under Component 3 | required to manage the assets constructed under the outputs of Component 3.<br><br>i Number of community level management committees/structures established and no. of community members trained | |
| **Output 2.1.**<br>Government officers at the provincial and districts/cities trained to plan effectively for sustaining and enhancing the project's adaptation benefits<br><br>**Output 2.2.**<br>Government officers at the provincial and district provided with comprehensive technical training to manage, operate and maintain the infrastructure<br><br>**Output 2.3.**<br>Institutional systems strengthened to monitor adaptation investments and replicate their benefits<br><br>**Output 2.4**<br>Knowledge from the project implementation is captured and disseminated to local and national stakeholders, focusing on sustainable adaptation actions and policy enhancement | LO – provincial governments, commune officials and communities themselves gain knowledge of how to plan for, construct, manage and maintain infrastructure, resilient houses and natural assets that will make them more resilient to climate change<br>i – Number of officials trained | A set of guidelines produced that covers step-by-step the process of designing, planning, monitoring and managing small scale infrastructure and protective natural assets for resilience.<br>Training materials under each output (books, slides etc). |
| **Output 3.1.**<br>285ha of Mangroves restored in Kep City and Angkaol Communes, Kep Province<br><br>**Output 3.2**<br>(a) Water gates repaired in 3 locations in Pong Teuk and Angkaol<br><br>(b) 2 canals rehabilitated in Pong Teuk and Angkaol Communes, Kep Province<br><br>**Output 3.3**<br>Prevention of salt water ingress through improved channels<br><br>**Output 3.4**<br>(a) O Thmar Reservoir rehabilitated to increase water storage capability Kep Province<br><br>(b) Bank strengthening work at Roness Reservoir to provide additional water retention and safety.<br><br>(c) Coastal flood protection embankment in Kep and Angkaol constructed<br>~~(b)~~ | Lo – Provincial and commune officials and communities will have enhanced knowledge of operating infrastructure and protective natural and social assets to enhance resilience.<br><br>i – Number and types of infrastructure constructed and protective natural/social assets built/rehabilitated. | Documentation of good practices, effective designs and lessons learned. |

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| **Output 3.5**<br>Resilient Housing designs developed and demonstrations constructed (both provinces)<br><br>**Output 3.6**<br>Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province.<br><br>**Output 3.7**<br>Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province<br><br>**Output 3.8**<br>Tide gauge with early warning system broadcast capabilities installed.Tide Gauge in Ou Okhna Heng Commune, Prey Nob District. | | |

# H. CONSULTATIVE PROCESS

In development of this project, UN-Habitat undertook several joint missions by the country office representatives of the Regional Office for Asia and the Pacific to consult national and local stakeholders from 8th to 12th of May 3rd to 7th July and 11th to 16th of December 2017. UN-Habitat also mobilised seven engineers and associated experts from Arcadis, under the auspices of the Shelter Programme, to undertake further technical design work on the investments outlined in Component 3 between 15th and 26th of October, 2018.

The meetings at the national level between **8th to 12th of May 2017** focused primarily on alignment with national priorities (as identified in Section D), coordination (and avoiding duplication) with other development partner initiatives (outlined in Section F), the implementation modality and the target districts and communes. There was also discussion of the climate hazards and underlying vulnerabilities, and the types of vulnerabilities the project should address. Further consultations with the national government took place on **16th and 25th of October 2018**.

At the local level in both provinces, discussions with local officials went into greater detail on the priority areas, the development challenges/underlying vulnerabilities they face and the climate hazards. The local level meetings also discussed various adaptation options and investments that are required in the target areas. The meetings with officials of Preah Sihanouk and Kep Provinces identified the proposed climate change projects reflected in the Commune Investment Plan (CIP) that is the official priority investments at the commune level. The Commune Investment Plans offer 'pre-packaged' actions that could enhance alignment between the project and government priorities. Finally, the meetings helped the project design team understand the priorities of the different line departments at provincial level.

The consultation mission also met with other key actors in climate change adaptation and mitigation, including UNDP, the Global Green Growth Institute (GGGI) and UN Environment (in Bangkok).

The second consultation mission took place from the **3rd to the 7th of July 2017,** and discussed in more detail possible actions and identified the target number of beneficiaries. The objective was to understand the local climate change impacts/effects per commune, (the lack of) community coping mechanism/barriers to building resilience, specific resilience building needs and interest and concerns regarding the proposed project in general. The results are displayed in Annex 1 and inform the background and context section.

Further in-depth discussions with the proposed executing entities[54], provincial and commune stakeholders were held during a mission from **11th to 15th of December 2017** to develop the full proposal through a robust stakeholder

[54] Note that since these consultations the number of executing entities has been reduced to one – the NCSD

engagement process, to complete the rapid vulnerability assessment, outline preliminary action plans and develop further the environmental and social safeguards screening and management plan.

The purpose of this mission on national level was to reach agreement with the Executing Entities about the project modality, which is outlined in detail in Part III. Section A.

The mission also held in-depth discussions with Provincial stakeholders in both target Provinces. These meetings contributed in several ways to reiterate the support of provincial officials for the project and highlighted several adaptation concerns and underlying vulnerability issues. The meeting revealed potential adaptation actions listed in the Commune Investment Plan, reflecting the priority investments at the commune level and the line departments at provincial level.

Through consultation with the target commune councils and vulnerable groups, the mission reconfirmed the issues discussed with provincial level stakeholders and also understood the local issues and smaller scale interventions not covered by the Commune Investment Plan. These meetings also reconfirmed acceptance by the communes, outlined alternative options for increasing resilience and potential environmental and social risks and impacts of the interventions.

Based on comments from the Adaptation Fund Secretariat, a final set of consultations, primarily around providing more detail on the investment programme outlined in Component 3, was undertaken between **October 15th and 26th, 2018.** The outputs of these consultations are displayed in the investment programme highlighted in Part II, Section A and on UN-Habitat's ROAP website. These consultations met the national and sub-national governments, as well as communities, but focused primarily on-site visits and assessments to inform the investment programme and Environmental and Social Safeguards to ensure compliance with the Environmental and Social Policy of the Adaptation Fund.

**Table 14**

*Stakeholder Consultations Held*

| Stakeholder, Incl. Role/Function | Consultation Objective | Outcome | Conclusion |
|---|---|---|---|
| Ministry of Environment/National Council for Sustainable Development (NCSD) | • Re-confirm focal point support<br>• Establish preferred target areas<br>• Ensure coordination with other, ongoing adaptation activities and policy alignment<br>• Agree on project modality and responsibility of implementation | • MoE/NCSD has agreed to support the project formulation<br>• The target areas named in this concept note were agreed<br>• Information was exchanged on existing and planned initiatives in the target area, as highlighted in Part II, Section F<br>• Arrangement modalities can be found in Part III. Section A; Project Arrangements | MoE/NCSD as the designated authority will approve the project |
| National Committee for sub-national Democratic Development | • Establish NCDD interest in being an executing entity<br>• Agree in principle the modality for channelling funds to the local level<br>• Gain understanding on integrating climate change adaptation into commune and district level plans<br>• Understanding existing technical standard, rules, and regulations<br>• Agree on project modality and responsibility of implementation | • NCDD agrees to be an executing partner<br>• Funding for local investments would be channelled through the NCDD mechanism<br>• The project contains provisions to mainstream climate change into commune/district planning<br>• The project follows NCDD's Technical Guidelines for Commune/Sangkat (2009)<br>• Arrangement modalities can be found in Part III. Section A, project arrangements | NCDD will also provide written agreement to be an executing partner |
| Local officials in Preah Sihanouk Province | • Agree target sites<br>• Understand climate change vulnerability and highlight possible adaptation investments<br>• Agree on role in organigram<br>• Identify climate change adaptation projects of the Commune Investment Plans (CIP) of the target Province<br>• Collect missing data for rapid vulnerability assessment | • Target sites agreed<br>• A clear picture of vulnerability and investments established<br>• An updated and agreed organigram was provided<br>• Climate change adaptation projects of each commune received<br>• Missing data for rapid vulnerability assessment collected | The long-list of target communities is listed in Part I – summary of the project |

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| Communes councils and vulnerable groups in Preah Sihanouk Province | • Understand the local climate change impacts/ effects per commune and (the lack of) community coping mechanisms/barriers to building resilience<br>• Understand specific resilience building needs and interest as well as concerns<br>• Understand trend and impacts of tourism on the communities<br>• Understand the main climate change issues, the impacts of vulnerable groups and climate actions prioritized by the commune council and vulnerable groups that are not reflected by the CIP | • Insufficient data and relevant documents were collected<br><br>Developed the programme of investments under Component 3 | The collected data of target communities is listed in Annex 1 – summary of the community consultation |
| Local officials in Kep Province | • Agree target sites<br>• Discuss climate change vulnerability and highlight possible adaptation investments<br>• Understand provincial priorities of climate change adaptation projects based on the Commune Investment Plan | • Target sites agreed<br>• A clear picture of vulnerability and investment actions established<br>• A list of climate change adaptation projects of the Commune Investment Plan received | The long-list of target communities is listed in Part I – summary of the project |
| Commune council and vulnerable groups in Kep Province | • Understand the local climate change impacts/ effects per community and (the lack of) community coping mechanisms/barriers to building resilience<br>• Understand specific resilience building needs and interest as well as concerns<br>• Understand trend and impacts of tourism on the communities<br>• Understand the main climate change issues, the impacts of vulnerable groups and climate actions prioritized by the commune council and vulnerable groups that are not reflected by the CIP. | • Insufficient data and relevant documents were collected<br>• Developed the programme of investments under Component 3 | The collected data of target communities is listed in Annex 1 – summary of the community consultation |
| UNDP | • Gain experience from UNDP on the implementing modality for multi-lateral climate finance projects<br>• Improve alignment with the Cambodia Climate Change Alliance, and other climate change projects | • Agreement that national execution with funds for local investment channelled through NCDD is effective<br>• Confirmation that UNDP has no ongoing activities in the target area, and that the proposed project complements ongoing UNDP initiatives | No formal further action, but ongoing dialogue to continue |

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| UNCDF | • Ensure alignment with support provided to NCDD and commune/district planning | • Agreement that the commune/ district planning component does not duplicate | No formal further action, but ongoing dialogue to continue |
| GGGI | • Increase alignment with GGGI/MoE's green secondary cities planning work, which will take place in Sihanoukville and Kep | • Agreement that GGGI will be a partner, and that there will be information flow to ensure that investments made under this project will be part of the planning work undertaken by GGGI | GGGI will be a non-financial partner in the project (i.e. no funding from this project) |
| UNEP | • Ensure synchronicity with the UNEP coastal adaptation project, which also worked in Prey Nob, and the forthcoming urban Ecosystem Based Adaptation project, which will also work in Kep | • The UNEP project has been concluded. All relevant reports regarding this project have been passed to UN-Habitat (and MoE/NCSD).<br>• The urban EbA project is yet to start. The proposed project will only work on small-scale infrastructure in Kep | No formal further action, but ongoing dialogue to continue |

In Cambodia, UN-Habitat has been implementing projects that support and strengthen policy interventions, institutional capacity building and community empowerment related to water and sanitation, climate change adaptation, disaster risk management, gender mainstreaming and youth development, housing and urban planning both national and subnational level. The following section elaborates Table 14, detailing further the consultations that took place with government agencies at the national and sub-national level and development partners during the three consultation missions that supported the formulation of the project.

Consecutive meetings during each mission were held with the proposed executing entities, NCSD and the Provincial Halls of both provinces to discuss target areas, appropriate small-scale infrastructure interventions, the overall policy environment and the implementation modality. MoE recommended Prey Nob in Preah Sihanouk province and both the municipality and district in Kep province[55]. The discussions confirmed that the Ministry of Environment will be the executing partner for Components 1&2 and The Provincial Halls of the respective provinces will be the implementing entities for Component 3 (Outputs 3.1 to 3.4 in Kep, Output 3.5 in both Kep and Preah Sihanouk Province, Outputs 3.6-3.8 In Preah Sihanouk).

Climate change resilience and environment is the largest portfolio of UNDP in Cambodia. UNDP also recommended that the project should have a strong linkage with the NCDD. The meeting also discussed the technicalities of capacity building at the local level, with UNDP recommending that local officials take a place on the project board.

The mission met with the Global Green Growth Institute (GGGI), which is implementing activities under the framework of the Green Urban Development Programme. This programme produced the green city strategic plan, which is now officially adopted and has been incorporated into the environmental law and code. GGGI is also developing a national strategic plan for green secondary cities, and develop green strategic plans for 6 cities, likely including Kep and Sihanoukville. GGGI is also developing an overall framework at the national level and planning at the city level. These combined works provide scope for alignment with the proposed project.

UN-Habitat met with officials from Preah Sihanouk province, including representatives from the Department of Environment, the Fisheries Administration, NCDD and the Provincial Hall Administrative Department. There is limited donor footprint in these areas with no donors currently investing in resilient housing, protective infrastructure or water supply. The participants agreed with the proposed mechanism of project implementation, which partners with MoE for national policy development and trainings while partnering with the respective Provincial Halls for fund-flows to the investment. This mechanism is also identified to match with the national strategic plan and the IP3-III.

The meeting with provincial officials in Kep included representation from the Department of Environment, Department of Tourism, Fisheries Administration, Department of Water Resources and Meteorology, Department of Public Works and Transport, the Provincial NCDD Advisor and the Department of Administration under Provincial Hall. The meetings discussed the priority actions which contributed to the selection of actions highlighted in Outputs 3.1 to 3.5.

UN-Habitat conducted community consultation in the communities of Preah Sihanouk and Kep Province. Based on the guide on community-level vulnerability assessments and action planning, requisite data including community profiles and tourism were collected through interviews and relevant documents. All of collected data were summarized in Annex 1. Further in-depth consultations were held with the commune councils of 14 target communes[56], including vulnerable groups. These consultations identified the climate change hazards per commune and helped to understand the necessary and prioritized adaptation action planning in each commune, beyond and independent from the small-scale interventions addressed in the Commune Investment Plans. These consultations heavily influenced the investment programme of the project outlined in Outputs 3.1 – 3.8.

*55 Kep Province is made up of 1 municipality and 1 district*

*56 Because the project will not implement the concrete component in Koh Rong and logistical constrains, the mission from 11th to 16th of December 2017 did not visit the Koh Rong commune, an island about 27 km from the mainland*

# I. JUSTIFICATION

The proposed project components, outcomes and outputs fully align with national and local government/institutional priorities, with identified community and vulnerable groups needs and with five of the Adaptation Fund's seven outcomes (See Part II, Section A) as stated in the Adaptation Fund results framework. This alignment has resulted in the design of a comprehensive approach in which the different components strengthen each other and in which outputs and activities are expected to fill identified gaps in Cambodia's climate change response.

The project maximises the funding amount for the investments programmed under Component 3. It allocates 86 per cent of the project budget (excluding executing costs and project cycle management) to investments in Component 3. The funding for soft activities under Components 1&2 is required for complementarity/support for Component 3 and sustainability and quality assurance of the project. The table below provides a justification for the 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 15

***Project justification table***

| Outcomes/ Planned Activities | Baseline (Without AF) | Additional (With AF) | Comment and Alternative Adaptation Scenarios |
|---|---|---|---|
| **Output 1.1.** Community capacity built to collect and manage solid waste | Solid waste is problematic in the target areas with little capacity to manage it or recognise the problems to causes to water management infrastructure and the environment | People will have the capacity to organise their waste so that it does not block critical infrastructure and can be collected from collection points on the main road | The alternative would be to replace solid waste affected infrastructure with new infrastructure, a vastly more expensive option that would not guarantee positive adaptation benefits and would carry more environmental and social safeguarding risks |
| **Output 1.2.** Communities in target areas have been trained on resilient house construction techniques | Up to 200 households per commune are damaged every year due to storms and people lack the capacity to build more resilient houses | 9,720 will benefit from training | The alternative would be to replace the existing housing stock with externally build houses, but in a way that does not build the capacity of local people |
| **Output 1.3.** Communities have been organised to manage, monitor and maintain the infrastructure investments under Component 3, | Communities don't have the capacity to manage basic infrastructure | Basic maintenance of infrastructure is conducted by communities | External contractors conduct maintenance which is costly and potentially less reliable |
| **Output 2.1** Government officers at the provincial and districts/cities trained to plan effectively for sustaining and enhancing the | Capacity building is still in an early stage at present, meaning additional capacity is required to plan for the | Capacity is enhanced, enabling the implementation of adaptation actions identified as a result of | Capacity building, ongoing under the support of NCDD, is currently slowing. This means urgent action |

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| project's adaptation benefits | impacts of climate change. | work undertaken in Component 1.<br><br>100 government officials from the provincial and district levels have also been trained. | required to adapt to climate change will not be forthcoming. |
| **Output 2.2**<br>Government officers at the provincial and district provided with comprehensive technical training to manage, operate and maintain the infrastructure | Capacity on technical management is limited to the national level and 1-2 engineers at the provincial level | A core team of 40 engineers, architects and ecosystem experts trained across the whole project area | There is currently no other capacity building effort of this nature, meaning that technical maintenance beyond the capacity of the community would not be conducted, or would rely on external contractors |
| **Output 2.3:**<br>Institutional systems strengthened to monitor adaptation investments and replicate their benefits | Institutional systems are limited, especially considering the recent withdrawal of NCDD advisors at the provincial level | Strengthened capacity of target provinces to respond climate change through the Cambodian government planning and budgeting system | There is no adaptation alternative – without support the provincial level would not have the capacity to respond through the sub-national planning system to climate change. |
| **Output 2.4**<br>Knowledge from the project implementation is captured and disseminated to local and national stakeholders, focusing on sustainable adaptation actions and policy enhancement | There is minimal feedback from communities about successful autonomous adaptation efforts. At the national level, policy responses will continue to be formulated, but may not benefit from the latest innovative practices | Communities and local government will have greater information and knowledge about 'what works', while national government will be more informed in the policy and strategy formulation process. | There is no alternative adaptation scenario other than effective knowledge management |
| **Output 3.1.**<br>285ha of Mangroves restored in Kep City and Angkaol Communes, Kep Province | **Vulnerability Baseline**<br>Salt water incursion, coast flooding and coastal erosion | **Adaptation Benefit resulting from the project**<br>Improved agriculture, access to drinking water and coastal defence | **Alternative scenario**<br>Building sea walls would be the alternative action to achieve the same result, but would be much less cost effective and create substantial additional ESS risks |

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|---|---|---|---|
| **Output 3.2**<br>Water gates repaired in 3 locations in Pong Teuk and Angkaol<br><br>2 canals rehabilitated in Pong Teuk and Angkaol Communes, Kep Province | Water is mismanaged, causing both draughts and floods, in an area of declining rainfall | Improved access to water for agriculture, leading to greater yield. Increased water availability for drinking/domestic use | The alternative would be to build a water treatment plant or similar infrastructure, which would be prohibitively expensive |
| **Output 3.3**<br>Prevention of salt water ingress through improved channels | As above | As above | As above |
| **Output 3.4**<br>O Thmar Reservoir rehabilitated to increase water storage capability Kep Province<br><br>Bank strengthening work at Roness Reservoir to provide additional water retention and safety.<br><br>Coastal flood protection embankment in Kep and Angkoal constructed | O Thmar reservoir is currently incapable of storing sufficient water, and is plagued by leaks and poor management. Roness is also incapable of storing sufficient water and its southern bank is in an unsafe condition.<br><br>Coastal areas of Kep are highly vulnerable to coastal flooding and resulting salinity. | As above<br><br>The material excavated from O Thmar allows for the construction of the coastal flood protection, originally omitted from the proposal for cost reasons | The alternative would be two new reservoirs at different sites. However, this is difficult for cost and environmental and social safeguard reasons<br><br>The alternative scenario would be to dispose of the material excavated from O Thmar. |
| **Output 3.5**<br>Resilient Housing designs developed and demonstrations constructed (both provinces) | Strong winds damage up to 200HH per commune every year | Poor households will be damaged as a result of strong winds and therefore will not have to invest their minimal savings in repairs | The alternative would be relocation of the affected households, either to other, less vulnerable areas, or into social housing. However, this carries substantial Environmental and Social Risk |
| **Output 3.6**<br>Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province. | Sea water affects land and ground water in three communes, affecting agricultural yield and drinking water | People in the three target communes will be protected from sea-water and coastal flooding | The alternative would be to build a sea-wall. However, this is a highly costly activity and it would carry substantial environmental and social risks |
| **Output 3.7**<br>Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province | Heavy rains lead to flooding which temporarily closes the market, resulting in lost income | People will be protected from flooding and earn a year-round income. Moreover, water will be supplied from rainwater | The alternative action would be to re-locate or reconstruct the market, which would be highly costly, requiring |

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| | | | new land and not guaranteed to bring adaptation benefits |
| **Output 3.8**<br>Tide gauge with early warning system broadcast capabilities installed Tide Gauge in Ou Okhna Heng Commune, Prey Nob | Floods and storms damage households, agricultural lands, and jeopardise coastal fisheries partly because people don't have access to reliable information | People will have improved information, allowing them to make more informed decisions and take additional measures to safeguard themselves during the rainy season. | There is no viable alternative to this action, other than to continue business as usual, which is causing damage to houses, land and jeopardising coastal fisheries |

# J. SUSTAINABILITY

The project aligns with the Cambodian government's planning and implementation mechanism and strengthens it. This is because NCSD, the implementing partner will work directly with the local government in each province, promoting alignment with sub-national planning at the commune and district level. Through the activities under Component 2 of the project, the target districts and provinces will be enabled to plan for small-scale resilient investments, and to programme their maintenance more effectively. UN-Habitat will further design an exit strategy addressing all institutional levels to ensure the long-term and sustainable benefits of this project

| INVESTMENT | MAINTENANCE ARRANGEMENT |
|---|---|
| **Output 3.1**<br>285ha of Mangroves restored in Kep City and Angkaol Communes, Kep Province | Develop a Mangrove Planting and Monitoring Plan as the first activity in the implementation. After the project, the Fisheries Administration of Kep and Preah Sihanouk Provinces would be responsible for care for the mangrove areas, in conjunction with the communities living adjacent to them. |
| **Output 3.2**<br>a) Water gates repaired in 3 locations in Pong Teuk and Angkaol<br>b) 2 canals rehabilitated in Pong Teuk and Angkaol Communes, Kep Province | Communities will be organised under Output 1.3 to perform basic management and maintenance of both the water gates and the canals. Output 1.1 will also enhance sustainability because it will prevent damage and reduced functionality through solid waste clogging.<br><br>Government capacity to manage and maintain will be strengthened under Output 2.2. Responsibility for ongoing management lies with the Provincial Department of Water Resources and Meteorology, Kep Province. |
| **Output 3.3**<br>Prevention of salt water ingress through improved channels | Communities will be organised under Output 1.3 to perform basic management and maintenance of the channels and supporting infrastructure.<br><br>Government capacity to manage and maintain will be strengthened under Output 2.2. Responsibility for ongoing management lies with the Provincial Department of Water Resources and Meteorology, Kep Province. |
| **Output 3.4**<br>a) O Thmar Reservoir rehabilitated to increase water storage capability Kep | Communities will be organised under Output 1.3 to perform basic management and maintenance of both reservoirs.<br><br>Government capacity to manage and maintain will be strengthened under Output 2.2. Responsibility for ongoing management lies with |

| | |
|---|---|
| Province<br><br>b) Bank strengthening work at Roness Reservoir to provide additional water retention and safety. | the Provincial Department of Water Resources and Meteorology, Kep Province. |
| **Output 3.5**<br>Resilient Housing designs developed and demonstrations constructed (both provinces) | The communities will be trained to manage their own houses and replicate the activity under Output 1.2<br><br>The Provincial Departments of Urban Planning, Land Management and Construction in both provinces will be responsible for management and maintenance of the demonstration houses (with active collaboration from the target Communes). |
| **Output 3.6**<br>Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province. | Communities will be organised under Output 1.3 to perform basic management and maintenance of the water gates.<br><br>Government capacity to manage and maintain will be strengthened under Output 2.2. Responsibility for ongoing management lies with the Provincial Department of Water Resources and Meteorology, Preah Sihanouk Province. |
| **Output 3.7**<br>Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province | Communities will be organised under 1.1 to improve solid waste management, which will support continued functionality of the market's drainage infrastructure.<br><br>Government capacity to manage and maintain will be strengthened under Output 2.2. Responsibility for ongoing management lies with the Provincial Department of Water Resources and Meteorology, Preah Sihanouk Province. |
| **Output 3.8**<br>Tide gauge with early warning system broadcast capabilities installed Tide Gauge in Ou Okhna Heng Commune, Prey Nob District | Government capacity to manage and maintain will be strengthened under Output 2.2. Responsibility for ongoing management lies with the Provincial Department of Water Resources and Meteorology, Preah Sihanouk Province. |

The social, economic, financial and environmental sustainability of the investments described below.

***Social***

By implementing the project through the People's Process methodology, whereby people take ownership for the design and construction of the infrastructure that they will ultimately be beneficiaries of, there will be greater social sustainability because people will take ownership of their adaptation infrastructure. In implementing the investments under Component 3, communities will gain greater awareness of climate change and adaptation, and vocational skills to build, operate and maintain infrastructure.

***Economic***

Adaptation is a highly important economic activity in the target areas. The activities to improve resilient housing, for example, under Outcomes 1.2 and 3.5, will bring sustainable economic benefits because people will not be forced to invest their minimal savings or get into debt to afford house repairs. The activities under outputs 3.2, 3.3, 3.4 and 3.6 will enhance people's access to water, making their land more productive and carrying health benefits for them. The mangrove plantations under Output 3.1 will also defend people's land and also bring additional economic benefits in terms of improved fish and crab catch. The activities under Output 3.7 to improve flood resilience at Veal Rinh market will also bring economic benefits because people will no longer lose at least 30 days of income per year due to floods. The economic benefits of the actions – especially the investment programme under Component 3 – are quantified in Part II Section C of this proposal.

***Financial***

Financial sustainability of the project's benefits is ensured by executing the project through the NCSD, working with the Provincial Halls of the two target provinces. Provincial halls have a coordinating function at the sub-national level. Provincial halls are best placed to do the following at the sub-national level:

- Partner with the Department of Planning and the NCDD to ensure that investment planning includes maintenance of the infrastructure, as well as replicating its successes in other areas.
- Mobilize national finance to support future upscaling as the Provincial Halls sit under the Ministry of Interior and have a powerful voice to demand further sub-national action.
- At the national level, NCDD, which is also under the Ministry of Interior, is applying to become a Green Climate Fund direct access entity. If this happens during the lifespan of the project, the target areas will be well-positioned to advocate for leveraging further finance through this modality.

These steps are being taken to mitigate the risk that infrastructure may not be properly maintained in the future. This has been in the case on some projects in the past that have not been implemented with sufficient government support or buy-in. The sea wall targeted under Output 3.6, for example, was constructed in 2002-3 with support from a bilateral donor, and has since fallen into disrepair.

The NCSD is the executing agency for this project. The project's governance structure combines the Ministry of Environment, the two target provinces and a variety of other important stakeholders at the national level. Further information on the management structure is presented in Part III, Section A. The need for further and sustained finance will be a key consideration for all the executing partners as the project is under implementation.

# K. ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS

## Table 16

***Overview of the environmental and social impacts and risks identified as being relevant to the project.***

| 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 Equity 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 |

As shown in Table 16, the project seeks full alignment with Adaptation Fund's Environmental and Social Policy (ESP), and will also be compliant with to UN-Habitat's Environmental and Social Safeguards System. This section briefly describes the initial analysis of environmental and social impacts of the project based on the ESP.

As shown in Table 17 and Annex 3 the project seeks full alignment with Adaptation Fund's Environmental and Social Policy (ESP) and will also be screened according to UN-Habitat's Environmental and Social Safeguards System and policy. This section briefly describes the initial analysis of environmental and social impacts of the project based on the Environmental and Social and Gender Policies.

Components 1 & 2 consist entirely of soft activities. The Adaptation Fund's ESP says, "Those projects/programmes with no adverse environmental or social impacts should be categorized as Category C.[57] However, they have been subjected to a comprehensive screening, as presented in Annex 3. It has been determined that these activities will not cause direct, indirect transboundary and cumulative impacts to environment and society.

All physical works activities in the project will be undertaken under Component 3. These activities carry the risk of causing environmental and social impacts. As the activities implemented under the project will be local and small scale, it is deemed that they are not 'Category A' risks. All activities implemented under Component 3 are, therefore, Category B or C. Capacity building under Component 1 (at the community level) and Component 2 (at the level of the sub-national government) will emphasise environmental and social safeguards and minimizing environmental and social, as well as project implementation risks, and the integration of gender and youth issues.

Moreover, the using the People's Process as a means to implement means that communities will manage the planning and construction of infrastructure, be trained on environmental and social risks and therefore will be incentivized to minimize environmental and social impact. This is because, under the People's Process, communities themselves are the planners, constructors and beneficiaries of the small-scale infrastructure, rather than contractors. Contractors have less incentive to minimise environmental and social risks, because they are not the end users of the infrastructure in question.

The checklist shown in Table 16 has been prepared based on the extensive consultations that took place in formulating the proposal, which were conducted with the Adaptation Fund Environmental and Social Policy and UN-Habitat's Environmental and Social Safeguard System, as well as the AF Gender Policy, in mind This is further elaborated in the risk assessment overview table, which is part of the Environmental and Social Risk Analysis in Annex 2 Table 17, below, and the Environmental and Social Management plan in Part III, Section C.

57 Adaptation Fund Environmental and Social Policy, paragraph 28, Page 8

## 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 Environment (MoE), as the national designated authority to the Adaptation Fund, the National Council for Sustainable Development (NCSD), the inter-ministerial body chaired by H.E. Minister of Environment and the sub-national government in the two target provinces.

The project will be executed at three levels; 1) national, 2) provincial (with support from the districts) and 3) commune. At the national level, the overall coordination of the project's execution will be led by the NCSD, who will be the signatory of the project MoU and AoC with UN-Habitat. The NCSD will also ensure that the project is executed in a timely manner, chair the Project Management Committee and coordinate its activities and results across the Cambodia government system. The NCSD will work directly with the Ministry of Environment for the execution of Components 1&2, and the Provincial Halls of Kep and Preah Sihanouk Provinces to execute Component 3.

The NCSD will then work with **Provincial Halls of Kep and Preah Sihanouk Provinces** at the Provincial Level to execute Component 3 of the project. NCSD will work with the Provincial Hall of Kep Province to execute activities under Outputs 3.1 – 3.5 of the project, while NCSD will work with the Provincial Hall of Preah Sihanouk Province to execute the activities under Outputs 3.6 – 3.8 of the project.

In the Cambodian government system, Provincial Halls are the main provincial level administration unit, headed by a governor, they coordinate the other line departments at the provincial level, and are accountable to the Ministry of Interior. The Provincial Governors of the two respective target provinces will be signatories to the agreement with UN-Habitat to execute the project, while the day-to-day oversight of the project will be the responsibility of the Provincial Administration Unit. The structure of the Provincial Halls is shown below in Figure 12.

The Provincial Halls will then coordinate with other provincial departments to deliver the physical works. The table below shows the execution responsibility. Note that in this table, the executing entity is characterized by fund flow – they will receive funding from UN-Habitat. The executing partner is a key agency involved in delivering the activities, who will organize and facilitate accordingly.

Thirdly, the commune councils, elected bodies that work in each commune, will support the project's implementation at the local level. While there will be no fund flow to the commune level, the councils will each chair a local commune committee (described below) that will, *inter alia,* support the organization of communities, facilitate the construction works, and act as a first point of contact for community members to engage with the project (including offering a possible channel to discuss potential grievances).

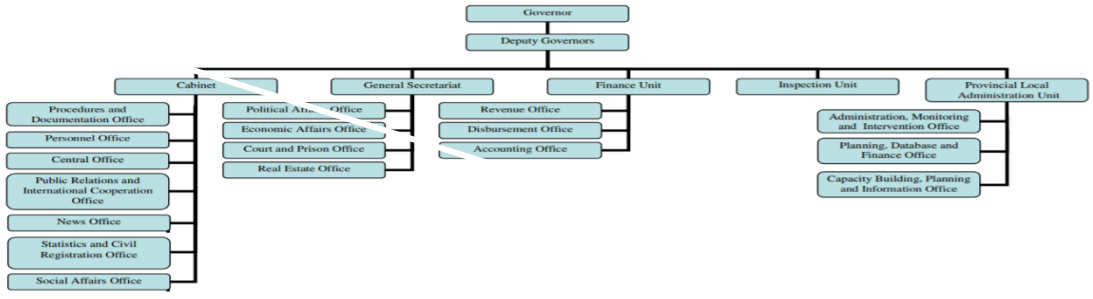


***Figure 12 "Structure of the Provincial Halls"***

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## Table 18

***Project Execution Responsibilities***

| Output | Executing Entity | Executing Partner |
|---|---|---|
| **Output 1.1.** Community capacity built to collect and manage solid waste | NCSD | Provincial Department of Environment, Kep and Preah Sihanouk Provinces |
| **Output 1.2.** Communities in target areas have been trained on resilient house construction techniques | NCSD | Provincial Department of Land Management, Urban Planning and Construction, Kep and Preah Sihanouk Provinces |
| **Output 1.3.** Communities have been organised to manage, monitor and maintain the infrastructure investments under Component 3 | NCSD | Provincial Halls of both provinces, NCDD, Department of Planning |
| **Output 2.1.** Government officers at the provincial and districts/cities trained to plan effectively for sustaining and enhancing the project's adaptation benefits | NCSD | Provincial Halls of both Provinces, Department of Environment, Department of Planning, NCDD (both provinces) |
| **Output 2.2.** Government officers at the provincial and district provided with comprehensive technical training to manage, operate and maintain the infrastructure | NCSD | Provincial Halls, Department of Water Resources and Meteorology, Department of Land Management, Urban Planning and Construction, Department of Environment, Fisheries Administration (both provinces for all departments) |
| **Output 2.3.** Institutional systems strengthened to monitor adaptation investments and replicate their benefits | NCSD | Provincial Halls, NCDD, Department of Planning (both provinces) |
| **Output 2.4** Knowledge from the project implementation is captured and disseminated to local and national stakeholders, focusing on sustainable adaptation actions and policy enhancement | NCSD | Communities, Provincial Halls, MoE |
| **Output 3.1.** 285ha of Mangroves restored in Kep City and Angkaol Communes, Kep Province | NCSD | Fisheries Administration |
| **Output 3.2** Water gates repaired in 3 locations in Pong Teuk and Angkaol<br>2 canals rehabilitated in Pong Teuk and Angkaol Communes, Kep Province | NCSD | Department of Water Resources and Meteorology, Kep Province |
| **Output 3.3** | NCSD | Department of Water Resources and Meteorology, Kep Province |

*58 Ministry of Interior (2008), Situational Analysis of Provincial/Municipal and District/Khan Administration in Cambodia, p8*
*59 Note that this is a generic structure. While the Provincial Administration Unit/Office is present in every provinces, some of the other offices may differ from province to province*

| | | |
|---|---|---|
| Prevention of salt water ingress through improved channels | | |
| **Output 3.4**<br>O Thmar Reservoir rehabilitated to increase water storage capability Kep Province<br><br>3.4b Roness reservoir rehabilitated for enhanced safety and storage<br><br>3.4c<br>Coastal flood protection embankment in Kep and Angkoal constructed | NCSD | Department of Water Resources and Meteorology, Kep Province |
| **Output 3.5**<br>Resilient Housing designs developed and demonstrations constructed (both provinces) | NCSD | Department of Land Management, Urban Planning and Construction, Kep and Preah Sihanouk Provinces |
| **Output 3.6**<br>Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province. | NCSD | Department of Water Resources and Meteorology, Preah Sihanouk Province |
| **Output 3.7**<br>Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province | NCSD | Department of Land Management, Urban Planning and Construction, Preah Sihanouk Provinces |
| **Output 3.8**<br>Tide gauge with early warning system broadcast capabilities installed (Tide Gauge in Ou Okhna Heng Commune, Prey Nob District | NCSD | Department of Water Resources and Meteorology, Preah Sihanouk Province |

UN-Habitat is the multilateral implementing entity (MIE) and will provide project management support, oversight and will act as the secretariat of the Project Management Committee. It will also be part of the team that implements the project, where it will provide technical knowledge and expertise based on its experience implementing other climate change projects in Cambodia and the Asia-Pacific region. The agency will further oversee compliance with its Environmental and Social Safeguard System and the Environmental and Social Safeguard Policy of the Adaptation Fund.

***Legal and Financial Arrangements***

UN-Habitat and the National Council for Sustainable Development (NCSD) will sign a joint Memorandum of Understanding (MoU) as a legal commitment to implement the project.

UN-Habitat will the enter into an Agreement of Cooperation with NCSD. This is the legal basis to transfer funds to be invested under the project. This agreement will be reviewed by the PMC and will specify in significant detail the activities to be implemented by the project, the timeframe and the deliverables required.

The Permanent Secretary, NCSD, will authorize the payments against the contractual agreements, upon recommendations from the project manager. The Director of the Climate Change Department, as well as the UN-Habitat Programme Manager for Cambodia will provide an advisory function.

***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 chaired by the Secretary General, NCSD, and vice-chaired by Governors of Kep and Preah Sihanouk Provinces, or their appointed deputies. 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 will be representatives of the following; the NCDD the Climate Change Department, MoE, working-level representatives of the Provincial Governments of Preah Sihanouk Province and Kep Province, the Ministry of Water Resources and Meteorology, the Fisheries Administration, the Ministry of Women's Affairs and Ministry of Land Management, Urban Planning and Construction. Observer members of the committee will representatives of the UN Capital Development Fund and the Global Green Growth Institute.

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 *adhoc* meetings to address serious Environmental and Social safeguard risks, if these arise. At least 30% of committee members will be women, and the Ministry of Women's Affairs will be a member of the PMC. This is designed to ensure female representation at the decision-making heart of the project.

**Project Oversight**, will be incorporated into the core function of the PMC (rather than being a separate oversight body), is led by the responsible officer in UN-Habitat's Regional Office for Asia and the Pacific (ROAP) under the guidance of the Regional Director and supported by Project Management Officers (financial management and administration) and UN-Habitat's Headquarters (HQ) Monitoring and Evaluation Unit, the Programme Division including the Climate Change Planning Unit, and the External Relations Division, in particular the Advocacy, Outreach and Communications will ensure project management compliance in accordance with UN-Habitat and AF standards and requirements.

The national level **Project Team** will be comprised of the Project Manager (who will be recruited by the Ministry of Environment), the Director of the Department of Climate Change, the Director of Marine and Coastal Conservation, and the Administration Unit, MoE. The Project Team will be responsible for managing project activities and ensuring compliance with all commitments contained in this project document, such as the 15 Environmental and Social Safeguards Principles of the Adaptation Fund, the Environmental and Social Management Plan (see Part III. Section E for the results framework, Annex 3 for the ESMP), as well as providing day-to-day support to the executing entity. The Project Team will also take the lead in monitoring through periodic visits to the intervention sites, 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 targeted stakeholders, and reported to the PMC.

There will then be a **Project Execution Unit** in each province (2x PEUs in total), which will be located in Provincial Hall. The Provincial Execution Unit will be chaired by the Deputy Governor of Kep and Preah Sihanouk Provinces This unit will include a provincial level coordinator who will oversee the day-to-day running of each activities underway in each respective province. The project execution will also count on representation from the following offices at the subnational level; Provincial Hall, the Provincial Departments of Environment; Water Resources and Meteorology; Land Management, Urban Planning and Construction, the Fisheries Administration, Women's Affairs and representatives from each of the municipalities and districts in the project (there is 1 target municipality and 1 target district in Kep, and 1 target district in Preah Sihanouk Province). The provincial execution unit will target 30% female representation, and include representation from the Provincial Department of Women's Affairs.

At the community Level, representatives of each elected commune council will form a **Local Commune Committee** with district officials and community representatives themselves. The local commune committee will be guide the investment activities in the target areas, as well as take a role in oversight, especially with regard to emerging environmental and social risks. As people on this committee are the closest to the beneficiaries and the field sites, they will be best-placed to review any breaches of the project's environmental and social safeguard system, and to flag any risks.

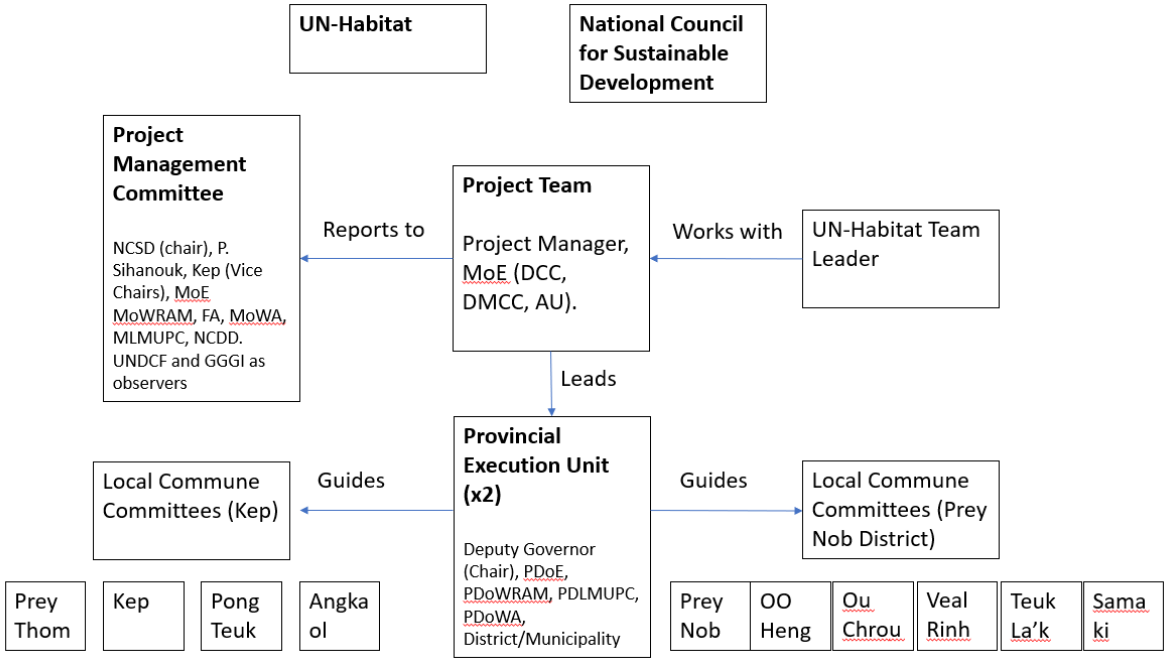


*Figure 2 - Organigram of the Project*

# 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 19

***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:<br>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<br>Prob: 2 | • Current climatic variability has been taken into account in the planning and design of project activities and especially into Component 3: The detailed project sheets (click here) identify where physical works need to take place during the dry season, for example<br>• All selected investments under Component 3 have been extensively consulted with communities, local elected officials, government staff at the sub-national and national level and with other organisations working in the target area. |
| 2. | Institutional:<br>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<br>Prob: 1 | • Establishment of a project management committee and the overall participatory and inclusive project design will improve national, municipal and beneficiary level ownership throughout and thus enhance government support for project implementation.<br>• UN-Habitat will enter into legal agreements (MoUs and AoCs) with the NCSD to ensure that the executing partners will deliver project activities and outputs.<br>• Government staff working on climate change, environment, disaster management, land use and housing will be strongly integrated into the project's structure (see Part III, Section A)<br>• In the fallout from the 2018 election, the position of the NCDD has been weakened in Cambodia, which is why the organisation plays a diminished role compared to the previous version of the proposal. The project design, and particularly its management arrangements now have a robust structure, as there will not be a national election until 2023. However, there will be a commune election in 2021, which could affect some locally elected representatives. However, the structure of the local committees is such that they also include both government staff and community members, which is partly designed to ensure continuity, in the event of a change of personnel at the commune level. |

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| 3. | Institutional:<br>Capacity constraints of local institutions may limit the effective implementation of interventions | Impact: 2<br>Prob: 1 | • The project has a strong capacity building and training component, designed to promote effectiveness and sustainability at the community, district and provincial government levels as part of Components 1&2 |
| 4. | Institutional/social<br>Lack of commitment/buy-in from local communities may result in delay at intervention sites. | Impact: 2<br>Prob: 1 | • Community stakeholders have been consulted during the full project development phase to ensure their buy-in into the AF project.<br>• A bottom-up approach integrating the community into the AF project's implementation phases – including community contracting - will be followed.<br>• 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:<br>Disagreement amongst stakeholders with regards to adaptation measures (infrastructure) and site selection. | Impact: 3<br>Prob: 2 | • Adaptation measures and locations have been selected using extensive and detailed criteria, and through several rounds of in-depth consultation<br>• There will be a participatory approach to the construction of the infrastructure to be built under Component 3, through the People's Process |
| 6. | Institutional:<br>Communities may not adopt activities during or after the AF project, including infrastructure maintenance | Impact: 2<br>Prob: 2 | • The interventions will be institutionalized within the ministries, local government and communities 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. 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.<br>• Officials of sub-national (provincial, district/municipality and commune/sangkat) level will support the participating communities beyond the project implementation ensuring community level governance support as well as support for maintenance.<br>• 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).<br>• Communities will be involved in project implementation/decision making throughout the project. Communities will have a stake in the construction, operation and maintenance of the infrastructure (Capacity building under Component 1, construction under Comp 3) |
| 7. | Financial:<br><br>Complexity of financial management and | Impact: 3<br>Prob: 2 | • Financial management arrangements have been defined during project preparation.<br>• UN-Habitat's control framework, under the financial rules and regulations of the UN secretariat, will ensure documentation of clearly defined roles and responsibilities for |

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| | procurement. Certain administrative processes could delay the project execution or could lack integrity | | management, internal auditors, the governing body, other personnel and demonstrates prove of payment / disbursement.<br>• Procurement will be done by the NCSD as agreed in the Agreement of Cooperation. The project manager and the project team have a certifying role (for key procurements / expenditures). All expenditures/costs/payments will be paid in USD. In Cambodia, US$ is used for the procurement of goods and services (including salaries). Hence, there is no risk of exchange rate fluctuation. |
| 8. | Institutional:<br><br>Delays in project implementation, and particularly in the development of infrastructure interventions | Impact: 1<br>Prob: 2 | • The ownership by the Government has been high during the project preparation phase which will reduce this risk.<br>• Partnerships with key government agencies and infrastructure and community resilience project planning will start early on – in tandem with the community action planning. Institutional arrangements will be put in place well before the finalization of community action plans.<br>• Lessons learned from other relevant projects (see Part II, Section F), done by MoE and NCDD are incorporated in the project design. |
| 9. | Institutional:<br>A lack of coordination between and within national government Ministries and Departments. | Impact: 1,<br>Prob:2 | • The Project Management Committee under the leadership of NCSD 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. |
| 10. | Legal<br><br>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<br>Prob 1 | • During the project preparation phase the proposed infrastructure identified is located on state public land. This means that conflicts over land tenure are not envisaged.<br>• The PMC and the LCC are tasked to ensure close collaboration with the provincial line departments of Environment, Water Resources and Meteorology, Land Management, Urban Planning and Construction and the Fisheries Administration |

# C. MEASURES FOR THE MANAGEMENT OF ENVIRONMENTAL AND SOCIAL RISKS

The proposed project seeks to fully align with the Adaptation Fund's Environmental and Social Policy (ESP). For that purpose, environmental and social risks and impacts of the project and related activities need to be identified and addressed (so that the project does not unnecessarily harm the environment, public health or vulnerable communities). As described in Part II. Sections E and K, systematic screening and assessment has been done based on broad consultation with national and local government stakeholders, a wide range of other concerned stakeholders and the target communities. The project design has benefitted from this process.

To ensure that remaining risks are well managed the project management and governance (Part III. Section A), Monitoring and Evaluation (Part III. Section D) fully take the management of environmental and social risks into account. In addition, and Environmental and Social Management Plan (ESMP) has been developed to ensure full compliance with the Adaptation Fund's Environmental and Social and Gender Policies.

The ESMP for this project, detailed in Annex 3 identifies measures and actions that reduce potentially adverse environmental and social impacts to acceptable levels. The plan includes compensatory measures, if applicable. Specifically, the ESMP".

(i) Identifies and summarizes all anticipated adverse environmental and social impacts in line with the Adaptation Fund's ESP principles;
(ii) Describes mitigation measures, both from the perspective of mitigating risks at each activity and from the perspective of upholding all ESP principles;
(iii) Describes a process which supports the screening and assessment of all project activities and the conditions under which screening and mitigation action is required;
(iv) Clearly assigns responsibilities for screening, assessment, mitigation actions and, approval and monitoring;
(v) Takes into account, and is consistent with, other technical standards required for the project in particular those that relate to national law.

It should also be noted that each investment that forms a part of Component 3 has been designed to provide environmental and social benefits, based on the Environmental and Social Policy of the Adaptation Fund. A summary of the benefits, and how ESP principles has been incorporated into the design of the investments is included in each investment sheet, which can be found here.

For the activities under the three components of the project, the ESP will be upheld by ensuring that:

(i) All MoUs and Agreements of Cooperation with the Executing Entity will include detailed reference to the ESMP and in particular the 15 ESP Principles.
(ii) The ToR of Committees and Advisory Groups, project personnel and focal points will include detailed reference to the ESMP and in particular the 15 ESP Principles.
(iii) The Executing Entity and other relevant government agencies will receive training / capacity development to understand the 15 Principles, the ESMP and in particular their responsibilities. This will include members of the Project Management Committee, the Local Commune Committees and the Communities.
(iv) A Monitoring and Evaluation Framework will be developed by the project management team and presented for approval to the Project Management Committee.
(v) All project monitoring will have the 15 environmental and social principles, and the ESMP Strategy mainstreamed into it. In addition to upholding the ESP of the Adaptation Fund and to familiarize all project stakeholders with the 15 ESP principles, this will also ensure that all stakeholders fully take ownership of the environmental and social safeguards procedures of the project and that any activity that may have been altered or not yet assessed in detail are captured.

(vi) A grievance mechanism is also part of the plan. This will allow any affected stakeholder to raise concerns, anonymously if they wish, to the community leaders on the local coordinating committee, the project team or the PMC. The primary alternative means for affected beneficiaries and/or community members to raise grievances confidential telephone number[60]. In addition to the grievance mechanism, local staff will be trained to have an 'open-door' policy with communities, so that communities can discuss any aspect of the project at any time. This less formal mechanism will also enable project staff to listen to communities' concerns or ideas and promote them in the implementation of the project. More formal consultations and workshops held at local and national levels throughout the project implementation will also serve as a means for stakeholders to raise concerns or suggests with the project's implementation.

# D. ARRANGEMENTS FOR MONITORING, REPORTING AND EVALUATION

The AF project will comply with formal guidelines, protocols and toolkits issued by the AF, UN-Habitat and the Royal Government of Cambodia. Annex 5 defines a more detailed Monitoring and Evaluation Framework, in which the Monitoring and Evaluation (M&E) of progress in achieving project results will be based on targets and indicators established in the Project Results Framework (see also below). Besides that, the status of identified environmental and social risks, UN-Habitat's Environmental and Social Safeguard System and the 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. Annex 4 further reflects the AoC-partner in charge monitoring activities and ensuring milestones.

### *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.

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 proposed in the Table 20 below.

## Table 20

*Monitoring and Evaluation Plan*

| Type of M&E Activities | Responsible Parties | Time Frame | Reporting |
|---|---|---|---|
| Inception Workshop and Report | National Project Manager<br>Project Management Committee<br>UN-Habitat ROAP | Workshop: within first two months of start<br>Report: within first quarter | Inception Report |
| Periodic status/ progress reports | National Project Manager | Quarterly | Quarterly Report |

*60 Note that an address was considered. However, Cambodia does not have a reliably functional postal service and literacy rates are far from 100% across the beneficiary communities. Given that telephone penetration is significantly higher, and a far more frequently used and reliable means of communication, it was decided that this is the best confidential and private means to address grievances.*

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|---|---|---|---|
| Final Evaluation | National Project Manager<br>UN-Habitat ROAP<br>Project Management Committee<br>External Consultants | Final: At least three months before the end of project implementation | Final Evaluation Report |
| Project Terminal Report | National Project Manager<br>UN-Habitat ROAP<br>Local consultant | At least three months before the end of the project | Terminal Report |
| Audit | UN-Habitat ROAP<br>National Project Manager | As per UN-Habitat regulations | Audit Reports |
| Community consultations / workshops / training | National Project Manager | Within one week after each event | Documentation |
| Visits to field sites | UN-Habitat ROAP<br>Project Management Committee<br>Government representatives | Every six months | Field Report |

For the M&E budget and a breakdown of how implementing entity fees will be utilized in the supervision of the M&E function, please see the detailed budget (Part III, Section G). For related data, targets and indicators, please see the project proposal results framework (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 formulation has gathered demographic data (some of which is in this public domain) and generated maps through Google Maps and Google Earth, which will be handed over to the PMC for use in the project, including in monitoring.

The communes will be involved in further data collection and in community consultations in data analysis. 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. Data collected will include marginalized groups (e.g. women) aggregated (if possible). Project site visits will be jointly conducted based on an agreed schedule to assess project progress first hand.

The Project Manager will develop an **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 M&E plan will be on (participatory) outcome/result monitoring, project risks (financial & project management risks and environmental social safeguard risks) and learning and sustainability of the project. 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 Agreement 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;

- Project financial and management risks (same as per above).

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.**

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

# E. PROJECT PROPOSAL RESULTS FRAMEWORK

## Table 21

*Project Results Framework*

| Expected Result | Indicators | Baseline Data | Targets | Risks & Assumptions | Data Collection Method | Frequency | Responsibility |
|---|---|---|---|---|---|---|---|
| **Project objective:** enhance the climate and disaster resilience of the most vulnerable coastal human settlements of Cambodia through concrete adaptation actions, particularly in areas where eco-tourism has the potential to sustain such interventions. | | | | | | | |
| **Project component 1:** community-scale knowledge and capacity enhanced to sustain the adaptation benefits of the project's investments | | | | | | | |
| **Outcome 1**<br><br>Community-scale knowledge and capacity enhanced to sustain the adaptation benefits of the project's investments | Level of knowledge capacity at the community increased, measured by the number of community groups performing basic maintenance, clean-ups or house maintenance | Communities in the target area are not organised to manage or maintain infrastructure, collect solid waste or repair houses | At least one community group per investment and one group per commune formed and functional, performing these tasks. Each group should include 50% women | R Migration and/or rapid development makes it difficult to sustain these community groups<br><br>A People will continue to be willing to take responsibility for management, maintenance and clean-up | Commune-level data gathering | Baseline, mid-term and end | UN-Habitat and executing entity, with support from target commune councils |
| **Output 1.1.**<br><br>Community capacity built to collect and manage solid | No. and type of trainings conducted to strengthen capacity on solid waste management | No training has been conducted on solid waste management, and solid waste is a critical factor in preventing the | 2x trainings per commune completed. 50% of trainees are women | R – Communities ignore the training they have been given | Training reports | Baseline, mid-term and end | UN-Habitat and Executing entity |

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| waste | No. of female training beneficiaries | functionality of critical infrastructure | | A – Improved solid waste management will play a critical role in the continued functionality of infrastructure | | | |
| **Output 1.2.**<br><br>Communities in target areas have been trained on resilient house construction techniques | No. of people trained on resilient house construction techniques<br><br>No. of female beneficiaries | There are few if any local carpenters that have sufficient capacity to build resilient houses. | 200 people ~~(with equal gender balance~~50% of whom women) trained | R Carpenters take their new skills elsewhere, seeking greater economic opportunities<br><br>A People will actually utilise the skills they gain in house construction (Rather than reverting to traditional practices) | Training reports | Baseline, mid-term and end | UN-Habitat and Executing entity |
| **Output 1.3.**<br><br>Communities have been organised to manage, monitor and maintain the infrastructure investments under Component 3 | No. of trainings provided to communities on managing, monitoring and maintaining infrastructure investments<br><br>No. of women trained | Communities have not received training of infrastructure management, monitoring and maintenance and are unaware of the need and approaches | 8 Training clusters implemented with 50% participation from women | R – Limited technical capability to maintain infrastructure<br><br>A – Sufficient maintenance can be undertaken without specialist equipment or knowledge | Training reports | Baseline, mid-term and end | UN-Habitat and Executing entity |
| Activities<br>1.1.1 Define trainee group<br>1.1.2 Baseline knowledge/training needs assessment | | | | Milestones<br>▪ All trainees defined by month 6<br>▪ All baseline knowledge/training needs assessments completed by month 12 | | | |

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| 1.1.3 Define/prepare training materials<br>1.1.4 Give trainings<br>1.1.5 Monitor<br><br>1.2.1 Define trainee group (note that these will be different from Output 1.1)<br>1.2.2 Baseline knowledge/training needs assessment<br>1.2.3 Define/prepare training materials<br>1.2.4 Give trainings<br>1.2.5 Monitor<br><br>1.3.1 Define community members who will lead<br>1.3.2 Baseline knowledge/training needs assessment<br>1.3.3 Develop training materials on infrastructure maintenance and mangrove planting and management<br>1.3.4 Organise community-scale committees<br>1.3.5 Monitor | | | | ▪ All training materials prepared by month 15<br>▪ All trainings complete between months 15-36<br>▪ All monitoring of training complete by month 42 | | | |
| **Project Component 2:** Government planning and technical capacity enhanced ~~t~~ and knowledge captured and disseminated to sustain and enhance the project's adaptation benefits | | | | | | | |
| **Outcome 2**<br><br>Government planning and technical capacity enhanced to sustain and enhance the project's adaptation benefits and knowledge captured and disseminated | Level of capacity at the sub-national level increased, measured by the number of adaptation actions planned in the target area | Capacity is limited, especially outside the national level. It is unclear if any adaptation projects have been planned | 5 projects prepared and planned for through the government system that enhance this project's adaptation benefits, and extend climate change adaptation to a greater number of people in the target area. These projects should include the particular, differentiated adaptation needs of women | R. Political issues change the nature of the planning system<br><br>A. There is continued broad support for climate change adaptation, politically | Review of planning | Baseline, mid-term and end | Executing entity |

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| **Output 2.1.**<br><br>Government officers at the provincial and districts/cities trained to plan effectively for sustaining and enhancing the project's adaptation benefits | No. of government staff trained disaggregated by sex | There is constrained capacity (both in terms of manpower and technical know-how) to plan for the replication and upscaling of climate change actions | 60 government officers trained, at least 20 of whom are women | R. Changing priorities in the planning system result in adaptation getting lower priority<br><br>A. Continued willingness exists to plan for and implement climate change adaptation | Training reports | Baseline, mid-term and end | Executing entity and UN-Habitat |
| **Output 2.2.**<br><br>Government officers at the provincial and district provided with comprehensive technical training to manage, operate and maintain the infrastructure | No. of government staff trained<br><br>No. of female government staff trained | There is constrained capacity (both in terms of manpower and technical know-how) to manage, operate and maintain infrastructure | 25 government officers trained, at least 10 of whom women | R. Staff move on to new posts, once trained<br><br>A. Staff will remain in place to be able to implement the training | Training reports | Baseline, mid-term and end | UN-Habitat and Executing entity |
| **Output 2.3.** Institutional systems strengthened to monitor adaptation investments and replicate their benefits | No. of monitoring systems in place | There is currently no systematic way to review 'what works' in terms of climate change adaptation and to upscale its benefits | A system in place to systematically monitor adaptation investments and plan and advocate for replication, upscaling and further funding | R. Changing priorities in the planning system result in adaptation getting lower priority<br><br>A. Continued willingness exists | Institutional review report | Baseline, mid-term and end | UN-Habitat and Executing entity |

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| | | | | to plan for and implement climate change adaptation | | | |
| **Output 2.4** Knowledge from the project implementation is captured and disseminated to local and national stakeholders, focusing on sustainable adaptation actions and policy enhancement | No of knowledge products produced and estimated number of people reached | There is currently no systematic approach to capturing successful or autonomous adaptation practices, and no 'anchoring' of urban adaptation issues within either MoE or NCSD | At least 20 local good practice documents (which could include local language articles, radio broadcasts or brochures) and 3 major policy recommendations. At least 3 of the knowledge products will focus specifically on the adaptation priorities and actions of women At least 100,000 people reached with knowledge products | R Local people are unwilling to change their practices or sceptical of adaptation actions<br>A Autonomous adaptation actions are still possible in the coastal area, and that coastal adaptation continues to be a high priority for the government | The physical knowledge products. Workshop reports (at the national level) | Baseline and end | |

Activities

2.1.1 Define trainee group
2.1.2 Baseline knowledge/training needs assessment
2.1.3 Define/prepare training materials
2.1.4 Give trainings
2.1.5 Monitor

2.2.1 Define trainee group (note that these are different from Output 2.1)
2.2.2 Baseline knowledge/training needs assessment
2.2.3 Define/prepare training materials
2.2.4 Give trainings
2.2.5 Monitor

2.1.1 Perform institutional review
2.1.2 Make recommendations
2.1.3 Train appropriate range of officers

Milestones

- All trainees defined by month 6
- All baseline knowledge/training needs assessments completed by month 12
- All training materials prepared by month 15
- All trainings complete between months 15-36
- All monitoring of training complete by month 42

- Institutional review complete by month 12
- Training conducted by month 18
- Plans updated by month 36
- Case studies complete before month 48

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| 2.1.4 Highlight best practices and integrate into plans<br>~~2.1.5 Write case studies~~<br><br>2.4.1 Write case studies<br>2.4.2 Develop stories for radio broadcasts (note that radio is still a very common means of receiving information in rural Cambodia)<br>2.4.3 Develop high level policy recommendations<br>2.4.4 Conduct national level policy alignment workshops | | | | | | | |
| **Project component 3**: Resilience built through investment in small-scale protective and basic service infrastructure and natural assets | | | | | | | |
| **Outcome 3**<br><br>Resilience built through investment in small-scale protective and basic service infrastructure and natural assets | No of people that benefit from climate change resilient infrastructure, access to natural assets and improved livelihood options to withstand conditions resulting from climate variability and change | 62,521 people, at least 50% of whom women, have been assessed as vulnerable to climate change impacts | 100% of the vulnerable population (62,521 people)<br>of which at least 50 percent women have access to resilient infrastructure and/or protective natural assets | R – Delay in implementing infrastructure<br><br>A – Agreement of Cooperation will stipulate timeframe for implementing infrastructure | Field site inspections photo documentation and<br>data base and geo-tacked community monitoring report | Baseline, mid-term and end | UN-Habitat |
| **Output 3.1.**<br><br>285ha of Mangroves restored in Kep City and Angkaol Communes, Kep Province and Prey Nob Commne, Prey Nob District | No. of people who benefit from the restored mangrove, disaggregated by sex | Approximately 1140ha of land is vulnerable to coastal flooding, erosion, and salt-water incursion | This land and 17,754 people, at least 50% of whom are women have greater protection from coastal flooding, erosion and salt-water incursion.<br><br>There will be $600 benefit to fishermen per hectare of mangrove planted | R – Plantation Failure, illegal cutting<br><br>A – Full buy-in from local communities who understand the long-term benefits of mangroves | MPMP and monitoring reports | Baseline, mid-term and end | UN-Habitat |

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| Activities<br>3.1.1 Site reconfirmation and finalisation<br>3.1.2 Develop and finalise the Mangrove Planting and Management Plan (MPMP)<br>3.1.3 Approve the MPMP<br>3.1.4 Plant the mangroves<br>3.1.5 Monitor the progress of the mangrove areas and highlight any problems<br><br>For a more detailed description of the activities, see Project sheet 3.1, here | | | | Milestones<br>• MPMP complete and approved (month 9)<br>• Plantation underway (Month 12)<br>• Plantation complete (Month 24) | | | |
| **Output 3.2a**<br>Water gates repaired in 3 locations in Pong Teuk and Angkaol<br><br>**Output 3.2b**<br>Canals Rehabilitated in Pong Teuk and Angkaol Communes | No. of people who benefit from the repaired water gates and rehabilitated canals, disaggregated by sex | Water shortages arising from inadequate water management | 1960ha of paddy with greater water access.<br><br>Increased rice yield for agricultural families, and water access for non-agri families<br><br>A total of 19,553 people, at least 50% are women, benefit | R – Solid waste decreases the effectiveness of the gates<br><br>A – The training under Output 1.1 will be effective | Monitoring reports | Baseline, mid-term and end | UN-Habitat |
| Activities<br>3.2.1 a&b Reconfirm and design in further detail, based on technical drawings provided<br>3.2.2 Procure the necessary construction materials<br>3.2.3 Undertake the construction work during the dry season<br>For a more detailed description of the activities, see Project sheets 3.2a and 3.2b here | | | | Milestones<br>• Construction complete by month 18. Physical work on 3.2b to take place during the dry season | | | |
| **Output 3.3**<br>Prevention of salt water ingress through improved channels | No. of people who benefit from the rehabilitated canals | 3,500 people in the target area lack basic water management infrastructure and suffer from salt water incursion | 3,500 people, at least 50% of whom are women will benefit | R. Inability to access the site<br><br>A. Sea-level rise will be within worst-case scenario projections. Continued cooperation to allow site access | Monitoring reports | Baseline, mid-term and end | UN-Habitat |

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| Activities<br>3.3.1 Final re-confirmation on ESS, considering the need for an access road<br>3.3.2 Procurement of hardware<br>3.3.3 Site clearance and access road construction<br>3.3.4 Install gates and embankments<br><br>For a more detailed description of the activities, see Project sheet 3.3 here | | | | Milestones<br>• ESS reconfirmation complete by month 9<br>• Access road constructed by Month 18<br>• Activity complete by month 36<br>• Site restored to original state by month 42 | | | |
| **Output 3.4**<br>O Thmar Reservoir rehabilitated to increase water storage capability Kep Province<br><br>**Output 3.4b**<br>Roness reservoir rehabilitated for enhanced safety and storage<br><br>**Output 3.4c**<br>Coastal flood protection embankment in Kep and Angkoal constructed | No. of people who have improved access to water<br><br>No. of ha land protected<br><br>No of people with increased protection from coastal flooding, disaggregated by sex<br><br>Ha of mangrove demarcated | 14,060 people have unreliable access to water, are vulnerable to poor conditions or the reservoir, and rely on rainfed agriculture<br><br>People in the coastal area are highly vulnerable to coastal flooding | 14,060 people, , of whom 50% are women, will have year-round access to water~~,~~ even during especially dry years, 600ha of rice paddy will be irrigated.<br><br>The same number of people will benefit from increased protection from flooding | R. A contractor with sufficient technical capability cannot be found<br><br>A. A pontoon suitable for dredging (see project sheet) can be found | Monitoring reports | Baseline, mid-term and end | UN-Habitat |
| Activities<br>3.4.1 Clear the site<br>3.4.2 Confirm (through survey if necessary) that the site is clear on UXO<br>3.4.3 Procure the necessary hardware<br>3.4.4 Undertake excavation work<br>3.4.5 Move the excavated material to the new construction sites | | | | Milestones<br>• UXO clearance report complete by month 6)<br>• Excavation ~~begins~~ complete by month 1~~2~~8<br>• Material removal complete by month 21<br>• Complete by month 36 | | | |

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| For a more detailed description of the activities, see Project sheets 3.4a, b and c, here | | | | | | | |
| **Output 3.5** Resilient Housing designs developed and demonstrations constructed (both provinces) | No. of locally appropriate housing designs developed<br><br>No. of demo houses constructed | Up to 200 houses per commune are destroyed or severely damaged by strong winds every year.<br><br>Women are more likely to be injured or affected from or by damaged houses<br><br>Houses are not well constructed and use poor materials | 9,720 people, of whom, 50% are women, benefit from design, training and 4 demo houses built | R. people don't utilise the training in their own houses/future construction/repairs<br><br>A. People will use their skills productively, will remain in the area and will reconstruct their houses | Monitoring reports | Baseline, mid-term and end | UN-Habitat |
| Activities<br>3.5.1 Develop in greater detail demo house drawings<br>3.5.2 Select training beneficiaries considering age, gender and location<br>3.5.3 Run educational programmes/courses for trainees<br>3.5.4 Construct demo houses with trainees<br><br>For a more detailed description of the activities, see Project sheet 3.5, here | | | | Milestones<br>• Detailed designs complete by month 12<br>• Courses and demo houses complete in all communes by month 36 | | | |
| **Output 3.6** Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province. | No of people whose land is protected from salt water incursion, disaggregated by sex<br><br>No. of ha of land protected | The land-side of the embankment and water gates is severely affected by salt water, meaning that rice paddies are unproductive and surface water used for drinking is unusable | 20,000 people, of whom 50% women, in the area (of a total population of 27,667) and 2,000ha of rice fields protected | R. Access to the site will not be possible in the rainy season, due to the existing quality of the access road and the nature of the equipment that needs to travel down it<br><br>A. Sea-level rise will be within worst-case | Monitoring reports | Baseline, mid-term and end | UN-Habitat |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | scenario projections. | | | |
| Activities<br>3.6.1 Topographic survey<br>3.6.2 Geotechnical survey<br>3.6.3 Install new gates and fill areas<br><br>For a more detailed description of the activities, see Project sheet 3.6, here | | | | Milestones<br>• Topographic and geotechnical surveys complete by month 18<br>• New gates installed by month 24<br>• Areas filled and works complete by month 36 | | | |
| **Output 3.7** Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province | The number of days' income lost to flooding events | The market floods every time there is heavy rain. Sellers lost around 30 days' income per year as a result. The vast majority of sellers (up to 90%) are women | The market retains 365 day per year functionality, not losing any days to heavy rainfall.<br><br>The market has access to harvested rainwater<br><br>4,500 people, up to 90% of whom are women, have improved year-round income | R. Sellers will be impacted while the works are ongoing<br><br>A. The market can continue its functionality throughout the adaptation works, and that the incomes of those who derive their livelihood there will not be affected | Monitoring reports | Baseline, mid-term and end | UN-Habitat |
| **Activities**<br>3.7.1 Re-consult the sellers and the owner with a view to minimising risks and disruption arising from the works<br>3.7.2 Procure all necessary materials<br>3.7.3 Undertake works<br>3.7.4 Specific training for market vendors and residents<br>3.7.5 Develop a best-practice case study<br><br>For a more detailed description of the activities, see Project sheet 3.7, here | | | | **Milestones**<br>• Re-consultations complete by month 9<br>• Works underway by month 12<br>• Works Complete by month 36<br>• Final training and best-practice case study complete by month 42 | | | |
| **Output 3.8** Tide gauge with early warning | No. of people who have improved access to tidal | There is no accurate or local tidal information provided to people, | An estimated 30,000 people, of whom, 50% are women have | R. People will have adapted to not having | Monitoring reports | Baseline, mid-term and end | UN-Habitat |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| system broadcast capabilities installed (Tide Gauge in Ou Okhna Heng Commune, Prey Nib District | information and early warning, disaggregated by sex | and no early warning system | access to early warnings. Tidal information is also available to the local government and beneficiaries in the coastal area. | weather information, and may not heed warnings provided<br><br>A. Information can be provided to people in a timely manner | | | |

| | |
|---|---|
| Activities<br>3.8.1 – Import the tide gauge<br>3.8.2 – installation of tide gauge and integration with other PoWRAM systems<br>3.8.3 – Training for PoWRAM and other related officials.<br><br>For a more detailed description of the activities, see Project sheet 3.8, here | Milestones<br>Tide Gauge in-country by month 18<br>Training complete by month 24<br>Fully operational by month 30 |

**Table 22**

*Activities and Milestones*

| OUTPUT | YEAR 1 | | | | YEAR 2 | | | | YEAR 3 | | | | YEAR 4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| **Output 1.1.** Community capacity built to collect and manage solid waste | | X | | X | X | | | | | | | X | | X | | |
| **Output 1.2.** Communities in target areas have been trained on resilient house construction techniques | | X | | X | X | | | | | | | X | | X | | |
| **Output 1.3.** Communities have been organised to manage, monitor and maintain the infrastructure investments under Component 3 | | X | | X | X | | | | | | | X | | X | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Output 2.1.** Government officers at the provincial and districts/cities trained to plan effectively for sustaining and enhancing the project's adaptation benefits | X | | X | X | | | | | X | | X | |
| **Output 2.2.** Government officers at the provincial and district provided with comprehensive technical training to manage, operate and maintain the infrastructure | X | | X | X | | | | | X | | X | |
| **Output 2.3.** Institutional systems strengthened to monitor adaptation investments and replicate their benefits | | | X | | X | | | | X | | | X |
| **Output 2.4** Knowledge from the project implementation is captured and disseminated to local and national stakeholders, focusing on sustainable adaptation actions and policy enhancement | | | | | X | | | X | | X | | |
| **Output 3.1.** 285ha of Mangroves restored in Kep City and Angkaol Communes, Kep Province | | X | X | | | X | | | | | | |
| **Output 3.2** Water gates repaired in 3 locations in Pong Teuk and Angkaol (a)<br><br>Canals Rehabilitated in Pong Teuk and Angkaol Communes (b) | | | | | X | | | | | | | |
| **Output 3.3** Prevention of salt water ingress through improved channels | | X | | | X | | | | X | | X | |
| **Output 3.4** O Thmar Reservoir rehabilitated to increase water storage capability Kep Province | | | X | | X | X | | X | X | | | X |
| **Output 3.5** | | | X | | | | | | X | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Resilient Housing designs developed and demonstrations constructed (both provinces) | | | | | | | | | | | | |
| **Output 3.6** Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province. | | | | X | | X | | | X | | | |
| **Output 3.7** Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province | X | X | | | | | | | X | | X | |
| **Output 3.8** Tide gauge with early warning system broadcast capabilities installed (Tide Gauge in Ou Okhna Heng Commune, Prey Nob District | | | | X | | X | | X | | | | |

# F. PROJECT ALIGNMENT WITH THE ADAPTATION FUND RESULTS FRAMEWORK

## Table 23

***Project alignment with the Adaptation Fund results framework***

| Project Outcome | Project Outcome Indicator | Fund Outcome | Fund Outcome Indicator | Grant Amount (USD) |
|---|---|---|---|---|
| **Outcome 1**<br><br>Community-scale knowledge and capacity enhanced to sustain the adaptation benefits of the project's investments | Level of knowledge capacity at the community increased, measured by the number of community groups performing basic maintenance, clean-ups or house maintenance | **Outcome 3:** Strengthened awareness and ownership of adaptation and climate risk reduction processes at<br>local level | 3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses | **$275,000** |
| **Outcome 2**<br>Government planning and technical capacity enhanced to sustain and enhance the project's adaptation benefits | Level of capacity at the sub-national level increased, measured by the number of adaptation actions planned in the target area | **Outcome 2:** Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses | 2.1. No. and type of targeted institutions with increased capacity to minimize exposure to climate variability risks | **$275,000** |

| | | | | |
|---|---|---|---|---|
| **Outcome 3**<br><br>Resilience built through investment in small-scale protective and basic service infrastructure and natural assets | No of people that benefit from climate change resilient infrastructure, access to natural assets and improved livelihood options to withstand conditions resulting from climate variability and change | **Outcome 4:** Increased adaptive capacity within relevant development and natural resource sectors<br><br>**Outcome 5**: Increased ecosystem resilience in response to climate change and variability-induced stress<br><br>**Outcome 6:** Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas | 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress<br><br>5. Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress<br><br>6.1 Percentage of households and communities having more secure (increased) access to livelihood assets | **$3,620,507** |

| Project Output | Project Output Indicator | Fund Output | Fund Output Indicator | Grant Amount (USD) |
|---|---|---|---|---|
| **Output 1.1.** Community capacity built to collect and manage solid waste | No. and type of trainings conducted to strengthen capacity on solid waste management | ***Output 3***: Targeted population groups participating in adaptation and risk reduction awareness activities | 3.1.1 No. and type of risk reduction actions or strategies introduced at local level | $$106,145 |
| **Output 1.2.** Communities in target areas have been trained on resilient house construction techniques | No. of people trained on resilient house construction techniques | ***Output 3***: Targeted population groups participating in adaptation and risk reduction awareness activities | 3.1.1 No. and type of risk reduction actions or strategies introduced at local level | $82,995 |
| **Output 1.3.** Communities have been organised to manage, monitor and maintain the infrastructure investments under Component 3 | No. of trainings provided to communities on managing, monitoring and maintaining infrastructure investments | ***Output 2.2:*** *Targeted population groups covered by adequate risk reduction systems* | 2.2.1. Percentage of population covered by adequate risk-reduction systems | $95,569 |
| **Output 2.1.** Government officers at the provincial and districts/cities trained to plan effectively for sustaining and enhancing the project's adaptation benefits | No. of government staff trained | ***Output 2.1***: 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 | $76,734 |
| **Output 2.2.** Government officers at the provincial and district provided with comprehensive technical training to manage, operate and maintain the infrastructure | No. of government staff trained | ***Output 2.1***: 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 | $123,845 |

| | | | | |
|---|---|---|---|---|
| **Output 2.3.** Institutional systems strengthened to monitor adaptation investments and replicate their benefits | No. of monitoring systems in place | ***Output 2.2:*** *Targeted population groups covered by adequate risk reduction systems* | 2.1.2. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased | $91,656 |
| **Output 2.4** Knowledge from the project implementation is captured and disseminated to local and national stakeholders, focusing on sustainable adaptation actions and policy enhancement | No of knowledge products produced and estimated number of people reached | ***Output 7*** *Improved integration of climate-resilience strategies into country development plans* | 7.1. No., type, and sector of policies introduced or adjusted to address climate change risks | $76,256 |
| **Output 3.1.** 285ha of Mangroves restored in Kep City and Angkaol Communes, Kep Province | No. of people who benefit from the restored mangrove | ***Output 5:*** Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability | 5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets) | $208,704 |
| **Output 3.2** Water gates repaired in 3 locations in Pong Teuk and Angkaol (a)<br><br>Canals Rehabilitated in Pong Teuk and Angkaol Communes (b) | No. of people who benefit from the repaired water gates and rehabilitated canals | ***Output 6:*** Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability | 6.1.1.No. and type of adaptation assets (physical as well as knowledge) created in support of individual or community-livelihood strategies | **$5,328 (a)**<br><br>**$76,050 (b)** |
| **Output 3.3** Prevention of salt water ingress through improved channels | No. of people who benefit from the rehabilitated canals | ***Output 6:*** Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability | 6.1.1.No. and type of adaptation assets (physical as well as knowledge) created in support of individual or community-livelihood strategies | $185,000 |

| | | | | |
|---|---|---|---|---|
| **Output 3.4**<br>O Thmar Reservoir rehabilitated to increase water storage capability Kep Province<br><br>Bank strengthening work at Roness Reservoir to provide additional water retention and safety.<br><br>Coastal flood protection embankment in Kep and Angkoal constructed | No. of people who have improved access to water<br><br>~~No. of ha land protected~~<br><br>No of people with increased protection from coastal flooding.<br><br>Ha of mangrove demarcated | ***Output 5:*** Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability | 5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets) | **$660,040**<br><br>**$1,304,000**<br><br>**$126,150** |
| **Output 3.5**<br>Resilient Housing designs developed and demonstrations constructed (both provinces) | No. of locally appropriate housing designs developed<br><br>No. of demo houses constructed | ***Output 6:*** Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability | 6.1.1.No. and type of adaptation assets (physical as well as knowledge) created in support of individual or community-livelihood strategies | **$89,000** |
| **Output 3.6**<br>Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province. | No of people whose land is protected from salt | ***Output 6:*** Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability | 6.1.1.No. and type of adaptation assets (physical as well as knowledge) created in support of individual or community-livelihood strategies | $97,750 |
| **Output 3.7**<br>Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province | The number of days' income lost to flooding events | ***Output 6:*** Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability | 6.1.2. Type of income sources for households generated under climate change scenario | **$712,905** |
| **Output 3.8**<br>Tide gauge with early warning system broadcast capabilities installed Tide Gauge in Ou Okhna Heng Commune, Prey Nob District | No. of people who have improved access to weather information and early warning | ***Output 6:*** Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability | 6.1.1.No. and type of adaptation assets (physical as well as knowledge) created in support of individual or community-livelihood strategies | **$52,380** |

| Adaptation Fund Core Indicators | Indicative Targets | Comments |
|---|---|---|
| 1 Number of Beneficiaries | 62,521 (50% women) | This only measures the beneficiaries of physical investments. It does not count the government officers trained by the project under Component 2 |
| 2. Early Warning Systems | 1 | There is no local early warning system in place, but local people receive warming of hazards from Ministry of Water Resources and Meteorology through TV, media and local authorities. |
| 3. Assets Produced, Developed, Improved, or Strengthened | 11 infrastructures | The investment sheets (Part II, Section A, and online) |
| 4. Increased income, or avoided decrease in income | 4500 people will directly increase their income,<br><br>57,113 will indirectly increase their income | The 4500 people will benefit from the adaptation activities at Veal Rinh Market (output 3.7)<br><br>The 57,113 beneficiaries are the combined total of outputs 3.2 (a&b), 3.3, 3.4 and 3.6. The adaptation actions under these outputs will enable to increase their incomes through improved water management |
| 5. Natural Assets Protected or Rehabilitated | 285ha | The adaptation activities under output 3.1 will lead to the planting/replanting of 285ha of mangrove, protecting 1143ha of land and benefitting 17,754 people |

# G. DETAILED BUDGET

| Programme Component | Outputs | Activities | Total Budget | Year 1 | Year 2 | Year 3 | Year 4 |
|---|---|---|---|---|---|---|---|
| Community-scale knowledge and capacity enhanced to sustain the adaptation benefits of the project's investments | 1.1. Community capacity built to collect and manage solid waste | 1.1.1 Define trainee group<br>1.1.2 Baseline knowledge/training needs assessment<br>1.1.3 Define/prepare training materials<br>1.1.4 Give trainings<br>1.1.5 Monitor | $106,145 | $51,128 | $55,017 | | |
| | 1.2. Communities in target areas have been trained on resilient house construction techniques | 1.2.1 Define trainee group<br>1.2.2 Baseline knowledge/training needs assessment<br>1.2.3 Define/prepare training materials<br>1.2.4 Give trainings<br>1.2.5 Monitor | $82,995 | $36,378 | $46,617 | | |
| | 1.3. Communities have been organised to manage, monitor and maintain the infrastructure investments under Component 3 | 1.3.1 Define community members who will lead<br>1.3.2Baseline knowledge/training needs assessment<br>1.3.3 Develop training materials<br>1.3.4Organise community-scale committees<br>1.3.5 Monitor | $95,659 | $41,902 | $53,667 | | |
| | | **COMPONENT 1 TOTAL** | **$284,709** | **$129,408** | **$155,301** | ~~$75,000~~ | |
| Government planning and technical capacity enhanced to sustain and enhance the | 2.1. Government officers at the provincial and districts/cities trained to plan effectively for sustaining and enhancing the project's adaptation benefits | 2.1.1 Define trainee group<br>2.1.2Baseline knowledge/training needs assessment<br>2.1.3 Define/prepare training materials<br>2.1.4 Give trainings<br>2.1.5 Monitor | $76,734 | $36,767 | $39,967 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| project's adaptation benefits | 2.2. Government officers at the provincial and district provided with comprehensive technical training to manage, operate and maintain the infrastructure | 2.2.1 Define trainee group<br>2.2.2 Baseline knowledge/training needs assessment<br>2.2.3 Define/prepare training materials<br>2.2.4 Give trainings<br>2.2.5 Monitor | $123,845 | $36,559 | $50,948 | $36,339 | |
| | 2.3. Institutional systems strengthened to monitor adaptation investments and replicate their benefits | 2.3.1 Perform institutional review<br>2.3.2 Make recommendations<br>2.3.3 Train appropriate range of officers<br>2.3.4 Highlight best practices and integrate into plans<br>~~2.3.5 Write case studies~~ | $91,656 | $25,439 | $39,278 | $26,939 | |
| | 2.4 Knowledge from the project implementation is captured and disseminated to local and national stakeholders, focusing on sustainable adaptation actions and policy enhancement | 2.4.1 Write case studies<br>2.4.2 Develop stories for radio broadcasts (note that radio is still a very common means of receiving information in rural Cambodia)<br>2.4.3 Develop high level policy recommendations<br>2.4.4 Conduct national level policy alignment workshops | $76,256 | $9,485 | $17,324 | $23,529 | $25,909 |
| | | **COMPONENT 2 TOTAL** | **$368,491** | **$108,249** | **$147,517** | **$86,817** | **$25,909** |
| Resilience built through investment in small-scale protective and basic service infrastructure and natural assets | 3.1. 285ha of Mangroves restored in Kep City and Angkaol Communes, Kep Province | 3.1.1 Site reconfirmation and finalisation<br>3.1.2 Develop and finalise the Mangrove Planting and Management Plan (MPMP)<br>3.1.3 Approve the MPMP<br>3.1.4 Plant the mangroves<br>3.1.5 Monitor the progress of the mangrove areas and highlight any problems | $208,704 | $35,000 | $150,000 | $20,000 | $3,704 |
| | 3.2a Water gates repaired in 3 locations in Pong Teuk and Angkaol | 3.2.1 a&b Reconfirm and design in further detail, based on technical drawings provided<br>3.2.2 Procure the necessary construction materials | $5,328 | | $5,328 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 3.2b Canals Rehabilitated in Pong Teuk and Angkaol Communes | 3.2.3 Undertake the construction work during the dry season | $76,050 | | $25,000 | $40,000 | $11,050 |
| | **Output 3.3** Prevention of salt water ingress through improved channels | 3.3.1 Final re-confirmation on ESS, considering the need for an access road<br>3.3.2 Procurement of hardware<br>3.3.3 Site clearance and access road construction<br>3.3.4 Install gates and embankments | $185,000 | $30,000 | $140,000 | $15,000 | |
| | **Output 3.4** O Thmar Reservoir rehabilitated to increase water storage capability Kep Province<br><br>**Output 3.4b** Bank strengthening work at Roness Reservoir to provide additional water retention and safety.<br><br>**Output 3.4c** Coastal flood protection embankment in Kep and Angkoal constructed | 3.4.1 Clear the site<br>3.4.2 Confirm (through survey if necessary) that the site is clear on UXO<br>3.4.3 Procure the necessary hardware<br>3.4.4 Undertake excavation work<br>3.4.5 Move the excavated material to the new construction sites | $660,040<br><br>$1,304,000<br><br>$126,010 | $100,000<br><br>$350,000 | $300,000<br><br>$500,000<br><br>$50,000 | $200,000<br><br>$400,000<br><br>$76,150 | $60,040<br><br>$54,000 |
| | **Output 3.5** Resilient Housing designs developed and demonstrations constructed (both provinces) | 3.5.1 Develop in greater detail demo house drawings<br>3.5.2 Select training beneficiaries considering age, gender and location<br>3.5.3 Run educational programmes/courses for trainees<br>3.5.4 Construct demo houses with trainees | $89,000 | $25,000 | $25,000 | $25,000 | $14,000 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Output 3.6**<br>Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province. | 3.6.1 Topographic survey<br>3.6.2 Geotechnical survey<br>3.6.3 Install new gates and fill areas | $97,750 | $15,000 | $35,000 | $31,750 | $16,000 |
| | **Output 3.7**<br>Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province | 3.7.1 Re-consult the sellers and the owner with a view to minimising risks and disruption arising from the works<br>3.7.2 Procure all necessary materials<br>3.7.3 Undertake works | $712,905 | $75,000 | $200,000 | $400,000 | $37,905 |
| | **Output 3.8**<br>Tide gauge with early warning system broadcast capabilities installed. Tide Gauge in Ou Okhna Heng Commune, Prey Nob District. | | $52,230 | | $20,000 | $32,380 | |
| | | **Component 3 TOTAL** | **$3,517,308** | **$680,000** | **$1,500,328** | **$1,140,280** | **$196,699** |
| | | **PROJECT ACTIVITIES TOTAL** | **$4,170,507** | **$917,657** | **$1,803,146** | **$1,227,097** | **$222,608** |
| | **Programme execution** | Project Team Leader (part-time) | $14,875 | $$4,250 | $4,250 | $4,250 | $2,125 |
| | | Programme Manager | $256,200 | $36,600 | $73,200 | $73,200 | $73,200 |
| | | Office staff and technical support | $52,500 | $ 7,500 | $15,000 | $15,000 | $15,000 |
| | | Office facilities | $42,000 | $6,000 | $12,000 | $12,000 | $12,000 |
| | | Travel related to execution | $50,400 | $7,200 | $14,400 | $14,400 | $14,400 |
| | | Final Evaluation | $21,813 | $ | $ | $ | $21,813 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | **PROJECT EXECUTION TOTAL** | **$437,788** | **$61,550** | **$118,850** | **$118,850** | **$138,538** |
| | **TOTAL PROGRAMME COST** | **$4,608,295** | **$979,207** | **$1,921,996** | **$ 1,345,947** | **$361,146** |
| **Programme cycle management** | PSC 7 Percent (on total operational budget including components below) approx. 7.1 percent | $325,010 | $32,511 | $65,023 | $178,813 | $48,663 |
| | Evaluation support cost (HQ) | $10,000 | $1,500 | $2,800 | $3,900 | $1,800 |
| | Project Support Costs (ROAP)<br>- Project Management Committee Meetings<br>- IE staff salary / supervision of reports etc.<br>- Project supervision missions | $56,690 | $7,195 | $11,500 | $30,000 | $8,000 |
| | **PROJECT CYCLE MANAGEMENT TOTAL** | **$391,705** | **$41,206** | **$79,323** | **$212,713** | **$58,463** |
| | **AMOUNT OF FINANCING REQUESTED** | **$5,000,000** | **$1,020,413** | **$2,001,319** | **$1,558,660** | **$419,609** |

## Detailed Budget for Components 1&2

| Output | | Cost | Year 1 | Year 2 | Year 3 | Year 4 |
|---|---|---|---|---|---|---|
| | **Output 1.1** | | | | | |
| | *Main Partners MoE/ NCSD, local governments* | | | | | |
| | trainings on provincial and commune level | **9,350** | 4,400 | 4,950 | 0 | 0 |
| | Climate Change Assessment Specialist (Int) | **33,695** | 13,478 | 20,217 | 0 | 0 |
| | Community Mobilizer, GIS support, enumerators | **25,300** | 11,500 | 13,800 | 0 | 0 |
| | Communication (data for tablets/GIS etc.) | **5,400** | 1,800 | 3,600 | 0 | 0 |
| | Laptops (2), printer | **5,000** | 5,000 | - | 0 | 0 |
| | Production of maps, printing of assessments etc | **6,250** | 3,500 | 2,750 | 0 | 0 |
| | City consultations | **8,750** | 5,250 | 3,500 | 0 | 0 |
| | Tranport/Travel /mission | **12,400** | 6,200 | 6,200 | 0 | 0 |
| | Sub total 1 | **106,145** | **51,128** | **55,017** | **0** | 0 |
| | **Output 1.2** | | | | | |
| | Main Partners MoE/ NCSD | | | | | |
| | Urban Planner/DRR expert (int) | **33,695** | 13,478 | 20,217 | 0 | 0 |
| | Training ( evidence base action palnning) | **8,250** | 3,850 | 4,400 | 0 | 0 |
| | Planners | **19,250** | 8,250 | 11,000 | 0 | 0 |
| | Transport (travel/per diem) | **18,600** | 9,300 | 9,300 | 0 | 0 |
| | Reports | **3,200** | 1,500 | 1,700 | 0 | 0 |
| | Sub total 2 | **82,995** | **36,378** | **46,617** | 0 | 0 |
| | **Output 1.3** | | | | | |
| | Main Partners MoE/ NCSD, local governments | | | | | |
| | Climate Change Planner | **33,695** | 13,478 | 20,217 | 0 | 0 |
| | Local Planners, GIS support, enumerators | **18,400** | 6,900 | 11,500 | 0 | 0 |
| | Training | **8,400** | 3,600 | 4,800 | 0 | 0 |
| | Transport (travel/per diem) | **18,600** | 9,300 | 9,300 | 0 | 0 |
| | City consultations | **10,500** | 5,250 | 5,250 | 0 | 0 |
| | Production of maps, printing of plans etc | **5,974** | 3,374 | 2,600 | 0 | 0 |
| | Sub total 3 | **95,569** | **41,902** | **53,667** | 0 | 0 |
| | **Outcome 1 total** | **284,709** | **129,408** | **155,301** | **0** | **0** |

| Output | | Cost | Year 1 | Year 2 | Year 3 | Year 4 |
|---|---|---|---|---|---|---|
| | **Output 2.1** | | | | | |
| | Main partner NCDD | | | | | |
| | Climate Change Planning/Assessment Expert | **40,434** | 20,217 | 20,217 | 0 | 0 |
| | Capacity Development Expert | **24,750** | 11,000 | 13,750 | 0 | 0 |
| | Initial Training | **6,000** | 3,000 | 3,000 | 0 | 0 |
| | Layout and printing | **5,550** | 2,550 | 3,000 | | |
| | Sub total 4 | **76,734** | **36,767** | **39,967** | 0 | 0 |
| | **Output 2.2** | | | | | |
| | Main partner MoE | | | | | |
| | Climate Change Assessment Expert: | **33,695** | 10,109 | 16,848 | 6,739 | 0 |
| | Community Mobilizer, GIS support, enumerators | **35,200** | 11,000 | 15,400 | 8,800 | 0 |
| | Training | **5,500** | 1,100 | 2,200 | 2,200 | 0 |
| | Rental of drone, tablets | **4,700** | 1,500 | 1,700 | 1,500 | 0 |
| | Communication (data for tablets/GIS etc.) | **8,400** | 1,800 | 3,600 | 3,000 | 0 |
| | Transport (travel/per diem) | **31,500** | 9,450 | 9,450 | 12,600 | 0 |
| | Production of maps and documents | **4,850** | 1,600 | 1,750 | 1,500 | |
| | Sub total 5 | **123,845** | **36,559** | **50,948** | **36,339** | **0** |
| | **Output 2.3** | | | | | |
| | Main partner MoE | | | | | |
| | Climate Change Planner | **26,956** | 6,739 | 13,478 | 6,739 | 0 |
| | Local Planners, Community Mobilizers, Facilitators | **32,200** | 9,200 | 13,800 | 9,200 | 0 |
| | Transport (travel/per diem) | **18,600** | 6,200 | 6,200 | 6,200 | 0 |
| | Community consultations | **9,000** | 1,800 | 3,600 | 3,600 | 0 |
| | Production of maps, printing of plans etc. | **4,900** | 1,500 | 2,200 | 1,200 | 0 |
| | Sub Total 6 | **91,656** | **25,439** | **39,278** | **26,939** | **0** |
| | **Output 2.4** | | | | | |
| | *Main Partners MoE/ NCSD, local governments* | | | | | |
| | Knowledge Management Expert | **26,956** | 3,370 | 6,739 | 6,739 | 10,109 |
| | Knowledge Management workshops | **3,850** | 550 | 550 | 1,100 | 1,650 |
| | Transport (travel/per diem) | **34,850** | 4,100 | 8,200 | 12,300 | 10,250 |
| | Production of reprots documents e-stories | **7,900** | 1,165 | 1,235 | 2,500 | 3,000 |
| | Communication | **2,700** | 300 | 600 | 900 | 900 |
| | Sub total 7 | **76,256** | **9,485** | **17,324** | **23,539** | **25,909** |
| | **Outcome 2 total** | **368,491** | **108,249** | **147,517** | **86,817** | **25,909** |

Please note that the detailed budget for activities under Component 3 can be found in the individual project design sheets, which can be found here

## Budget Explanatory Notes

### Project Execution Cost

A. Project Support Costs (ROAP) - Project Management Committee Meetings - IE staff salary / supervision of reports etc. - Project supervision missions: The Human Settlement Officer at the Regional Office of UN-Habitat will provide oversight support and regular field mission for which $7,195; $11,500; $30,000: $8,000 are budgeted for respective year with a total budget of $56,695 for the project period.

B. Following national staff are budgeted:

- Program Manager for 42 person-months at $6,100 per month with a total allocation of $256,200. The Programme Manager will be contracted through UNON.
- Office staff and technical support for 42 person-months at $1,250 per month with a total allocation of $52,500.

C. Following Operations costs are budgeted:

- Office operations at $1,000 per month. Total budget $42,000.
- Travel related to execution at $1,200 per month. Total budget $54,600.

D. $21,988 has been budgeted for project evaluation including support from UN-Habitat HQ.

**Project Cycle Management Fee**

a. Project Support Cost by the UN-Habitat Regional Office is budgeted at 1.134% of total cost.
b. UN-Habitat HQ Project Support Cost is budgeted at 7% of total cost.
c. $10,000 has been budget for UN-Habitat HQ Evaluation Unit support to the project

# H. DISBURSEMENT SCHEDULE

| | Year 1 | Year 2 | Year 3 | Year 4 | Total |
|---|---|---|---|---|---|
| | 1st disbursement – upon agreement signature | 2nd disbursement – One Year after project start<br>▪ Upon First Annual Report<br>▪ Upon financial report indicating disbursement of at least 70% of funds | 3rd disbursement - Two years after project start<br>▪ Upon Second Annual Report<br>▪ Upon financial report indicating disbursement of at least 70% of funds | 4th disbursement – Third Year after Project Start<br>▪ Upon Third Annual Report<br>▪ Upon financial report indicating disbursement of at least 70% of funds | |
| **Milestone** | Milestones (by end of year)<br>- Full list of trainees decided with background info developed (for Outputs 1&2) | Milestones (by end of year)<br>- All training materials finalised<br>- 50% of training complete (for Components 1&2)<br>- Mangrove planting (physical | Milestones (by end of year)<br>- All training complete (Components 1&2)<br>- Local level plans updated | Milestones (by end of year)<br>- All monitoring complete<br>- Case studies complete<br>- Output 3.3 – Site restored | |

| | | | | | |
|---|---|---|---|---|---|
| | - Baseline knowledge/TNA complete (for outputs 1&2)<br>- Training materials drafted<br>- MPMP Complete<br>- UXO clearance report (where necessary)<br>- Detailed house designs completed<br>- Further market consultations complete and works underway (output 3.7) | works) complete<br>- Output 3.2a+b construction complete<br>- Output 3.3 access road complete<br>- Output 3.4 Excavation underway<br>- Demo house construction underway<br>- Output 3.6 Topographic survey complete<br>- Output 3.6 Gates installed<br>- Output 3.7 physical works underway<br>- Output 3.8 Procurement and import complete | - Output 3.3 physical works complete<br>- Output 3.4 (a,&b and c) physical works complete<br>- Output 3.5 all demo houses and training complete<br>- Output 3.6 All physical works complete<br>- Output 3.7 All physical works complete<br>- Output 3.8 Tide gauge fully operational | to original state **if** communities don't want to keep the access road<br>- Output 3.7 Best practice case study and replication designs complete | |
| **Schedule date** | **October 2019 Or Upon Signing** | **October 2020** | **October 2021** | **October 2022** | **TOTAL** |
| A. Project Funds (US$) | $790,000 | $1,775,328 | $1,408,380 | $196,799 | $4,170,507 |
| B. Programme Execution | $73,784 | $112,539 | $112,539 | $138,925 | $437,788 |
| C. Programme Cycle Mgt | $41,206 | $79,323 | $212,713 | $58,463 | $391,705 |
| **TOTAL** | **$904,990** | **$1,967,190** | **$1,733,632** | **$394,187** | **$5,000,000** |

## Part IV – Endorsement by Government and Certification by the Implementing Entity

**A. Record of endorsement on behalf of the government**[61]

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:

| | |
|---|---|
| Dr. Tin Ponlok<br>Secretary of State<br>National Council for Sustainable Development<br>Designated National Authority for the Adaptation Fund of Cambodia | Date: 17th December 2018 |

The scanned letter is provided on the next page

1. 6. 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.

**KINGDOM OF CAMBODIA**
**Nation Religion King**

**National Council for Sustainable Development**
**General Secretariat**
No: 449 GSSD

Phnom Penh, 17th December 2018

**To: The Adaptation Fund Board Secretariat**
c/o Global Environment Facility Secretariat
1818H Street, NW, MSN P-4-400
Washington DC, United State of America
Email: secretariate@adaptation-fund.org
Fax: +1 2025223240/5

**Endorsement for "Climate Change adaptation through protective small-scale infrastructure interventions in Cambodian coastal settlements" proposal**

**Dear Sir/Madam,**

In my capacity, as Designated Authority for the Adaptation Fund in Cambodia, I confirm that the above national project is in accordance with the Royal Government of Cambodia national priorities, especially with the specific commitments to the Cambodia Climate Change Strategic Plan (2014-2023), in implementing adaptation activities to reduce the adverse impacts and risks posed by climate change in Cambodia.

Accordingly, I am pleased to endorse the above project proposal for support from the Adaptation Fund. If approved, the project will be implemented by the United Nations Human Settlements Programme (UN-Habitat) and executed by the National Council for Sustainable Development (NCSD), the Ministry of Environment and Sub-National Authority of Kep and Preah Sihanouk Provinces. Several other line ministries/departments, identified sub-national authorities and non-governmental organizations will also be involved in the implementation of this project.

The project proposal builds on the relevant provincial, municipal/district and community-level climate vulnerability and local development plans/strategies. As such the project is based on a large number of in-depth consultations with Government and beneficiary communities. In close collaboration with key national Government entities and sub-national authorities, the proposal aims to support and build resilience to climate change for housing, infrastructure, environment and livelihoods through participatory planning and implementation with respect to the needs of woman, youth, elderly and other vulnerable groups.

Morodok Techo Building (Lot 503) Tonle Bassac, Chamkarmorn, Phnom Penh, CAMBODIA, Tel: 089 218 370

Further, the proposal builds on the long-standing collaboration between NCSD, the Ministry of Environment and UN-Habitat. Hence, my institution is grateful for the direct support in this regard.

I sincerely hope that this proposal will be considered favorably by the Adaptation Fund.

Yours sincerely,

Tin Ponlok
Secretary General
NCSD/Ministry of Environment

| |
|---|
| 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 Cambodia's Rectangular Strategy, it's National Climate Change Strategy and Sector Action Plans, 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. |
| Raf Tuts, Director, Programme Division, UN-Habitat For Pungkong OIC. |
| **Date: 03 January 2019** \| Tel and email: +254-20-762-3736 |
| Project Contact Person: Laxman Perera, Human Settlements Officer, Regional Office for Asia and the Pacific, |
| Tel+ 81-92-724-7121 |
| Email: Laxman.perera@un.org |

# Annex 1 – Community Consultations and Vulnerability Assessment

## A. Summary of Results from Community Consultation in Kep and Preah Sihanouk Provinces

### I. Kep Province

Kep province is located on low land close to the sea. Storm surge, flood and sea water intrusion were the main concerns raised during the field mission. Rice production has been affected by floods, groundwater has been contaminated by see water, poor houses have been destroyed by storms, and the coastline has been eroded by sea level rise and strong waves.

Kep province is highly vulnerable to climate change, especially in Angkaol commune. Storms are predominant concerns, while floods, saline intrusion (as influenced by sea level rise) and coastline erosion are as additional concerns. The highest vulnerabilities relates to agriculture (rice fields and salt farms). The vulnerability affects social welfare (and public health, economic growth and livelihoods), and unique habitats and ecosystems. Cultivated land is known to be vulnerable to saline intrusion in low land areas. The production of rice and crops are reduced due to poor soil quality and salinity. Storm surge causes disturbance to daily living and destruct agriculture production.

There are five target communes/ sangkat in Kep province as below information:

1. **Beneficiaries**

| No. | Name of Sangkat/commune | Angkaol | Pong Tuek | Prey Thom | Kep |
|---|---|---|---|---|---|
| 1 | Number of villages/Communities | 4 | 7 | 3 | 2 |
| 2 | Total population | 8,566 | 10,987 | 8,521 | 4,917 |
| 3 | Number of Female | 4,280 | 5,574 | 3,994 | 2,358 |
| 4 | # of age 0-17 | 3,288 | 4,579 | 2,969 | 2,111 |
| 5 | # of age 18-60 | 4,729 | 5,668 | 5,112 | 2,262 |
| 6 | # of > age 60 | 549 | 740 | 440 | 544 |
| 7 | # of indigenous people | 0 | 0 | 0 | 0 |
| 8 | # of disabled population | 108 | 169 | 78 | 98 |
| 9 | # of informal settlements | 20 | 25 | 260 | 13 |
| 10 | # of households | 1,835 | 2,481 | 1,917 | 1,074 |
| 11 | Poverty rate (%) | 18,04 | 11,66 | 11,41 | 9,30 |
| 12 | How many people (percent) will benefit from the following interventions in the community:<br>Main climate change impacts and risks need are: Storm, flood, Saline intrusion, drought | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | Physical/structural interventions (roads, bridges, agriculture irrigation, water supply facilities, drainage system, houses) | 80% | 80% | 50% | 50% |
| | Trainings | 50% | 50% | 50% | 30% |
| | Communication | 100% | 100% | 100% | 100% |
| | Information | 100% | 100% | 100% | 100% |
| 14 | Early warning systems in place covering different types of hazards (e.g. floods, cyclones, storms, droughts, etc.) | | | | |
| 15 | Existence of drainage and sewage system | No system in place | | | |
| 16 | Existence of different groups (ethnic, women, elderly, disabled, youth) who are treated differently. If so, how? | | | | |
| 17 | Participation of women in decision-making process. If no, why? | | | | |
| 18 | Responsible person to take elderly, disabled people and children | | | | |
| 19 | Main livelihoods / sources of income in community? | | | | |

**2. Climate change – impacts, barriers for adaptation and possible interventions analysis**

| No. | Name of Sangkat/commune | Most problematic climatic hazard | Effects | Factors stopping your community from coping with | Prioritized activities/ infrastructure to enhance adaptive capacity |
|---|---|---|---|---|---|

| | | | | current impacts | |
|---|---|---|---|---|---|
| 1 | Angkaol | • Storm surge<br>• Flood and sea water intrusion<br>• Sea level rise and strong waves<br>• Drought<br>• Beach erosion<br>• Water pollution | • Low rice production<br>• Contaminated ground water<br>• Destroyed houses<br>• Slow down fishing activities<br>• Damaged roads and dikes<br>• Coastline erosion<br>• Lack of water supply<br>• Poor sanitation and health issues | • Bad infrastructure<br>• Limited irrigation<br>• Insufficient clean water supply<br>• Limited of education and skills<br>• Lack of sanitation<br>• Health issues<br>• Poor management of natural resources like forests<br>• Poor houses | • Improve road condition and drainage system<br>• Agriculture irrigation<br>• Trees plantation on coastline<br>• Water supply by digging new ponds and wells<br>• Conserve and protect natural resources and biodiversity<br>• Resilient houses models<br>• Environmental management activities, e.g. planting trees, improve sanitation<br>• Provide vocational training on various topics |
| 2 | Pong Tuek | | | | |
| 3 | Prey Thom | | | | |
| 5 | Kep | | | | |

Note: Climate hazards, effects, coping barriers and priority interventions have been consolidated because they are similar in each Sangkat/commune.

### 3. Strengthened institutional capacity

| No. | Name of Sangkat/commune | Angkaol | Pong Tuek | Prey Thom | Kep |
|---|---|---|---|---|---|
| 1 | Having a structured plan for hazard risk reduction/ climate change adaptation | Yes, the structured plan in place but there is no facilities and financial assistance as well as limited capacity on | | | |

| | | |
|---|---|---|
| | | climate change adaptation and resilience. |
| **2** | Experience of the municipality on specialist training (for risk reduction and resilience) | There is no/limited capacity/experience at municipality or provincial level on specialist training. Usually, national specialists provide these such trainings. |
| **3** | Having a CC and resilience plan incorporated into planning schemes | Yes, commune development plan has been elaborated climate change but limited implementation due to no fund and capacity. |
| **4** | Reporting awareness of exposure to at least one key hazard | No, local community could not make a report on this matter due to lack of capacity. National and provincial officials have assisted on this report. |

**4. Assets produced, developed or strengthened (Health issues related to climate change)**

| No. | Name of Sangkat/commune | Angkaol | Pong Tuek | Prey Thom | Kep |
|---|---|---|---|---|---|
| **1** | # of households to report an occupant with diarrhoea in last 3 months in this settlement | 0 | 0 | 0 | 0 |
| **2** | # of households to report an occupant with malaria/ dengue last year | 0 | 0 | 0 | 0 |
| **3** | Existence of drainage issues that may give rise to mosquito borne diseases | Yes | Yes | Yes | Yes |
| **4** | Main health problems/ issues | No major health issues but lack of sanitation and hygiene cause of health problem to children and women. Blood pressure and liver function are main health issue for older people. | | | |

**5. Urban development and housing**

| No. | Name of Sangkat/commune | Angkaol | Pong Tuek | Prey Thom | Kep |
|---|---|---|---|---|---|
| **1** | # of dwellings with 'average' or 'poor' quality walls | 1,363 | 1,423 | 1,282 | 660 |
| **2** | # of overcrowded dwellings | 43 | 17 | 28 | 8 |
| **3** | # of dwellings, which have been trained on enhancing dwelling resilience | 0 | 0 | 0 | 0 |

6. **Physical Infrastructure**

| No. | Name of Sangkat/commune | Angkaol | Pong Tuek | Prey Thom | Kep |
|---|---|---|---|---|---|
| 1 | Are the streets and roads in this settlement planned and paved? | y | y | y | y |
| 2 | How many schools are there in this settlement? Are they built in a resilient manner? | 7 | 7 | 5 | 2 |
| 3 | How many hospitals/health posts are there in this settlement? Are they built in a resilient manner? | 1 | 2 | 1 | 0 |
| 4 | Are the necessary protective infrastructures in place (e.g. dams and walls) to reduce impact of flooding, storms, etc. in this community? | 0; small canal to receive water from Pong Tuek<br>2 dams to avoid salt water intrusion into rain fields | 1 | Shared with Ou Krasar, only 20% has been used by Prey Thom; 1 reservoir. | 0 |
| 5 | Does this settlement have an operational drainage system? Is it sufficient to drain precipitation and avoid flooding? | n | n | n | n |
| 6 | How many pagodas/mosques | 3 | 5 | 3 | 3 |

7. **Water resources and infrastructure**

| No. | Name of Sangkat/commune | Angkaol | Pong Tuek | Prey Thom | Kep |
|---|---|---|---|---|---|
| **1** | # of households with toilet | 1,618 | 1,627 | 1,125 | 605 |

| | | | | | |
|---|---|---|---|---|---|
| **2** | % of households using following types of toilets:<br>1) Shared community toilet<br>2) Share neighbours<br>3) Connected to septic tank<br>4) Straight pipe<br>5) Connected to town sewerage system | 90% - Straight pipe<br>10% - Septic tanks | 90% - Straight pipe<br>10% - Septic tanks | 80% - Straight pipe<br>20% - Septic tanks | 70% - Straight pipe<br>30% - Septic tanks |
| **3** | Average type of toilet:<br>1) Water seal<br>2) Flush<br>3) Pit | 90% - Pit<br>10% - Flush | 90% - Pit<br>10% - Flush | 60% - Pit<br>40% - Flush | 60% - Pit<br>40% - Flush |
| **4** | % of households with toilet discharging directly into the environment (unimproved pit toilet or straight pipe to sea/river/etc,) | 100% | 100% | 100% | 100% |
| **5** | Main water resource for livelihood | Surface water (ponds), ground water (wells), and rain water | | | |
| **6** | # of households that own (not shared) formal water connection with meter | 162 | 1,658 | 459 | 439 |

### 8. Waste and waste infrastructure

| No. | Name of Sangkat/commune | Angkaol | Pong Tuek | Prey Thom | Kep |
|---|---|---|---|---|---|
| **1** | Existence of regular waste collection by council or private organization | No | No | No | Yes |
| **2** | % of households to dispose waste in river, creek, or sea | 10% | 15% | 15% | 5% |
| **3** | % of households to burn or bury waste | 90% | 85% | 85% | 20% |

### 9. Natural assets protected or rehabilitated

| No. | Name of Sangkat/commune | Angkaol | Pong Tuek | Prey Thom | Kep | |
|---|---|---|---|---|---|---|
| **1** | Does this settlement report issues with pollution/ environmental degradation (e.g. coral or mangroves)? And how many people affected - livelihoods | Yes, local settlement report issues with pollution and environment degradation that affected to majority of people in the city, particularly fisherman. | | | | |
| **2** | Has any steps been taken in this settlement to improve/ | Due to no financial assistance, there is no major action taken place. Individual | | | | |

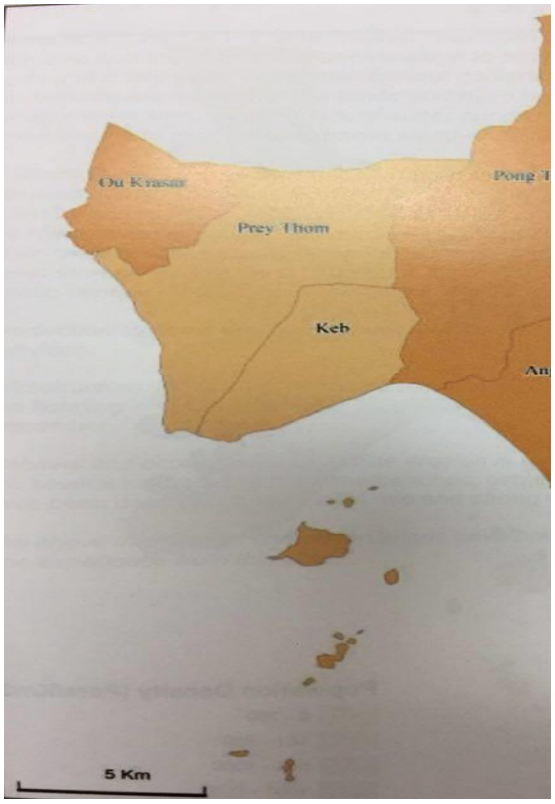
| | | | |
|---|---|---|---|
| | maintain/reduce impacts on natural assets? And how many people affected - livelihoods | people have taken care for themselves. There is around 20-30% of population affected their livelihood. | |
| | Main environmental problems **(Choose Top 3)**<br>1) River flooding<br>2) Coastal Flooding (saltwater intrusion)<br>3) Surface Flooding (rainwater)<br>4) River Bank Erosion (soil disappearing)<br>5) Inland erosion<br>6) Coastal Erosion (beach disappearing)<br>7) Pollution (dirty air, dirty water, dirty soil)<br>8) Rubbish (waste management)<br>9) Drainage (e.g., blocked drains)<br>10) Sanitation (problems with toilet)<br>11) Decline in Mangrove areas<br>12) Plant Disease<br>13) Insects or bugs (flies, mosquitoes) | 1. Coastal Flooding (saltwater intrusion)<br>2. Decline in Mangrove areas<br>3. Surface Flooding (rainwater)<br>4. Freshwater for drinking and usage | 1. Drainage (e.g. blocked drains)<br>2. Sanitation (problems with toilet)<br>3. Decline in Mangrove areas<br>4. Surface flood |

**10. Improved policies & regulations**

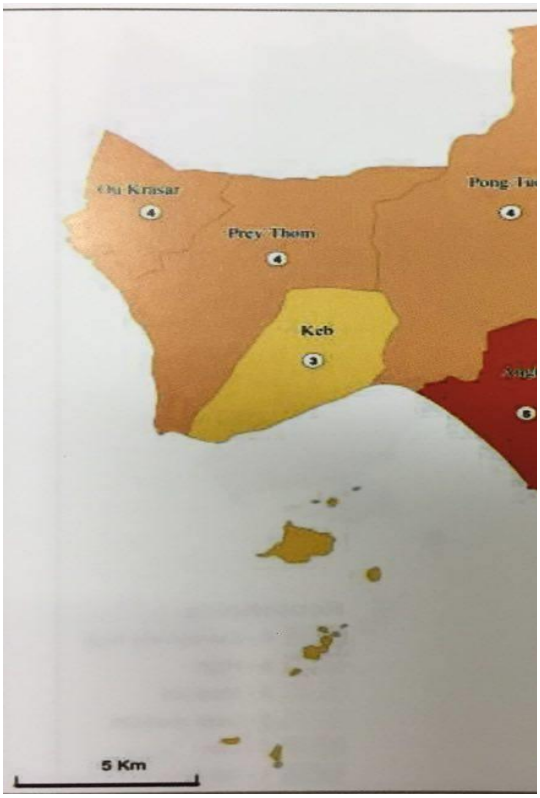
| No. | Name of Sangkat/commune | Angkaol | Pong Tuek | Prey Thom | Kep | |
|---|---|---|---|---|---|---|
| 1 | Does the sangkat/commune has the necessary building regulations for resilient development? Are they enforced properly in this community? | There are building regulations from national that has applied for nationwide usage. They are enforced by technical line department of land management, urban planning and construction. However, there is very limited information on the resilient development in those regulations. | | | | |
| 2 | Have any policies been introduced or adjusted in your municipality to address climate change? | There is no local policy to address climate change but they implement the national climate change action plan and NAPA. Commune development plan and investment programme have also addressed climate change and disaster risk reduction. | | | | |

## 11. Community vulnerability and risk map

**Poverty Map of Kep Province by Commune**




**Overall Vulnerability of Kep Province by Commune**




## II. Preah Sihanouk Province

Several climate change issues were discussed during the field consultation. Concerns included erratic rainfall, sea water intrusion on rice fields and ground water, storms and storm surge destroying rice and crop production, and waste management.

Households: Poor households living in homes built with zinc and thatched roofs, located on low lands along the coastline, are sensitive to storm surge and sea level rise. These CC exposures also affect drinking water, sanitation, health and livelihoods. Drought or erratic rainfall is also main issues that can affect water supplies and drinking water when the dry season lasts longer than usual. The capacity of these people to recover from extreme weather is still limited. Additionally, the management of solid water is also an issue, as it was found that the waste was floated during the floods.

The assessment studied 10 communes in Preah Sihanouk Province. Note, only 7 of these are included in the final project proposal.

### 1. Beneficiaries

| No. | Municipality / District | Prey Nob | Sihanouk ville |
|---|---|---|---|

| | **Name of Sangkat/commune** | Tuek Thla | Tuek L'ak | Samakki | Veal Rinh | Samrong | Prey Nob | Ou Oknha Heng | Boeng Taprom | Koh Rong | Sangkat Muoy |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Number of Villages/communities | 4 | 4 | 3 | 3 | 5 | 5 | 5 | 6 | 2 | 3 |
| 2 | Total population | 5,455 | 4,413 | 3,641 | 10,717 | 6,683 | 7,944 | 9,006 | 7,917 | 1,693 | 18,613 |
| 3 | Number of Female | 2,720 | 2,198 | 1,919 | 5,636 | 3,334 | 3,976 | 4,559 | 4,025 | 791 | 9,308 |
| 4 | # of age 0 - 17 | 2,133 | 1,728 | 1,620 | 3,850 | 2,474 | 2,909 | 3,696 | 2,170 | 611 | 7,316 |
| 5 | # of age 18 - 60 | 2,930 | 2,182 | 1,724 | 6,007 | 3,795 | 4,163 | 4,834 | 4,847 | 985 | 10,324 |
| 6 | # of > age 60 | 392 | 503 | 297 | 860 | 414 | 872 | 476 | 900 | 97 | 973 |
| 7 | # of indigenous people | 0 | 0 | 0 | 0 | 127 | 0 | 0 | 0 | 0 | 0 |
| 8 | # of disabled population | 25 | 25 | 19 | 80 | 37 | 42 | 115 | 83 | 7 | 46 |
| 9 | # of immigrants | 551 | 178 | 101 | 628 | 223 | 340 | 139 | 464 | 526 | 5,582 |
| 10 | # of informal settlements | 45 | 13 | 0 | 40 | 17 | 42 | 21 | 5 | 330 | 160 |
| 11 | # of households | 1,169 | 963 | 1,044 | 1,967 | 1,352 | 1,608 | 1,688 | 1,503 | 427 | 4,094 |
| 12 | Poverty rate (%) | 20.2 | 20.1 | 19.2 | 26.3 | 19.8 | 18.8 | 18.0 | 12.6 | 23.7 | 11.7 |
| 13 | How many people will benefit from the following interventions in the community:<br>The main climate change impacts and risks need to be focused are: storm surge, strong waves, sea water intrusion, ground water, pollution, drinking water, waste and flood. | | | | | | | | | | |
| | Physical/structural interventions (roads, dikes, water supply facilities, market, irrigation, drainage system, houses) | 80% | 80% | 80% | 80% | 80% | 80% | 80% | 80% | 80% | 80% |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Trainings | 50 % | 50 % | 50% | 50 % | 50% | 50 % | 50 % | 50% | 50 % | 50% |
| | Communication | 50 % | 50 % | 50% | 50 % | 50% | 50 % | 50 % | 50% | 50 % | 50% |
| | Information | 100% | 100% | 100 % | 100 % | 100% | 100% | 100 % | 100 % | 100% | 100 % |
| 14 | Early warning systems in place covering different types of hazards (e.g. floods, storms, drought etc.) | There is no local early warning system in place but they receive warming system from Ministry of Water Resources and Meteorology through TV, media and local authorities. | | | | | | | | | |
| 15 | Existence of drainage/sewage system | There is limited drainage system available only in the downtown | | | | | | | | | |
| 16 | Existence of different groups (ethnic, women, elderly, disabled, youth) who are treated differently. If so, how? | There are no different groups established. They are under the supervision and management of Commune's children and women committee | | | | | | | | | |
| 17 | Participation of women in decision-making process. If no, why? | Yes, women have involved all level of decision-making but they have limited knowledge and experience. | | | | | | | | | |
| 18 | Responsible person to take elderly, disabled people and children | There are provincial, district and commune disaster committees and red-cross committee's responsibilities. | | | | | | | | | |
| 19 | Main livelihoods / sources of income in community? | Fishery, agriculture, industry, poultry/animal raising, building construction and tourism | | | | | | | | | |

## 2. Climate change - Trend analysis

| No, | Municipality/ District | Name of Sangkat/ commune | Most problematic climatic hazard | Effects | Factors stopping your community from coping with current impacts | Prioritized activities/ infrastructure to enhance adaptive capacity |
|---|---|---|---|---|---|---|
| 1 | Prey Nob | Tuek Thla | • Storm surge<br>• Strong waves<br>• Sea water intrusion<br>• Ground water<br>• Pollution<br>• Drinking water<br>• Waste management<br>• Flood, and<br>• Sea level rise, | • No tourists to visit<br>• Destroyed houses<br>• Damaged roads and dikes<br>• Low fish production<br>• Low rice production<br>• Contaminated ground water<br>• Coastline erosion<br>• Lack of water supply<br>• Poor sanitation and health issues | • Low income that affect to livelihood due to no tourists<br>• Bad infrastructure<br>• Insufficient clean water supply<br>• Poor house conditions<br>• Lack of sanitation<br>• Health issues<br>• Poor management of natural resources like forests<br>• Limited irrigation<br>• Limited of education and skills | • Improve road condition<br>• Provide clean water supply<br>• Provide proper drainage system<br>• Conserve and protect natural resources and biodiversity<br>• Provide resilient house models<br>• Environmental management activities, e.g. planting trees, improve sanitation<br>• Provide vocational training on various topics<br>• Agriculture irrigation |
| 2 | | Tuek L'ak | | | | |
| 3 | | Sameakki | | | | |
| 4 | | Veal Renh | | | | |
| 5 | | Samrong | | | | |
| 6 | | Prey Nob | | | | |
| 7 | | Ou Oknha Heng | | | | |
| 8 | | Boeng Taprom | | | | |
| 9 | Sihanoukville | Koh Rong | | | | |
| 10 | | Sangkat Muoy | | | | |

### 3. Strengthened institutional capacity

| No. | Municipality/ District | Prey Nob | | | | | | | | Sihanoukville | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Name of Sangkat/commune | Tuek Thla | Tuek L'ak | Samakki | Veal Rinh | Samrong | Prey Nob | Ou Oknha Heng | Boeng Taprom | Koh Rong | Sangkat Muoy |

| | | |
|---|---|---|
| **1** | Having a structured plan for hazard risk reduction/ climate change adaptation | Yes, there is a structured plan in place but very limited operation/function due to no capacity and fund. |
| **2** | Experience of the municipality on specialist training (for risk reduction and resilience) | No specialist training from the municipality/district level to support the communities. They are from provincial and national level with limited supported. |
| **3** | Having a CC and resilience plan incorporated into planning schemes | Yes, all plans such as commune, district/municipality, and provincial development plans have addressed climate change adaptation and resilience. However, the implementation is limited due to low capacity and financial support. |
| **4** | Reporting awareness of exposure to at least one key hazard | Yes, there is a report on disaster happened in the areas such as storms and flood. |

**4. Assets produced, developed or strengthened (Health issues related to climate change)**

| **No.** | **Municipality/ District** | **Prey Nob** | | | | | | | | **Sihanoukville** | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Name of Sangkat/commune** | Tuek Thla | Tuek L'ak | Samakki | Veal Rinh | Samrong | Prey Nob | Ou Oknha Heng | Boeng Taprom | Koh Rong | Sangkat Muoy |
| **1** | # of households to report an occupant with diarrhoea in last 3 months in this settlement | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **2** | # of households to report an occupant with malaria/ dengue last year | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **3** | Existence of drainage issues that may give rise to mosquito borne diseases | Yes, there is drainage issues such as bad smell, pollution, mosquito and bad living environment | | | | | | | | | |
| **4** | Main health problems/ issues | There are skin diseases, mosquito borne diseases and high blood pressure | | | | | | | | | |

**5. Urban development and housing**

| **No.** | **Municipality / District** | **Prey Nob** | **Sihanoukville** |
|---|---|---|---|

| | Name of Sangkat/commune | Tuek Thla | Tuek L'ak | Samakki | Veal Rinh | Samrong | Prey Nob | Ou Oknha Heng | Boeng Taprom | Koh Rong | Sangkat Muoy |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | # of dwellings with 'average' or 'poor' quality walls | 973 | 879 | 854 | 1,399 | 1,187 | 1,392 | 1,438 | 1,342 | 373 | 3,157 |
| 2 | # of overcrowded dwellings | 30 | 23 | 47 | 50 | 11 | 7 | 30 | 10 | 29 | 46 |
| 3 | # of dwellings, which have been trained on enhancing dwelling resilience | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

### 6. Physical Infrastructure

| No. | Municipality/ District | Prey Nob | | | | | | | | Sihanoukville | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Name of Sangkat/commune | Tuek Thla | Tuek L'ak | Samakki | Veal Rinh | Samrong | Prey Nob | Ou Oknha Heng | Boeng Taprom | Koh Rong | Sangkat Muoy |
| 1 | Are the streets and roads in this settlement planned and paved? | y | y | y | y | y | y | y | y | n | 20% |
| 2 | How many schools are there in this settlement? Are they built in a resilient manner? | 4 | 3 | 3 | 2 | 3 | 3 | 3 | 5 | 2 | 3 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **3** | How many hospitals/health posts are there in this settlement? Are they built in a resilient manner? | 0 | 3 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| **4** | Are the necessary protective infrastructures in place (e.g. dams, walls) to reduce impact of flooding, storms, etc. in this community? | 0 | 1 | 0 | 1 | 2 | 3 | 0 | 1 | 0 | 0 |
| **5** | Does this settlement have an operational drainage system? Is it sufficient to drain precipitation and avoid flooding? | n | n | n | n | n | n | n | n | n | n |
| **6** | How many Pagodas/Mosques exist? | 2 Mosques | 1 Pagoda | 2 Pagodas | 2 Pagodas | 5 Pagodas | 2 Pagodas and 2 Mosques | 2 Pagodas and 3 Mosques | 2 Pagodas and 3 Mosques; 50 % of the people are | 1 Pagoda | 1 Pagodas |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Cham Muslims | | |

7. **Water resources and infrastructure**

| No | Municipality/ District | Prey Nob | | | | | | | | Sihanoukville | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Name of Sangkat/commune** | Tuek Thla | Tuek L'ak | Samakki | Veal Rinh | Samrong | Prey Nob | Ou Oknha Heng | Boeng Taprom | Koh Rong | Sangkat Muoy |
| **1** | # of households with toilet | 455 | 702 | 724 | 1,433 | 794 | 1,254 | 777 | 760 | 318 | 3,757 |
| **2** | % of households using following types of toilets: 1) Shared community toilet 2) Share neighbours 3) Connected to septic tank 4) Straight pipe 5) Connected to sewerage system | Straight pipe – 100 % | Straight pipe – 100 % | Straight pipe – 100 % | Straight pipe – 100 % | Straight pipe – 100 % | Straight pipe – 100 % | Straight pipe – 100 % | Straight pipe – 100 % | Straight pipe – 100% | Straight pipe – 70%<br><br>Septic tank – 30% |
| **3** | Average type of toilet: 1) Water seal 2) Flush 3) Pit | Flush | Flush | Flush | Flush | Flush | Flush | Flush | Flush | Flush | Flush |
| **3** | % of households with toilet discharging directly into | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100 % | 100% | 100 % |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | the environment (unimproved pit toilet or straight pipe to sea/river/etc.) | | | | | | | | | | |
| **3** | Main water resource for livelihood | Surface water, underground water, ponds, wells, and rainwater | | | | | | | | | |
| **4** | # of households that own (not shared) formal water connection with meter | 872 | 598 | 905 | 1,955 | 877 | 965 | 698 | 1,225 | 95 | 3,043 |

**8. Waste and waste infrastructure**

| **No.** | **Municipality / District** | **Prey Nob** | | | | | | | | **Sihanoukville** | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Name of Sangkat/commune** | Tuek Thla | Tuek L'ak | Samakki | Veal Rinh | Samrong | Prey Nob | Ou Oknha Heng | Boeng Taprom | Koh Rong | Sangkat Muoy |
| **1** | Existence of regular waste collection by council or private organization | No | No | No | No | No | No | No | No | No | No |
| **2** | % of households to dispose waste in river, creek, or sea | 20 % | 20 % | 20% | 10 % | 20% | 20 % | 20% | 20% | 10 % | 15% |
| **3** | % of households to burn or bury waste | 80 % | 80 % | 80% | 90 % | 80% | 80 % | 80% | | 90 % | 85% |

**9. Natural assets protected or rehabilitated**

| **No.** | **Municipality/ District** | **Prey Nob** | **Sihanoukville** |
|---|---|---|---|

| | **Name of Sangkat/ commune** | Tuek Thla | Tuek L'ak | Samakki | Veal Rinh | Samrong | Prey Nob | Ou Oknha Heng | Boeng Taprom | Koh Rong | Sangkat Muoy |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | Does this settlement report issues with pollution/ environmental degradation (e.g. coral or mangroves)? | Yes, local settlement report issues with pollution and environment degradation that affected to majority of people in the communities. | | | | | | | | | |
| **2** | Has any steps been taken in this settlement to improve/ maintain/reduce impacts on natural assets? | There is very limited implementation because no fund support. Community people have taken care for themselves. There is around 50% of population affected their livelihood. | | | | | | | | | |
| | Main environmental problems **(Choose Top 3)**<br>1) River flooding<br>2) Coastal Flooding (saltwater intrusion)<br>3) Surface Flooding (rainwater)<br>4) River Bank Erosion | • Decline in Mangrove areas<br>• Drainage (e.g., blocked drains)<br>• River flooding, coastal flooding (saltwater intrusion), surface flooding (rainwater) | | | | | | | | • Deforestation<br>• Pollution / Rubbish/ Drainage / Sanitation<br>• Coastal Erosion | |

| | | | |
|---|---|---|---|
| | (soil disappearing)<br>5) Inland erosion<br>6) Coastal Erosion (beach disappearing)<br>7) Pollution (dirty air, dirty water, dirty soil)<br>8) Rubbish (waste management)<br>9) Drainage (e.g. blocked drains)<br>10) Sanitation (problems with toilet)<br>11) Decline in Mangrove areas<br>12) Plant Disease<br>13) Insects or bugs (flies, mosquitoes) | | |

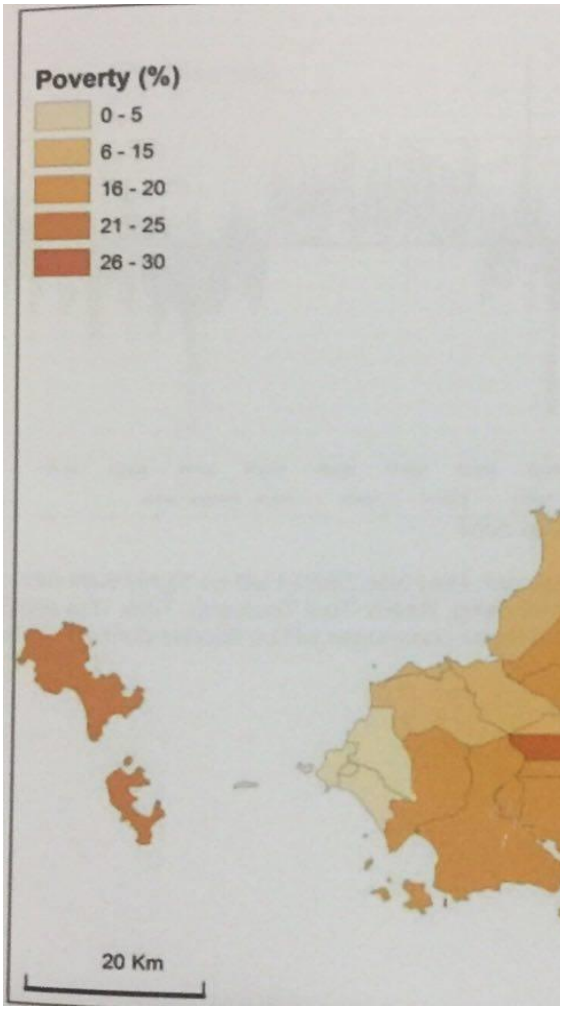
**10. Improved policies & regulations**

| No. | Municipality / District | Prey Nob | Sihanoukville |
|---|---|---|---|

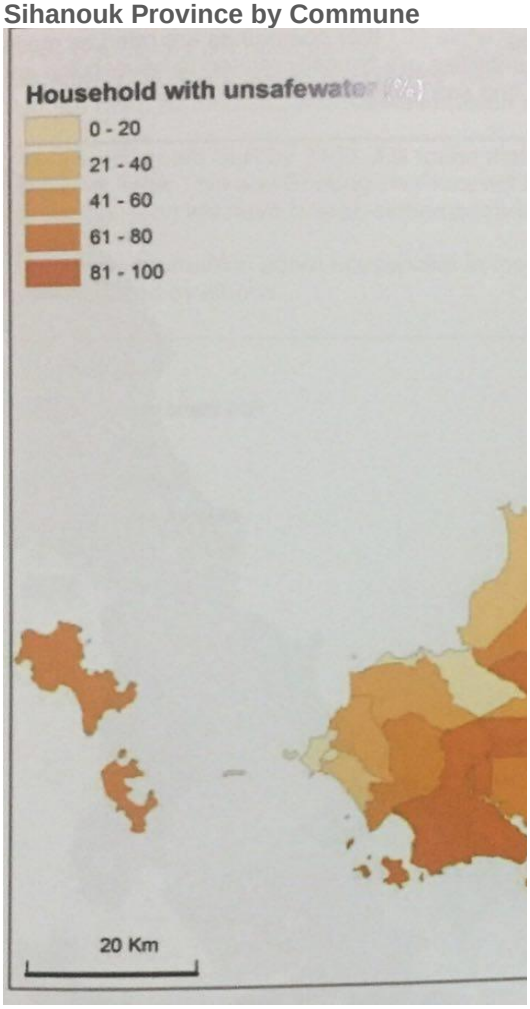
| | **Name of Sangkat/commune** | Tuek Thla | Tuek L'ak | Samakki | Veal Rinh | Samrong | Prey Nob | Ou Oknha Heng | Boeng Taprom | Koh Rong | Sangkat Muoy |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | Does the sangkat/commune has the necessary building regulations for resilient development? Are they enforced properly in this community? | No, they don't have a local building regulation. So people in the community to build their houses based on their experience and practice. However, the Ministry of Land Management, Urban Planning and Construction has issued all necessary building regulations that applied for nationwide implementation. But those regulations may not include the resilient development. | | | | | | | | | |
| **2** | Have any policies been introduced or adjusted in your municipality to address climate change? | There is no local policy to address climate change, but they implement the national climate change action plan and NAPA. Commune development plan and investment programme have also addressed climate change and disaster risk reduction. | | | | | | | | | |

### 11. Community vulnerability and risk map

**Poverty Map of Preah Sihanouk Province by Commune**




**Household with unsafe water of Preah Sihanouk Province by Commune**




## B. Action Planning

Prognoses of interventions based on in-depth community consultation in target provinces. Information in below tables established the basis to identify the catalogue of intended sub-projects.

### I. In Kep Province

| Commune/ Sangkat of Kep Province | Main Climate Change Impact | Activities | | |
|---|---|---|---|---|
| Angkaol | 1. Strong winds (more than 100 HH in 2013 and | 1.1. Advocacy on planting more trees | 1.2. Demonstration | |

| | | | | |
|---|---|---|---|---|
| | 20-30 per year) | | of resilient housing design | |
| | 2. Sea water floods | 2.1. Protective infrastructure (road or dam) | | |
| | 3. SLR and beach erosion | 3.1. Erosion vulnerability assessment and hazard map | 3.2. Protective infrastructure (road) | |
| Pong Tuek | 1. Strong winds (20-30 HH per year) | 1.1. Advocacy on planting more trees | 1.2. Demonstration of resilient housing design | |
| | 2. SLR and salinization | 2.1. Advocacy on reforestation of the coast-line | 2.2. Protective infrastructure (canal, fresh water reservoir) | 2.3. Salt-resilient crops for agriculture |
| | 3. Beach erosion | 3.1. Erosion vulnerability assessment and hazard map | 3.2. Protective infrastructure (road) | |
| Prey Thom | 1. Drought | 1.1. Fresh water reservoir | | |
| | 2. Lack of water supply | 2.1. Rain water harvesting | 2.2. Piped water supply | 2.3. Advocacy esp. to children and women about health issues of unsafe water |
| | 3. Strong wind (60 HH destroyed per year) | 3.1. Advocacy on planting more trees | 3.2. Demonstration of resilient housing design | |
| Kep | 1. Flood | 1.1. Improvement of flood-protective 3-4 km long canal (shared with Ou Krasar commune) | | |
| | 2. Drought | 2.1. Water supply from Kampot is a | | |

| | | | | |
|---|---|---|---|---|
| | | goal of the CIP for 2022, but water shortage is an urgent issue of today | | |
| | 3. Strong wind (20 HH destroyed per year) | 3.1. Advocacy on planting more trees | 3.2. Demonstration of resilient housing design | |
| Ou Krasar | 1. Strong wind | 1.1. Advocacy on planting more trees | 1.2. Demonstration of resilient housing design | |
| | 2. Unsafe water | 2.1. Awareness on health issues to unsafe water and how to avoid | | |
| | 3. Drought | 3.1. Rehabilitation of irrigation and capacity to harvest water during dry season | 3.2. Drought-resilient crop for agriculture | |

**II. In Preah Sihanouk Province[62]**

| Commune/Sangkat of Preah Sihanouk Province | Main Climate Change issue | Activities | | |
|---|---|---|---|---|
| Tuek Thla | 1. Drought | 1.1. Rehabilitate reservoir located in one village to improve the water supply for the whole year | | |
| | 2. Flood | 2.1. Build water gate | | |

[62] Because the project will not implement the concrete component in Koh Rong and logistical constrains, the mission from 11th to 16th of December 2017,where actions were identified, did not visit the Koh Rong commune, an island about 27 km from the mainland

| | | | | |
|---|---|---|---|---|
| | | for existing reservoir | | |
| | 3. Strong wind | 3.1. Advocacy on planting more trees | 3.2. Weather station, broadcasting extreme weather events and EWS | 3.3. Demonstration of resilient housing design and training of local craftsmen |
| Tuek L'ak[63] | 1. Drought | 1.1. Build a reservoir or dam with water gate to keep water | | |
| | 2. Flood | 2.1. Assess possible infrastructure like canals to channel rain water | | |
| | 3. Strong wind | 3.1. Advocacy on planting more trees | 3.2. Weather station, broadcasting extreme weather events and EWS | 3.3. Demonstration of resilient housing design and training of local craftsmen |
| | 4. Decline of mangroves | 4.1. Make eco-tourism areas accessible | 4.2. Demarcation of areas for eco-tourism | |
| Samakki | 1. Flood | 1.1. Repair the water gate | | |
| | 2. Strong wind (100 HH per year destroyed in | 2.1. Advocacy on planting more trees | 2.2. Weather station, broadcasting extreme | 2.3. Demonstration of resilient housing |

[63] Natural protected area of Kampong Smach involving 6 communes of Prey Nob District (Tuek Lak, Samakki, Veal Renh, Ou Oknha Heng, Samrong and Boeng Taprom).

| | | | | |
|---|---|---|---|---|
| | Tuek Thla, Tuek L'ak and Samakki) | | weather events and EWS | design and training of local craftsmen |
| | 3. Drought (Jan-May no drinking water. It needs to be bought costly from neighbouring communes) | 3.1. Build dam and water gate that keeps water for 100 ha of land during the dry season | | |
| | 4. Decline of mangroves | 4.1. Make eco-tourism areas accessible | 4.2. Demarcation of areas for eco-tourism | |
| Veal Rinh | 1. Strong wind | 1.1. Advocacy on planting more trees | 1.2. Weather station, broadcasting extreme weather events and EWS | 1.3. Demonstration of resilient housing design and training of local craftsmen |
| | 2. Drought (Jan-May no drinking water. It needs to be bought costly from neighbouring communes) | 2.1. Improve access to drinking water by building dam or channel water through canals | | |
| | 3. Flood | 3.1. Channel floods through canals and water gates | | |
| | 4. Decline of mangroves | 4.1. Make eco-tourism | 4.2. Demarcation | |

| | | | | |
|---|---|---|---|---|
| | | areas accessible | of areas for eco-tourism | |
| Samrong | 1. Drought | 1.1. Build water gate to channel and harvest rain water | | |
| | 2. Flood | 2.1. Repair roads that were damaged by floods | 2.2. Build water gate to channel rain water during heavy rainfalls | |
| | 3. Strong winds | 3.1. Advocacy on planting more trees | 3.2. Weather station, broadcasting extreme weather events and EWS | 3.3. Demonstration of resilient housing design and training of local craftsmen |
| | 4. Decline of mangroves | 4.1. Make eco-tourism areas accessible | 4.2. Demarcation of areas for eco-tourism | |
| Prey Nob | 1. Drought | 1.1. Rehabilitation of canals in Oknha Heng could keep the water channelled in Prey Nob | | |
| | 2. Flood (affects esp. the market, the source of regular income of the people) | 2.1. Rehabilitation of canals in Oknha Heng can avoid floods in Prey Nob | 2.2. Build drainage system and sanitation system esp. around the market | |
| | 3. SLR | 3.1. Improve 8km of road to protect the road to the | | |

| | | | | |
|---|---|---|---|---|
| | | garment factory from SLR | | |
| Ou Oknha Heng | 1. Salinization | 1.1. Rehabilitation of protected dam along 3 villages in order to avoid sea-water intrusion of the rice fields | 1.2. Improvement of canals across the communes | |
| | 2. Drought | 2.1. Rehabilitation of canal to provide fresh water during dry season | 2.2. Build barriers for animals to avoid contamination of fresh water reservoirs | |
| | 3. Decline of mangroves | 3.1. Make eco-tourism areas accessible | 3.2. Demarcation of areas for eco-tourism | |
| Boeng Taprom | 1. Flood | 1.1 Rehabilitate the canal to channel floods and harvest fresh-water in the dry season | | |
| | 2. Salinization | 2.1. Rehabilitate the canal to protect fresh-water from sea-water intrusion | 2.2. Build dam (or protective infrastructure) to mitigate SLR | |
| | 3. Decline of mangroves | 3.1. Make eco-tourism | 3.2. Demarcation | |

| | | | | |
|---|---|---|---|---|
| | | areas accessible | of areas for eco-tourism | |
| Sangkat Muoy | 1. Drought | 1.1. Build water pipelines. Esp. people living on the hill-side cannot access water during the dry season. Approx. 500 HH have no access to safe drinking water. | 1.2. Wastewater sewage system can also avoid contamination of rain water, which otherwise goes straight into the sea. But difficult to implement due to land ownership issues. | |
| | 2. Strong wind | 2.1. Advocacy on planting more trees | 2.2. Demonstration of resilient housing design and training of local craftsmen | |
| | 3. Lack of drainage system and wastewater management system | 3.1. Build wastewater treatment plant | 3.2. Channel drainage to redirect the water flow | |

## Annex 2 – Environmental and Social Risk Screening and Environmental and Social Management Plan

### 1. Introduction

This environmental and social risk screening and management plan (referred to as ESMP, for ease of reference) has been developed specific to the defined components of the project. It has been developed as a standalone document which can be amended and expanded where necessary through the project implementation phase to ensure all risks, impacts and required mitigation and monitoring elements are fully comprehensible to all parties.

The ESMP lists all potential risks identified and the preventive / mitigation measures proposed to reduce potentially adverse environmental and social impacts to acceptable levels. The plan also shows how these potential risks and mitigation measures will be further monitored, including responsibilities. Specifically, the ESMP:

(i) Identifies and summarizes all anticipated adverse environmental and social risks and impacts in line with the Adaptation Fund's ESP principles.
(ii) Provides information about the significance of the risks of interventions.
(iii) Describes mitigation measures, both from the perspective of mitigating risks at each activity and from the perspective of upholding all ESP principles.
(iv) Refers to responsibilities and sections where responsibilities for further screening and monitoring is discussed.
(v) Takes into account, and is consistent with, other mitigation plans required for the project in particular those that relate to national law.

This ESMP should be revised, and reissued, prior to commencement of any proposed activities or interventions in accordance with the Environmental and Social Policy of the Adaptation Fund, and the needs on the ground, which could change between the final consultations undertaken in the formulation of this proposal and the commencement of physical investment works.

**Environmental and social problems and needs**

Initially, the vulnerability and risk assessment was used to increase understanding of the environmental and social problems and needs in communes. This information was fed into the risk assessments of activities and investments. Community relevant Adaptation Fund safeguard areas were discussed during consultation with stakeholders and during field assessments of potential investment sites. Examples of how the safeguards were addressed include:

Human rights

- Have you ever been mistreated or are you worried you will be mistreated by the UN, the government, other communities, other ethnic groups or anyone else?

Gender Equity and Women's Empowerment

- Have you ever felt discriminated as a woman or are you worried you will be discriminated? Is it difficult as a woman to participate in decision-making processes? If so, why?

Protection for Indigenous people and Marginalized and Vulnerable groups

- Have you ever experienced or seen discrimination against indigenous peoples or elderly, disabled people or youth?

Access and Equity

- Are different groups (ethnic, women, elderly, disabled, youth) in the community treated differently? If so, how? Who is normally responsible for taking care of elderly, disabled people and children? Who normally takes care of money, water and food in the household?

Promoting better labour and working conditions

- How much do you earn on average during a day? Do children also work/help in the community? If so, what do they do?

Enhancing community health, safety and security

- Have you ever experienced dangerous situations during work or in the community? Have people been injured? If so, what was the cause? What diseases do community members suffer from? Have unexploded ordinances been found? If yes, where? What are the main causes of death in the community? What do you do against malaria, dengue and diarrhoea?

Safeguarding land, housing, resettlement and rights

- Have you ever been asked to resettle or sell your land? If so, by whom and why?

Conserving biodiversity, Protection of Natural Habitats and lands and soil conservation

- Are there conserved or protected areas in or around the community? What areas should be protected to secure clean water and food/agriculture/fish/cattle?

The proposed project seeks to fully align with the Adaptation Fund's Environmental and Social Policy (ESP), its 15 safeguards and the Gender Policy (GP). Proposal activities have been identified and addressed to ensure that the project does not unnecessarily harm the environment, public health or vulnerable communities. Systematic screening and assessment has been undertaken based on detailed consultation with national and local government stakeholders, a wide range of other concerned stakeholders and the target communities. The project design has benefitted from this process.

Environmental and social risk analysis and impact assessment was undertaken progressively through the stages of proposal development and defining of investments. Investments under Component 3 were developed and designed specifically to ensure minimal risk to social and environmental elements. The ESMP has been developed around the risk analysis and impact assessment, identifies the specific environmental and social settings relevant to each investment and the potential risks, preventative measures and monitoring for activities under Components 1 and 2, as well as potential risks, mitigation measures and monitoring for investments under Component 3.

To ensure that remaining risks are well managed the project management and governance (Part III. Section A), Monitoring and Evaluation (Part III. Section D) fully take the management of environmental and social risks into account. Each project investment sheet, which can be found here, also contains information about how the 15 environmental and social safeguard areas from the AF ESP have been incorporated into the design of the investment.

In addition to capacity building, the proposal seeks to provide for a series of engineering investments under Component 3, which will provide immediate and long-term adaption solutions for communities affected by the impacts of climate change. UN-Habitat will oversee the proposed investments compliance

with its own Environmental and Social Safeguard System and the Environmental and Social, and Gender Policies and principles of the Adaptation Fund.

Provincial and commune level climate change adaptation investments were developed and officially approved with stakeholders to ensure the most appropriate, cost-effective and environmental and social concrete adaptation actions in line with the 15 Principles of the Adaptation Fund. The focus of the selected investments therefore provides a demonstratable balance between social, environmental and economic benefits to the effected communities.

The three separate project components (see Part III, Section E) have been developed in consideration of the 15 Adaptation Fund Environmental and Social Safeguard Principles. More specifically, a series of engineering investments have been screened in detail against the 15 AF risk areas (safeguards) to identify potential risks and to assess potential environmental and social impacts. These screenings are summarised here, and described in more detail in the investment sheets.

## Overarching (all components 1-3)

Climate threats and hazards of each commune were identified via a rapid vulnerability assessment and extensive consultation with a broad array of stakeholders. A further consultation programme was then undertaken, inclusive of technical specialists and engineers, to provide additional development around the details of the proposed components and potential risks. This assessment has led to evidence-based, risk averse development of the action planning and defined investments.

An overview of the identified environmental and social risks and impacts, co-benefits and opportunities of the project activities (including gender and youth) was undertaken throughout the development of the project components, and then further refined through development of the specific investments.

Component 1 (Community-scale knowledge and capacity enhanced to sustain the adaptation benefits of the project's investments) and Component 2 (Government planning and technical capacity enhanced to sustain and enhance the project's adaptation benefits) consist of soft activities. The Adaptation Fund's ESP says, "Those projects/programmes with no adverse environmental or social impacts should be categorized as Category C.[64] All activities under Components 1 and 2 are 'soft' activities that will not cause direct, indirect transboundary and cumulative impacts to environment and society.

All concrete activities in the project will be undertaken under Component 3. These activities carry the risk of causing environmental and social impacts. As the activities implemented under the project will be local and small scale, it is deemed that they are not 'Category A' risks. In regard to the ESP and UN-Habitat's Environmental Social Safeguard System, the project will ensure that especially AF principles 2, 3 and 5 are reflected through quotas of vulnerable and focused groups and through community consultation and participation throughout the project. The results framework makes specific provisions for the inclusion of women. All activities implemented under Component 3 are, therefore, Category B or C. The capacity building undertaken under Component 1 will emphasise environmental and social safeguards and minimizing risk. Moreover, the using the People's Process as a means to implement means that communities will manage the planning and construction of infrastructure, be trained on environmental and social risks and therefore will be incentivized to minimize environmental and social impact. This is

[64] Adaptation Fund Environmental and Social Policy, paragraph 28, Page 8

because, under the People's Process, communities themselves are the planners, constructors and beneficiaries of the small-scale infrastructure, rather than contractors. Contractors have less incentive to minimise environmental and social risks, because they are not the end users of the infrastructure in question.

The project is implemented on the coast; a sensitive environmental location. Required mitigation will be site specific and in accordance with activity specific measures. The project will make use of local materials, where possible. The project will also make provisions for the protection of the environment through its safeguarding procedures. The project will ensure the protection of natural habitats, conservation of biological diversity, prevention of emissions that cause climate change, and prevent pollution and promote resource efficiency. Capacity building on operation and maintenance will ensure that the benefits for the environment will not retrograde.

The Table below demonstrates overarching potential risks and mitigation measures. However more specific risk assessment was undertaken against each of the proposed activities and investments.

**Table ESP Risks and Mitigation Measures**

| Adaptation Fund Environmental and Social Principle | Identified Potential Risks | Mitigation Measures |
|---|---|---|
| Compliance with the Law | Possible conflicts over land ownership.<br><br>This principle always applies but the risk is not significant (i.e. low) (see Part II. Section E). The catalogue of intended investments has designed the interventions as such that EIA are not required by national law. This has been confirmed by government authorities<br><br>Failure to comply with laws relating to procurement procedures. | Only citing infrastructure on public land. Engagement with Department of Land Management, Urban Planning and Construction at the provincial level<br><br>Integrating legal compliance into all training. |
| Access and Equity | That certain groups are denied access to infrastructure, or that preferential access is given to others.<br><br>The significance of the risk is small (i.e. low). | Community management with rules ensuring that equal access is guaranteed. |
| Marginalized and Vulnerable Groups | There is some literature that suggest that there are a small number of immigrants in some of the target areas, who are vulnerable to discrimination. Continued consultations indicate that this is no longer the case.<br><br>The significance of the risk is small (i.e. low). | Community management with rules ensuring that equal access is guaranteed, including for migrant populations, where appropriate. |
| Human Rights | Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, | See measures of other risk categories. |

| | | |
|---|---|---|
| | for example.<br><br>The significance is low as most of the interventions have been confirmed to be implemented on public land where tenure arrangements are cleared. It is medium for the piped water supply network and high for beach erosion interventions as it targets inter alia informal settlements. | |
| Gender Equity and Women's Empowerment | Women could be denied access to infrastructure, or prevented from making critical decisions.<br><br>The significance of the risk is small (i.e. low). | Quotas for female participation in decision making at all levels. |
| Core Labour Rights | Labour rights may not be respected when contracting communities.<br><br>The significance of the risk is small (i.e. low). | All community contracts must be scrutinised to ensure they comply with both Cambodia law and international standards. |
| Indigenous Peoples | The community consultation has not identified indigenous people in the target area. As noted in Part II. Section H, 'Cham' Muslims' are not considered as indigenous people, and will be equally recognised through the People's Process, where possible. | Integration of any indigenous population where appropriate. As above for marginalised and vulnerable groups. |
| Involuntary Resettlement | Possible eviction arising from conflicts over land ownership.<br><br>Mostly not triggered expect with low significance for flood prevention measure, and high significance for intervention on beach erosion. | See above for compliance with the law. |
| Protection of Natural Habitats | Damage to local ecosystems, including forests, rivers and coastlines from infrastructure construction.<br><br>The significance of the risk is small (i.e. low), apart from the investment on wastewater management and drainage systems where significance is medium. | Incorporating protection of habitats and ecosystems into action planning.<br><br>Designing infrastructure so that it complements nature. |
| Conservation of Biological Diversity | See Protection of Natural Habitats.<br><br>The significance of the risk is small (i.e. low). | See Protection of Natural Habitats. |
| Climate Change | Triggered with medium significance in investment wastewater management and drainage system as wastewater treatment plants can emit GHG emissions | Closed circulation system of wastewater treatment plant |

| | | |
|---|---|---|
| Pollution Prevention and Resource Efficiency | Construction of infrastructure generates waste.<br><br>The significance of the risk is small (i.e. low). | Incorporating waste management and disposal into design. |
| Public Health | Water infrastructure could be open to contamination, spreading water-borne diseases.<br><br>The significance of the risk is small (i.e. low). | Incorporating public health considerations (especially relating to water contamination) into training under Component 2. |
| Lands and Soil Conservation | See Protection of Natural Habitats.<br><br>The significance of the risk is small (i.e. low). | See Protection of Natural Habitats. |

**SCREENING AND CATEGORIZING**

The proposed project will fully comply with international and national laws and the Adaptation Fund's Environmental and Social Policy. In line with UN-Habitat's Environmental and Social Safeguards System and in line with the Adaptation Fund's Environmental and Social Policy, UN-Habitat completed an initial screening, risk analysis, and assessing potential environmental and social impacts for the proposed project.

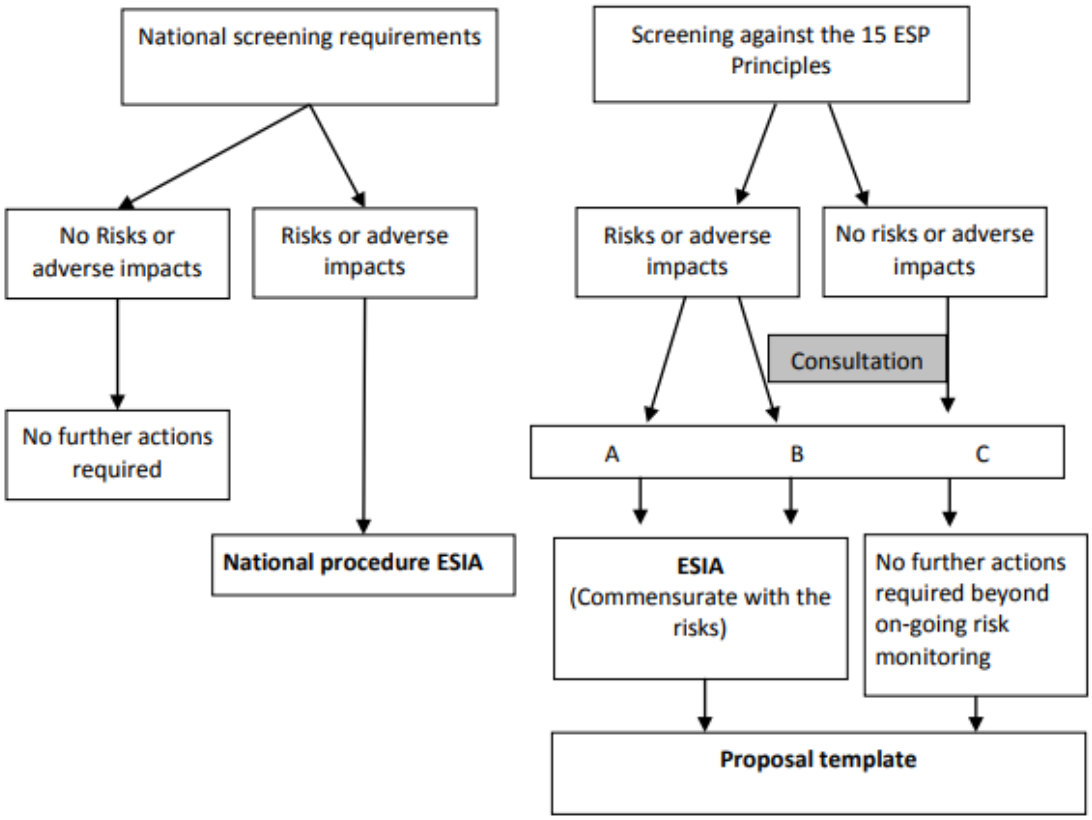



Fig A.4.1. Screening and Assessment Process (from AF ESP Guidance Document, p. 5)

In line with the Adaptation Fund's guidelines all activities were screened against international and national laws and policies as represented in the left flow chart in Fig A.4.1. above and documented (see table 11 and 12 in Part II, Section E). At this stage, significant risks were not identified, and it is very unlikely that national ESIA procedures will be triggered. However, given that some of the intended investments of the identified catalogue of investments may pose environmental and social risks that could potentially result in the need for national ESIA procedures, the ESMP for the project implementation has been developed taking this into consideration in terms of risk, impact assessment, mitigation, monitoring and responsibilities.

Further, in line with the Adaptation Fund's ESP guidelines (flow chart on the right in Fig A.4.1.) the entire project has been screened and assessed (and mitigation measures proposed) against the 15 environmental and social principles as presented in Table 6 in Part II, Section A. This reflects the knowledge and information collected during final consultation and re-confirmation of investments. During project implementation, all project activities will be further screened for environmental and social risks applying the ESMP. Actions to mitigate such risks will also be planned through any updates required within the ESMP.

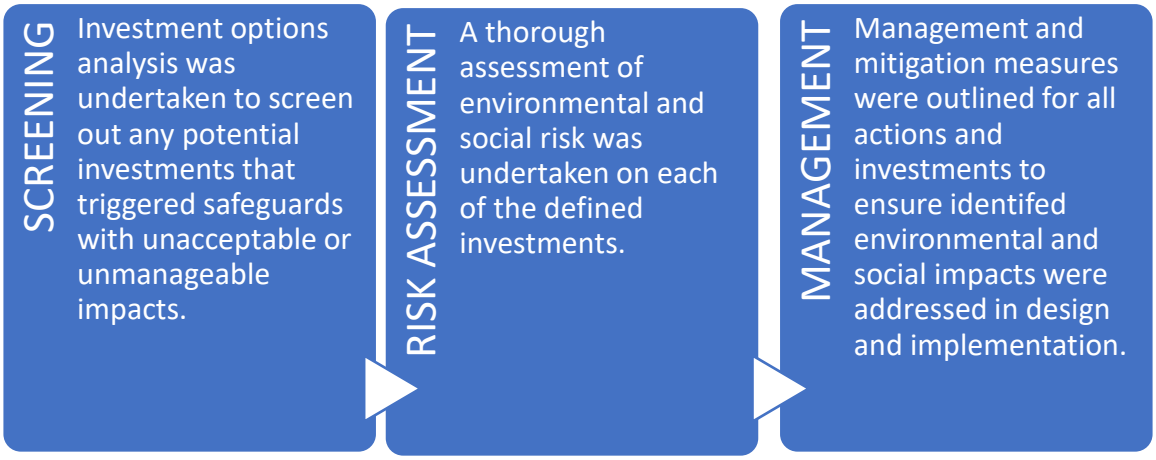
Potential social and environmental risks identified in Table 18 in Part II, Section K will be monitored from project outset. Further risk assessments will be conducted according to the procedure established in the latter part of this Annex (in line with the Environmental and Social Management Plan (ESMP). Risk

management will be integrated in the project management structure and in all assessment, planning and implementation elements of the project.

## Engineering investments (component 3)

The process of defining the most suitable investments for each of the provinces included continued risk assessment of and integration of safeguards at all stages:

- Screening
- Risk Assessment
- Management and Mitigation




In consideration of the baseline environmental, social and economic situation, the 11 defined investments that make up the activities under Outputs 3.1 – 3.8 under Component 3 were screened against the Environmental and Social Safeguards of the Adaptation Fund to ensure alignment with the overall principles for sustainable development.

The site vulnerability assessment provided the basis of evidence for selection of the most-appropriate, feasible, cost-effective and environmentally and socially safe investments for the provinces. Although the environmental and social safeguard risk screening per intended investment identified the target communes, it was still necessary to localize the most-effective investments based on further hazard mapping, analysis of the ecosystems, land use management assessment and continued consultation with stakeholders and communes. The respective investment sheets also give more information relating to how Environmental and Social Safeguards were incorporated into the investment design. The aim was to develop strong action planning, in which the investments are mutually re-enforcing. This process resulted in a number of potential investments or actions being screened out.

Stakeholder meetings reconfirmed acceptance by the communes, outlined alternative options for increasing resilience and potential environmental and social risks and impacts of the interventions. A rapid screening of the suggested commune interventions against the Environmental and Social Safeguards and cost-effectiveness concerns identified the potential adaptation actions, which are listed under Component 3 in Table 6 below, and in the investment sheets.

Some of the originally proposed investments that were screened out have been included in the Table below to demonstrate outcomes of the screening process. This was based on any potential investments that triggered safeguards with unacceptable or unmanageable impacts.

*Table: Proposed investments in target commune and AF Environmental and Social Principle triggered by proposed investment. See supporting information for appropriate use/sustainable management and maintenance, and environmental and social risks*

| Project Components | Expected Concrete Outputs and Target Communes | Expected Concrete Outcomes | Expected Beneficiaries | AF Environmental and Social Principle/s potentially triggered |
|---|---|---|---|---|
| **Component 3**<br><br>Resilience built through investment in small-scale protective and basic service infrastructure and natural assets | **Output 3.1.**<br>285,74ha of Mangroves restored in Kep and Angkaol Communes, Kep Province | **Outcome 3.**<br><br>At least 62,521 people have access to protective natural and social assets and/or benefit from physical infrastructure to reduce the climate vulnerability. (AF outcome 4 and 5) | 17,754 | AF Principles<br>3,6,9 |
| | **Output 3.2**<br>Water gates repaired in 3 locations in Pong Teuk and Angkaol | | 19,533 | AF Principles<br>2, 3, 6, 12, 13 |
| | **Output 3.3**<br>2 canals rehabilitated in Pong Teuk and Angkaol Communes, Kep Province | | 3,500 | AF Principles<br>4, 8, 9, 10, 12, 13 |
| | **Output 3.4**<br>O Thmar Reservoir rehabilitated to increase water storage capability Kep Province<br><br>**Output 3.4b**<br>Bank strengthening work at Roness Reservoir to provide additional water retention and safety.<br><br>**Output 3.4c**<br>Coastal flood protection embankment in Kep and Angkoal constructed | | 14,060 | AF Principles<br>4, 8, 9, 10, 12, 13 |
| | **Output 3.5**<br>Resilient Housing designs developed and demonstrations constructed (Both provinces | | 9,720 | AF Principle<br>2,3,4,5,6,13 |
| | **Output 3.6** | | 20,000 | AF Principles<br>2,3,4,6, 8,9,10,12,13 |

| | | | | |
|---|---|---|---|---|
| | Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province | | | |
| | **Output 3.7**<br>Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province | | 4,500 | AF Principles 2, 3, 4, 6, 8, 12, 13 and 15 |
| | **Output 3.8**<br>Weather station and tide gauge with early warning system broadcast capabilities installed (weather station in Teuk La'k Commune, Tide Gauge in Ou Okhna Heng Commune, P. Sihanouk Province | | 30,000 | None |

*Table 6a: Originally proposed potential investments screened out due to unacceptable or unmanageable environmental and/or social impacts*

| Potential investment option | Safeguards triggered | Reasoning for screening out |
|---|---|---|
| Flood prevention measures at Rones Reservoir, Tuek Lak Reservoir and Ou Okhna Heng Reservoir | 4, 8, 9, 10, 12 | Potential displacement of informal settlements cultivating land within broader catchment.<br>Ou Okhna Heng reservoir has been confirmed to be now in private ownership. It is unclear what the private owner intends to do with the reservoir and it's possible they will use their own funds to improve it. |
| Seawall at Ou Okhna Heng | 2, 3, 4, 6, 8, 9, 10, 12, 13 | Prohibitively disruptive for the informal settlements in the area, and unclear whether a sea wall would bring greater adaptation benefits than, say, an ecosystem based approach. |
| Housing resilience at Sangkat Mouy Informal Settlement, Preah Sihanouk Province | 2, 3, 4, 5, 6, 13 | Unknown as to future fate of informal settlement due to the expansion of the adjacent Sihanoukville port. Eviction is a possibility at the site as the community lives informally. |
| Flood prevention measures in canal at Ou Krasar | 4, 8, 9, 10, 12, 13 | Physical excavation and maintenance required, stabilisation of edges. Considered to be more of a natural stream, not a canal, and purely a waste management and maintenance issue. |

Project investments sheets which outline justification of risk mitigations incorporated into the design of investments under Component 3.

## 2. Environmental and social risk assessment of activities and interventions (investments)

Environmental and social risk assessment was undertaken using the following formula and matrix for significance of risk:

***Significance = likelihood x consequence severity***

Likelihood of an event occurring with some related impacts was assessed against a number of criteria:

***Rare***: Rare possibility of occurrence

***Unlikely***: Not likely to occur

***Possible***: Possibility of occurring sometimes

Likely: Highly likely of occurring, perhaps regularly

Certain: Certainty of occurrence, perhaps regularly

Consequence severity of related impact occurring was assessed against a number of criteria:

Negligible: No or very low impact to immediate community/environment

Marginal: Medium impact event, within immediate community/environment

Critical: High impact event, inclusive of surrounding community/environment

Catastrophic: Major impact event , surrounding /environment and beyond

As an example, for investment 3.2a, there exists a moderate risk that this intervention may not be accessible to the entire community. This risk was defined based on the possibility that inaccessibility occurs sometimes, and marginal impacts can be expected (medium impact event, within the immediate community/environment), such as a portion of the community not obtaining the benefits of repairs to watergates and adequate flow control through canals.

The criteria are summarised in the matrix below:

***Risk matrix:***

| | | Consequence | | | |
|---|---|---|---|---|---|
| Likelihood | | **Negligible** | **Marginal** | **Critical** | **Catastrophic** |
| | **Certain** | High | High | Extreme | Extreme |
| | **Likely** | Moderate | High | High | Extreme |
| | **Possible** | Low | Moderate | High | Extreme |
| | **Unlikely** | Low | Low | Moderate | Extreme |
| | **Rare** | Low | Low | Moderate | High |

The table at the end of this section includes the assessment of significance of risk based on likelihood of the risk or impact occurring and consequence of it of its effect. The risk significance should be revisited, and assessment of impacts and mitigations updated where necessary, prior to commencement of activities and investments.

### 3. Additional Risk Mitigation

Additional to the risk mitigation measures identified below, the following elements will be put in place to ensure the compliance with the ESP:

(i) All MoUs and Agreements of Cooperation with the Executing Entity will include detailed reference to this ESMP and in particular the 15 ESP Principles.
(ii) The ToR of Committees and Advisory Groups, project personnel and focal points will include detailed reference to this ESMP and in particular the 15 ESP Principles.
(iii) All key Executing Entity Partners will receive training / capacity development to understand the 15 Principles, the ESMP and in particular their responsibilities. This will include members of the Project Management Committee, the Local Steering Committees and the Communities.
(iv) A Monitoring and Evaluation Framework, including monitoring of risks and mitigation measures, will be developed by the project management team and presented for approval to the Project Management Committee.
(v) The UN-Habitat Human rights officers and PAG will check project compliance with the AF ESP and the Environmental and Social Safeguard System of UN-Habitat during the project (besides the project manager).

### 4. Detailed Environmental and Social Baseline, Impact Assessment and Mitigation

To ensure proper management of environmental and social aspects of the project through development and implementation, the environmental and social setting of each of the project activities was addressed. For assessing risk and aligning mitigation, management and monitoring requirements, each Component and output was considered separately. Component 1 and 2 are relevant to the broader Kep and Preah Sihanouk provinces, so the environmental and social setting overarching is outlined.

For the investments under Component 3, the environmental and social setting is more specifically addressed where necessary to assist with adequate risk assessment and identification of potential impacts and required mitigation and monitoring.

To understand the broader context of the setting for the proposal relevant to Kep and Preah Sihanouk Provinces, please see Part 1 of the full proposal. For the geographic context, please see the respective maps for Kep Province and Prey Nob District.

This sections below cover the specific environmental and social aspects of each province, to enable assessment of risk and impacts, and to provide for more relevant mitigation, management and monitoring requirements.

**Component 1 and 2 – Existing social and environmental context of Kep and Preah Sihanouk provinces**

Severe environmental degradation has taken place throughout the coastal area of Cambodia – especially in areas where there has been investment in infrastructure and tourism. Besides that, the often-informal nature of the target settlements creates environmental problems. Moreover, the combined effects of sea-level rise, coastal flooding, and on-shore development issues are causing coastal erosion.

Both Kep and Preah Sihanouk Provinces are experiencing coastal erosion and impacts of sea level rise, in combination with extensive issues with water resourcing and solid waste management.

The Ministry of Environment has specified the importance of forests in maintaining the country's ecosystems. In Preah Sihanouk, 26% of the land is categorized as protected forest area, in Kep 7%. However, forestry was drastically exploited in the last few decades due to illegal logging, encroachment, and economic land concessions. Deforestation is still happening in coastal areas, especially mangrove forests. Studies by IUCN (2011) have identified that approximately 3,500 to 4,000 hectares of former mangrove lands were converted to salt farms in Kampot Province and Kep Municipality, even though salt pans negatively affect mangrove growth and soil fertility. Moreover, a study by the Ministry of Environment (MoE et al. 2014) shows that mangroves in Prey Nob District in Preah Sihanouk Province are under threat by salt, charcoal use, and industrial development.

In addition, an estimated 3,446 hectares of area in Preah Sihanouk province and 343 hectares of Kep province will be below mean sea level if the sea level rises by 1 metre in the future. A study by the Ministry of Environment also estimated that 3,530 hectares of mangroves in Preah Sihanouk and 13 hectares in Kep are located within 1 metre above today's mean sea level. Therefore, simultaneous occurrence of changes of the mangrove systems and sea level rise will accelerate coastal erosion as well as reduce the adaptive capacity to climate change of the coastal ecosystem.[2]

Combined with other climate change impacts such as increasing temperatures and significant reductions in rainfall, the Kep and Preah Sihanouk provinces have existing and future environmental issues to manage. Water resources and waste management practices exacerbate the pressures on the existing environment and ecosystems.

Overall Cambodia's population is growing at a rate of 1.6% annually. Along the coastline the cities of Sihanoukville, Kampot and Kep are among the most populated areas. While household poverty rates are the highest in the north-east of the country, overall poverty rates remain high in the coastal area, especially considering its higher population density.

The country's coastal population faces challenges such as low levels of education and poor health and basic infrastructure services. It further shows an on-going deterioration of inequality between the mid-1990s and 2007, despite an overall poverty reduction.

The expected impacts of climate change in coastal regions jeopardize poverty reduction and health targets, because hazards are likely to increase in frequency and intensity. This is due to the fact that poor communities predominantly live in high-risk areas and already lack access to basic services. Especially the frequency of storms and inundation, which are projected to increase with climate change, create disruptive situations and conditions for the spread of water- and vector-borne diseases, limit access to clean water and food, flood and expose unsafe sanitation facilities, and isolate the population from health and other emergency services and responses. Notwithstanding advances in water, sanitation, and hygiene

[2] MoE, GEF and UNEP (2013), p. 190.

over recent years, the aforementioned issues are a present danger and cause loss of life and have long-lasting impacts on poverty and food security. Approaches to deliver these services need to become sensitive to the impacts of climate change and related hazards. As a means to significantly reduce vulnerability, citizens need to get access to resilient basic infrastructure services such as clean water, sewage, roads, electricity, or telecommunication, to name a few, and improving their resilience to natural disasters.

In Sihanoukville between 30-50% of households have access to improved water sources. Kep does not have any access to piped water. Consultation confirmed that access to latrines and water filters is also minimal in many areas.

Components 1, 2 and 2 consist of capacity building and training, workshops, community consultations, training events, information sharing through print and web-based means. Thus, they are not expected to have environmental or social impacts. The only potential risk related to these activities is the unequal involvement of different groups in processes. This will be mitigated through quota systems, where possible, and full transparency of processes through engagement with both local governments and beneficiaries.

Consultation outlined that across all communes, integration and equality is a strong focus. Opportunities for women and youth to be more integrated into community initiatives and employment opportunities and growth is evident and verified. Continued consultation with communes, including women, youth and minority groups, will be undertaken throughout project implementation to ensure any new risks and impacts can be identified and addressed, on the understanding that the situation can change between the last consultation with communities, undertaken in October 2018, and the commencement of project implementation, which is unlikely to start before October 2019.

#### Component 3 – Risk, impact, mitigation and monitoring

Due to the specific nature of outputs (investments) under Component 3, detailed assessments of each of the proposed investments have been undertaken assessing the existing social and environmental constraints, considerations and desired outcomes. The management and monitoring of risks during design and implementation are outlined within these assessments. The assessments are included in the individual project sheets, and summarised below.

The below subsections consider the existing environment and current impacts in target each area due to climate change. The risk of impacts due to the proposed investments are also outlined in terms of significance, in consideration of the AF principles, along with defined mitigation measures. The table at the end of this section summarises the outcomes of the impact assessment process relevant to providing clear guidance under this ESMP.

It should be noted that the proposed investments will all require site specific management planning through implementation to ensure risks are properly addressed, understood and mitigated through the works. In some cases this will require site specific environmental and social management plans, and the potential to update the plans for each investment should remain in place until completion of the project.

#### 3.1 Mangrove Plantations for Improved Coastal Resilience

Consultations with local communes in Kep Province and Prey Nob District have identified that coastal communities are being impacted by climate change and its effects on the coastal environment, leading to serious consequences for local people. The identified environmental impacts listed below can be attributed to a combination of declining mangrove ecosystems and/or insufficient coverage by existing mangrove reserves and the impacts of climate change:

- Significant reduction in fish levels for local fishermen and women;
- Coastal erosion leading to loss in coastal agricultural land and damage to coastal infrastructure;
- Storm surges resulting in salt water ingress into the local agricultural land and surface water, resulting in decreasing agricultural productivity and surface water availability;
- Reduced resilience of houses in the coastal area to flooding and high winds, contributing to potential loss of life and property damage.

This investment will plant mangroves along the coast in Prey Thom, Kep Pong Teuk and Angkaol Communes in Kep Province and Prey Nob Commune in Prey Nob District to establish mangrove protected areas in these locations. These sites have been selected due to an initial screening process and meeting criteria for a high likelihood of success.

The case of environmental and socio-economic benefits for this investment are strong: as per the International Federation of Red Cross and Red Crescent Societies (IFRC) study dated 2011 *Mangrove plantation in Viet Nam: measuring impact and cost benefit* the plantation of mangroves over a 30-year period is estimated to provide benefits per hectare of mangrove plantation 28 to 104 times the initial establishment costs.

There is a low risk that marginalised and vulnerable groups may be negatively impacted due to rehabilitation works. However poor and informal settlements, women, elderly, disabled and youth have been consulted, and there are no anticipated issues regarding marginalised groups as there is no potential for discrimination or favour in the protections offered by the mangrove plantations.

Poor and informal settlements, women, elderly, disabled and youth have been consulted, however, while there is always a risk that marginalised and vulnerable groups may be negatively impacted due to rehabilitation works, there are no anticipated issues regarding marginalised groups as there is no potential for discrimination or favour in the protections offered by the mangrove plantations.

A Mangrove Planting Management Plan will be developed before planting begins, which will aim to ensure the broader community as well as the government are involved in planting and the ongoing protection of mangrove zones. Continued consultation with potentially vulnerable groups is also proposed, integrating with outputs of Components 1 and 2.

There is a low risk that rehabilitation works if not undertaken properly and in accordance with a Mangrove Management plan, could have an impact on surrounding coastal habitats. The Mangrove Planting Management Plan will ensure that selected mangroves for plantation are suitable for the environment and will support the local ecosystem. An ecologist trained in mangrove ecology will be involved in development of the plan, which will be approved by the Project Manager and the PMC.

As specialist labour external to commune workforces (i.e. those hired under the People's Process) may be required for mangrove rehabilitation works and there is a low risk that contractors engaged do not comply with ILO standards. Where possible, planting of mangroves will draw upon labour from the community. It will be important to ensure compliance with ILO standards for all workers. For example, provision of safety equipment (where necessary), employing adults under contracts, non-discrimination and paying fair salaries above the national minimum wage. These safeguard requirements will be written into agreements with external contractors.

Refer to the table below for a summary of impact assessment, mitigation and monitoring for this investment.

**3.2a Water gate repair and 3.2b Canal Rehabilitation (Angkaol and Pong Teuk)**

Pong Teuk and Angkaol Communes are predominantly rural agricultural areas, obtaining their livelihood from rice and other cultivations (e.g fruit and vegetables). Both communes have been affected by fluvial flooding due a lack of drainage capacity. Reservoirs in the communities are not well operated and the canals are heavily silted up, which causes the capacity shortage. Besides draining during wet conditions, the canals provide an irrigation function for the rice paddy fields in the area. This makes the shallow canals more preferred in the dry season, while in the rainy season this causes problems due the lack of capacity.

The state of the current infrastructure means that the communities don't benefit from the existence of water gates. Increasing periods of water shortage due to decreased rainfall as a result of climate change enhance the problem of a non-functional irrigation system. Rice farmers depending on this water source for irrigation and all those dependent on it for domestic water use are likely to face increasing problems with water shortages in the dry season in the near future.

The communities need a more resilient approach to water management, building resilience to natural hazards refers to the ability to protect lives, livelihoods and infrastructure from destruction and damage, and to the capability to restore areas after natural hazard has occurred. This project seeks to improve the resilience of the affected communes to the vulnerability of low discharge capacity due to silted canals and vulnerability of increasing rainfall events and longer periods of droughts causing water shortage for cropping by the provision of:

- Canal maintenance and re-lining of the most silted up canals
- Capacity building on canal maintenance
- Gate repair.

**Water gate repair**

There exists a moderate risk that an intervention may not be accessible to the entire community. However, research and consultation undertaken confirms expectation that entire communes would benefit. All groups within communes were consulted in depth, and there was no expression of concern of unequal access. It was confirmed that the repair of the gate will improve access to water to the entire community (Angkaol and Pong Teuk communes). The gates make it possible to have controlled waterflow

and thereby improve the existing water system. Because the water bodies are all public land, it is expected that the water will be a 'public good' whereby it will not be possible to prevent individuals or groups from using it. Indeed, it will enhance the ability of all target beneficiaries to access water.

Even though poor and informal settlements, women, elderly, disabled and youth have been consulted through project development, there is low risk that marginalised and vulnerable groups may be negatively impacted due to rehabilitation works, though there are no anticipated issues regarding marginalised groups as there is no potential for discrimination or favour in the repair of the water gate. Continued consultation will be undertaken with any potentially marginalised groups identified during project implementation.

There is a low risk that core labour rights may be impacted as skilled labour external to commune workforce (i.e. those hired under the People's Process) may be required. The implementation of the project will need to ensure any contractors engaged for rehabilitation works comply with ILO standards, by, for example, providing safety equipment (where necessary), employing adults under contracts, non-discrimination and paying fair salaries above the national minimum wage. This will be written into any contractual agreement.

There is a low risk that the water quality of water adjacent to canal construction may be impacted due to mobile sediment causing turbidity, and/or pollution from construction activities (e.g use of cement). This could intern impact on public health. Improper design of the water gate could also impact water quality and flow. Verification of the design of will be required prior to engagement of any contractor and implementation of the works. The project's engineer (or an engineer nominated by the PMC) will review the works prior to their commencement.

Overall, water resource efficiency will be improved by the installation of the gate and repair and associated structures. The possibility to effectively divide the water makes the communes more resilient to longer periods of draught with more efficient resource management. Proper storage of fresh water increases the commune's access to fresh water, which a direct benefit to public health. There will, however, be a need for any contractors and labour force to comply with required health standards.

**Canal rehabilitation**

Canal rehabilitation works propose a low risk impacting on human rights as the land through which the canals traverse is a combination of public/informal and residential use (though the canals themselves are public land, but they are bordered by private land). The implementation project must not impede on tenure arrangements or property rights. Consultation undertaken has confirmed that neither the capacity building programme nor the rehabilitation of the canals will conflict with human rights, however, further follow up consultation through project implementation will be undertaken to ensure all beneficiaries accept works and that tenure arrangements and property rights are not violated. At present, those living nearby expressed strong support for these works, as they are also the primary beneficiaries.

There is a moderate risk triggering potential involuntary resettlement, although inhabitants (including directly affected) proposed and confirmed agreement with rehabilitation of the canals in Angkaol and Pong Teuk Communes, an involuntary settlement may need to be rechecked to ensure inhabitants are not resettled involuntarily due to changes in water flow. The works all involve work on state-public land. No one is currently occupying the land that is being used, and the repair work on the canals will not involve flooding or any other displacement that could force the resettlement of nearby people. Therefore, no involuntary resettlement is likely to be required or occur as a by-product of the investment. However, ongoing consultation through implementation phase will be undertaken to ensure this is still the case.

There is a low risk that rehabilitation works within and surrounding the canal could have an impact on the surrounding natural habitat and/or an indirect impact on biological diversity. Although no critical habitat or protected areas are confirmed within the works area, and the area where the gates are constructed is solely agricultural land, rehabilitation of the canals can cause temporarily disturbance of species living in the canals. By doing the work in section and keeping the water flow at all times will limit the damage to species, and all care must be taken to ensure no degradation of natural habitat and protection of surrounding ecosystems. As accessing the terrain temporarily might require crossing private property, to prevent damage to crops, rehabilitation work needs to be planned in between cropping cycles, and will therefore take place during the dry season.

As with the repair of water gates, there is a low risk of impact to water quality within the adjacent canal during construction (e.g use of cement). Improper design of the canal could also impact water quality and flow. Verification of design is required and will be conducted by the project engineer. Overall, resource efficiency will be improved by relining the canals and the larger discharge capacity will make the commune less vulnerable to climate change and allows for more efficient resource management. The rehabilitation of the canals will also prevent flooding, therefore reduces chances of negative effects on public health by reducing the spread of contaminated water. However, project implementation will need to ensure contractors comply with health standards.

**3.3 Prevention of salt water ingress through river channels – embankment and water gate (Angkaol and Pong Teuk)**

In both Angkaol and Pong Teuk Communes, the land through which the canals traverse is a combination of public / informal and residential use, predominantly used for agricultural purposes. This was confirmed via consultations, however there is a low risk that unknown or unidentified tenure issues may arise during embankment works and construction of the water gate or embankments. The investment must not impede on tenure arrangements or property rights, therefore further follow up consultation through project implementation should be undertaken to ensure all beneficiaries accept works and that tenure arrangements and property rights are not violated. This is also important to verify that there have not been changes in the tenure arrangement since the project's final consultations in October 2018.

Although inhabitants (including those who will be directly affected by the investment) proposed and confirmed agreement with embankment and water gates the project needs to ensure inhabitants are not resettled involuntarily due to changes in water flow. There is a low risk that resettlement may be required as a result of this investment if flows are redefined. However, the design is developed to improve water

flow amenity in both directions.

There is a low risk that embankment works and construction of the water gates could have an impact on the surrounding natural habitat. Although no critical habitat or protected areas are confirmed within the works area, all care needs to be taken to ensure no degradation of natural habitat. The rehabilitated mangrove areas will define the boundary between the shoreline (salt water mangrove) and cultivated rice paddies. As such it will help to prevent further erosion of the mangrove forest. The presence of a water gate across the river will also form a barrier to downstream flow of solid waste entrained in the river, which could then be removed more easily rather than flushing out to sea. In this sense, the project provides two positive benefits to the natural habitat; 1) the defence and protection of mangroves, and 2) the protection of the ocean against solid waste.

The works will require heavy components and machinery to be brought to site, and there is currently no suitable road for large vehicles to access to within 1km. Therefore, a temporary trackway will need to be installed to enable access. There is a risk of environmental impact if the temporary road is not satisfactorily constructed and safely removed again after the completion of the works. However, if communities and the local government conclude that the track is beneficial to them, it can be kept and formalised.

The works adjoin mangrove forest and it will be necessary to widen the footprint of the existing path separating the mangrove from the agricultural land. Care should be taken to minimise the impact on the mangrove.

There is also a low risk that embankment work and construction of the water gates could have an indirect impact on biological diversity. Material imported to construct the raised embankment should be environmentally screened to ensure that there are no invasive species brought to site.

There is a low risk of impact to water quality within adjacent canal during construction (e.g. use of cement). Improper design of embankments and water gates could impact water quality and flow. Verification of design upon inception is required. Environmental safeguards should be applied during the construction works to ensure no cement or oils are allowed into the environment.

There is a low risk that impacts to water quality could in turn effect public health of downstream users. However, as all contractors will comply with required health standards and regulations, and improvement to flow should benefit public health by improving crop production, no negative impacts are expected.

**3.4 O Thmar reservoir enhancement (Angkaol)**

Angkaol Commune is predominantly rural landscape, with existing natural vegetation within and surrounding a combination of public/ informal and agricultural use. Whilst land use and tenure was confirmed via consultation, there is a low risk that the implementation of the project might impede on tenure arrangements or property rights. Although enhancements to the reservoir are not anticipated to raise any issues regarding human rights, further follow up consultation through project implementation should be undertaken to ensure all beneficiaries accept the proposed works and that tenure arrangements and property rights are not violated.

There is a low risk that labour rights and safety of workers may be impacted as specialist labour external to commune workforce (i.e. those hired under the People's Process) may be required. There will be the

need to ensure any contractors engaged for rehabilitation works comply with ILO standards by, for example, providing safety equipment (where necessary), employing adults under contracts, non-discrimination and paying fair salaries above the national minimum wage. All these conditions will be written into legal contracts with the contractors. The choice of contractor/s must meet the requirements for this project to ensure adequate risk mitigation is implemented. Engineering certification required for the design of the works.

Although inhabitants (including directly affected) proposed and confirmed agreement with the need to enhance the reservoir, there is a low risk that unidentified inhabitants exist. The works all involve work on public state-owned land, however the project needs to ensure inhabitants are not resettled involuntarily due to changes in water flow, ongoing consultation prior and through implementation is required.

There is a low risk that works on the reservoir could have an impact on the surrounding natural habitat. Although no critical habitat or protected areas are confirmed within the works area, all care needs to be taken to ensure no degradation of natural habitat.

There is a low risk that embankment works and construction of water gates could have an indirect impact on biological diversity. The waterbody in its current state is home to vegetation and aquatic plant life but has no official status as natural habitat. O Thmar is not a natural lake and it is not in a protected area, however, excavation works may lower the biological diversity temporarily. The use of a silt curtain (or similar) to contain sediment during excavation works will be implemented to protect aquatic plants as far as possible.

There is a low risk that excavation works to the reservoir could impact on water quality within the reservoir and adjacent canal system. Construction methodologies will consider the need to protect the existing water quality. Improper design of the works could also impact water quality and flow. Verification of the design by a certified engineer is required to ensure the design adequately mitigates any negative impact to water quality and flow. Water resource management within the communes will be improved as the enhancement of the reservoir enlarges the water resource capacity, creating a more sustainable fresh water source. The enhanced reservoir should also benefit public health and livelihoods by improving crop production.

**3.4b Refurbish Roness Reservoir**

Roness reservoir is well-positioned to provide a water supply to much of Pong Teuk, Kep, Angkaol and Prey Thom Communes and as such the majority of the communities will have a stake in its refurbishment and will be supportive of any works. As identified above, there is a small community of approximately 50 people living in a village immediately to the east of Roness Dam, some of whom currently cultivate land within the reservoir footprint. It will be necessary to engage with these people to ensure they are able to effectively adapt to any change in the reservoir water level that occurs at a later date following completion of the investigation and design proposed in this investment.

In the construction, the existing dam material will be re-used and strengthened as much as possible. Other details of the physical works are as above.

**§ Environmental**

The works will require drilling and construction machinery and materials to be brought to site, and the existing road may require modification to enable access. Any disruption as a result of the road works should be kept to a minimum.

**§ Social Safeguards**

Full engagement should take place with the neighbouring community and training put in place with the workforce to ensure good working relations are maintained throughout the works.

**3.4c Coastal flood protection embankment in Kep and Angkaol constructed**

This activity has been added as a means to sustainably re-use the material excavated from O Thmar Reservoir (Investment 3.4a). This activity had originally been considered but ruled out on cost grounds. The investment is entirely in state public land, does not affect nearby informal settlements or privately occupied land, and is supportive to pollution prevention and resource efficiency, by upcycling the excavated material from O Thmar. Further details can be found in Investment sheet 3.4c.

**3.5 Resilient housing (Kep Province and Prey Nob District - all communes)**

Although all groups within communes were consulted in depth and no expression of concern of unequal access, there exists a low risk that an intervention may not be accessible to the entire community. Research and consultation undertaken confirms expectation that entire communes would benefit and any existing inequities would not be exacerbated but improved. Education opportunities provided within this project will be targeted to the marginalised and/or enhance the local capacity of the region which is in turn beneficial to all. The location of demo houses will be on state public land and re-confirmed before construction to ensure access and equity for all beneficiaries.

Impoverished and informal settlements, women, elderly, disabled and youth (where possible) have been consulted, however there is a low risk that marginalised and vulnerable groups may be negatively impacted due proposed interventions. There are no anticipated issues regarding marginalised groups as none were identified as being located within these communes. In fact, this project will:

- Provide new economic and livelihood options to the marginalised;
- Improve housing resilience for the marginalised and vulnerable.
- Continued consultation with any potentially marginalised groups identified during project implementation.

The land to which these interventions is applicable is a combination of public/informal and residential use. This was confirmed via consultations however there is a low risk that the project may impede on tenure arrangements or property rights. Continued consultations will take place throughout project implementation to ensure all beneficiaries accept the works and that tenure arrangements and property rights are not violated. The demonstration houses will all be on state-public land.

There exists a low risk that housing resilience capacity building would focus predominantly on men. However, the housing resilience project will aim to provide equal training opportunities to both men and women. Women will benefit from resilient houses because they more typically stay at home, are more likely to be affected by damage to houses and are more likely to source materials for the repair of houses.

Specialist labour external to commune workforce may be required for the construction of the demonstration houses. There is a low risk that labour rights may be impacted, hence there is a need to ensure any contractors engaged for works comply with ILO standards. Safety equipment will be required for workers on the site.

There is a low risk that if proper training is not provided for housing resilience, safety issues may continue. The housing resilience program assists with the provision of safer housing for the marginalised during adverse weather events. Continued engagement with community with regards to development of housing styles and construction techniques, and development of hazard maps is critical. This investment is also supported by activities under Output 1.2, which will enhance the capacity building efforts to a greater number of people.

### 3.6 Raised embankment and water gate repair (Ou Oknha Heng, Prey Nob, Ou Chrou and Veal communes)

The communities of Prey Nob District lying on the west side of the Kampong Smach Estuary have been protected from sea flooding since 2001 by an earth embankment and roadway separating the rice fields from the mangrove forest. On the landward side of the embankment is a 30m wide flood drainage canal for conveying fresh water floods in the rainy season and this empties under the embankment through a series of 36 manually-operated vertical sluice water gates. Repairs are required to several of the water gates. There are also locations where the current flood embankment is being overtopped in severe storms, and there is a need to identify low points as a preliminary to any future project to raise and improve the embankment. Raising areas of the embankment where there are identified low points will enable some targeted repairs improving the functionality of the existing flood embankment, incurring immediate benefits to the surrounding communes due to protection from saltwater ingress.

Both the estuary and the canal system behind the embankment provide for the livelihood of the surrounding communes of Ou Oknha Heng, Prey Nob, Ou Chrou and Veal. The estuary is a diverse ecosystem with a healthy mangrove system providing habitat for a diverse range of coastal species of fish and crustaceans, a highly relied upon source of food for locals. The canal system provides a freshwater source of water and directly feeds approximately 2,000 hectares of rice fields which support the broader surrounding communes.

All groups within the surrounding communes were consulted in depth, and no expression of concern of unequal access to the benefits from the proposed works was identified. However, there exists a low risk that an intervention may not be accessible to the entire community. All research and consultation undertaken in the preparation of this project supports the expectation that entire communes would benefit.

2 - The investment will deliver reduced instances of salt water ingress into agricultural land, improving the likelihood of high crop yields and protecting the income and food supply for a significant number of people in the Prey Nob district. The agricultural and fishing communities living in the informal areas of settlement will experience improved access and improved food security.

Impoverished and informal settlements, women, elderly, disabled and youth within the communes have been consulted, however there is always a low risk that marginalised and vulnerable groups may be negatively impacted due proposed interventions. There are no anticipated issues regarding marginalised

groups as none were identified as being located within these communes. However, there is some old data to suggest that a small number of undocumented ethnic Vietnamese live in Prey Nob District. This was repeatedly cross-checked with the elected Commune Council representatives and provincial level officials, who both assert that all undocumented ethnic Vietnamese living in the area have now been formalized and given Cambodian identity papers.

There exists a low risk that this investment (while being implemented) focuses benefits predominantly on the male population with regards to local labour force. In the poor communities affected by the proposal it was observed that women tend to take more of a household and community management role and therefore they are likely to benefit further from the community's improved crop yield, as they will be likely to take on the role of selling surplus crops. The men will benefit from improved yields from their labours. If the road overtops less frequently there will also be improved access to the market for all.

Specialist labour external to provincial workforce may be required for the embankment works and repairs to water gates. There is a low risk that labour rights may be impacted, hence there is a need to ensure any contractors engaged for rehabilitation works comply with ILO standards by, for example, providing safety equipment (where necessary), employing adults under contracts, non-discrimination and paying fair salaries above the national minimum wage.

Although inhabitants (including directly living along the embankment/sea defence) proposed and confirmed agreement with the need to prepare water gate and low points along sea defence, there is a low risk that some inhabitants are still unidentified. The project needs to ensure inhabitants are not resettled involuntarily due to changes in water flow, therefore continued consultation through implementation is required. Without this investment, resettlement of the informal communities living along the ocean side of the embankment would be inevitable.

There is a moderate risk that works on the sea defence and water gate could have an impact on the surrounding natural habitat. Although in many areas the existing mangroves have been cleared and cut down for use as building materials, they are now considered protected area and all care needs to be taken to ensure no degradation of natural habitat. Contractors are to be made aware of the implications of removing or damaging mangroves. No clearing of mangroves is required for the proposed works. The investment will help to maintain the boundary between salt water mangrove and cultivated rice paddies. As such it will help to prevent further erosion of the mangrove forest. There are areas of mangrove to seaward of the existing flood defence embankment that appear to have been previously cleared for cultivation but are now returning to nature. A separate investment will address re-planting these areas.

There is a low risk that works on the sea defence and construction of water gate could have an indirect impact on biological diversity. Material imported to repair and consolidate the embankment should be environmentally screened prior to commencement of construction to ensure that there are no invasive species brought to site.

There is a low risk that the project will impact emissions which may contribute to climate change due to CO2 emissions associated with the construction period only (machinery emissions). However, this will be temporary and controlled via use of modern and well-maintained equipment. The investment will however help to offset the effects of climate change for the poor local communities.

There is a low risk of impacts to water quality within estuary and adjacent canal system during construction (grading works, use of cement). Improper design could impact water quality and flow, therefore controlled construction methodologies and verification of design is required. Environmental safeguards will be applied during the construction works to ensure no cement or oils are allowed into the environment. The works will reduce the instances of pollution by improving performance of the existing embankment and water gates to better control flood flows.

There is a moderate risk that improper design and construction of the embankment and water gate repair works may result in negative impacts to soil and underlying groundwater condition. Design and construction methodologies should be certified by a suitably qualified engineer prior to the beginning of the construction works. The works will reduce the likelihood of salinization and soil degradation by preventing upstream salt water ingress. This will improve the quality of the agricultural soil. Moreover, the raised embankment will improve future capacity to adapt to sea-level rise.

**3.7 Drainage and rainwater harvesting in Veal Rinh Market**

Veal Rinh Market and its surroundings consist of about 18 hectares of commercial land located between the railway and National Road 4 in Veal Rinh Commune, Prey Nob District. The market is accessed by the entire community for food (including fresh meat, fruit and vegetables) and goods such as clothing and domestic products. The area suffers from storm water flooding in the rainy season, making it inaccessible and unsafe during and after periods of heavy rain. These flooding periods also cause the loss or reduction in incomes for the people who trade in the market. The stretch of land between the road and the market area has the lowest elevation level. The current drainage system is poorly maintained and is too small to deal with the increasingly intense rainfall events that are likely to occur as a result of climate change. Therefore, floods occur inside and in front of the market in every time it rains.

Although All groups within communes consulted in depth and no expression of concern of unequal access, there exists a low risk that the drainage works proposed may not be accessible to the entire community. Research and consultation undertaken however confirms the expectation that entire communes would benefit. The new drainage system and landscape works along the road will improve safety from flooding to all stakeholders in this area, and all housing in this area can connect their rainwater pipe direct or indirect to the rainwater system. Proactive measures will be taken to ensure that people (and especially sellers, who are primarily women) can still access the market while the works are ongoing. Overall, access to the market through the rainy season will benefit all in the commune as it is the main market place for provisions, food and goods.

There is a low risk that installation of the drainage and rainwater system will focus predominantly on the male population with regards to installation work. However, the overall project design is primarily designed to improve safety and access to the market, which is a direct benefit to women. It is estimated that 90% of the sellers in the market are women, so the incomes that will be safeguarded and increased as a result of the project will primarily benefit women.

Specialist labour external to provincial workforce may be required, therefore there is a low risk that labour rights may be impacted. The project will ensure any contractors engaged for rehabilitation works comply with ILO standards. Safety issues are critical as labourers will be working in the vicinity of National Road 4, the main highway between Sihanoukville and Phnom Penh. Further, as unskilled labour will be provided

by the community, safety training and appropriate equipment, support and monitoring will be required and provided by the project.

There is a moderate risk that the works will impact water quality within the surrounding catchment due to redirected runoff water (containing sediment) and flow in adjacent water ways. Improper design could impact water quality and flow therefore verification of the design is required prior to construction. The waste and pollution at the discharging point is taking account into the design. An eco-treatment system will be included at the discharging point to control waste and pollution to the waterways.

There is a low risk that if not designed and constructed correctly, the enhanced drainage system may cause indirect impacts to public health via decreased water quality. However, the design of the enhanced drainage system will redirect captured runoff meaning there is a low risk of contaminants entering the surrounding water ways. The better drainage system will reduce the stagnant water, therefore disease from viruses, bacteria and microorganisms, as well as local breeding grounds for mosquitoes, which in this area can carry Dengue Fever will be decreased as a result.

### 3.8 Tide gauge with early warning system broadcast capabilities (Teuk La'k, Ou Okhna Heng)

The communities of Prey Nob district lying on the coastal plain either side of the Kampong Smach estuary are increasingly experiencing flooding from the sea, and a sea defence embankment built in the period 1997-2001 is now reported as being overtopped every 2-3 years. There is a tide gauge within Preah Sihanouk province at Sihanoukville port, but this is on the opposite side of the Sihanoukville peninsula and does not necessarily record data reflecting the unusual tidal circumstances at the Kampong Smach, which has a shallow offshore shelf, a funnelling estuary mouth and the effects of several offshore islands affecting the tidal regime.

The Preah Sihanouk Provincial Department of Meteorology and Water Resources has requested installation of a tide gauge at the outer edge of the mangrove forest at Ou Oknha Heng, to provide accurate data on sea level rise in this location and thereby improve flood warning capability for the low-lying communities of Prey Nob district on both sides of the Kampong Smach.

The proposed location is 700m from the Prey Nob sea defence embankment at the outer edge of the mangrove, on the edge of open sea water. At high tide the depth to the muddy sea bed is only 1.7m, and the mangroves reach approx. 15m height. This location has been selected by the Preah Sihanouk Department of Water Resources and Meteorology as a relatively accessible location within the bay beyond the Kampong Smach Estuary. The bay here is very shallow, reaching no more than 3m water depth at normal high tide over 1km beyond the mangrove according to openly available bathymetric mapping. A tide gauge at this location will be able to give a good representation of the tidal regime within the entire bay.

Although all groups within communes were consulted in depth and no expression of concern of unequal access, there is a low risk that an intervention may not be accessible to the entire community. Research and consultation undertaken confirms expectation that entire communes would benefit from the tide gauge. In particular, the tide gauge will deliver improved warning and understanding of high tides and enable better preparation for protection against sea water ingress into agricultural areas. This will help build local resilience to all the communities living in close proximity to the sea within Prey Nob district. It

is generally the case that the poorest and most marginalized live in informal settlements on the edge of the mangrove and these communities stand the most to gain from improved flood warnings.

Specialist labour external to provincial workforce may be required, therefore there is a low risk that labour rights will be impacted. There is a need to ensure any contractors engaged for works comply with ILO standards by, for example, providing safety equipment (where necessary), employing adults under contracts, non-discrimination and paying fair salaries above the national minimum wage.

## Table 3.1 - Potential risks, preventative measures and monitoring for activities under Components 1 and 2

| Component | Outputs | Potential risk areas | Preventive measure | Monitoring arrangements | |
|---|---|---|---|---|---|
| | | | | Indicator and methods | Frequency and responsibility |
| Component 1<br>Community-scale knowledge and capacity enhanced to sustain the adaptation benefits of the project's investments | Output 1.1<br>Community capacity built to collect and manage solid waste in all communes within Kep and Preah Sihanouk provinces.<br><br>Output 1.2.<br>Communities in target areas (in all communes within Kep and Preah Sihanouk provinces) have been trained on resilient house construction techniques.<br><br>Output 1.3<br>Communities (all communes within Kep and Preah Sihanouk Provinces) have been organised to manage, monitor and maintain the infrastructure investments under Component 3. | 2, 3 and 5: Risk that different groups are not equally involved in capacity building forums and/or training | Communities will be organized and integrated, and quotas will be used to ensure different groups are included / represented.<br>For government workshops and trainings, gender quotas will apply.<br>Continued consultation will be undertaken with community and government through implementation stages. | Meeting attendance sheets with quota numbers and photographs<br><br>Review of documentation, processes and outputs. | Before and after training, workshops and plans<br><br>project manager |
| Component 2<br>Government planning and technical capacity enhanced and knowledge captured and disseminated to sustain and enhance the project's adaptation benefits | Output 2.1<br>Government officers at the provincial and district level (within Kep and Preah Sihanouk provinces) trained to plan effectively for sustaining and enhancing the project's adaptation benefits.<br><br>Output 2.2<br>Government officers at the provincial and district level (within Kep and Preah Sihanouk provinces) provided with comprehensive technical training to manage, operate and maintain the infrastructure<br><br>Output 2.3.<br>Institutional systems strengthened to monitor adaptation investments and replicate their benefits<br><br>Output 2.4<br>Knowledge from the project implementation is captured and disseminated to local and national stakeholders, focusing on sustainable adaptation actions and policy enhancement | | | | |

## Table 3.2 - Potential risks, mitigation measures and monitoring for investments under Component 3

| Output | AF triggered, risk of potential impact and significance score | Measure to avoid or mitigate potential risks | Monitoring indicator | Frequency and responsibility monitoring |
|---|---|---|---|---|
| 3.1<br><br>285ha of Mangroves restored in Kep City and Angkaol Communes, Kep Province | 3 - Poor and informal settlements, women, elderly, disabled and youth have been consulted, however, while there is always a risk that marginalised and vulnerable groups may be negatively impacted due to rehabilitation works, there are no anticipated issues regarding marginalised groups as there is no potential for discrimination or favour in the protections offered by the mangrove plantations.<br><br>**Unlikely x Marginal = Low**<br><br>6 – Specialist labour external to commune workforce may be required. Need to ensure any contractors engaged for rehabilitation works comply with ILO standards.<br><br>**Rare x Marginal = Low**<br><br>9 – Rehabilitation works if not undertaken properly and in accordance with a Mangrove Management plan, could have an impact on surrounding coastal habitats.<br><br>**Unlikely x Marginal = Low** | 3 - Continued consultation with minority groups and inclusion within Mangrove Management plan.<br><br>6 - Planting the mangrove will draw upon labour from the community. All employment will comply with ILO Standards.<br><br>9 - A Mangrove Planting Management Plan will be developed and implemented to ensure that selected mangroves for plantation are suitable for the environment and will support the local ecosystem. An ecologist trained in mangrove ecology to be involved in development of the plan. | Attendance sheets with quota numbers and photographs<br><br>Check contract and signatures<br><br>Check for compliance with ILO standards<br><br>Check compliance with Mangrove Planting Management Plan<br><br>Mangrove mapping | Pre- commencement and Monthly<br><br>Local Project Manager |
| 3.2a<br><br>Water gates repaired in 3 locations in Pong Teuk and Angkaol | 2- All groups within communes consulted in depth, no expression of concern of unequal access. There is a risk that an intervention may not be accessible to the entire community. However, research and consultation undertaken confirms expectation that entire communes would benefit.<br><br>**Possible x Marginal = Moderate**<br><br>3 - Poor and informal settlements, women, elderly, disabled and youth have been consulted, however, while there is always a risk that marginalised and vulnerable groups may be negatively impacted due to rehabilitation works, there are no anticipated issues regarding marginalised groups as there is no potential for discrimination or favour in the repair of the water gate.<br><br>**Unlikely x Marginal = Low** | 2 - The repair of the gate will improve the access to water to the community. The gates make it possible to have controlled waterflow and thereby improve the existing water system. Because the water bodies are all public land, it is expected that the water will be a 'public good' whereby it will not be possible to prevent individuals or groups from using it. Indeed, it will enhance the ability of all target beneficiaries to access water.<br><br>3 - Continued consultation with any minority groups identified during project implementation.<br><br>6 - Safety equipment will be required for workers on the site. For further general information on Core Labour Rights as part of the Environmental and Social Safeguard approach of the project, please refer to the proposal document, Part II, Section K.<br><br>Need to ensure any contractors engaged for rehabilitation | Attendance sheets with quota numbers and photographs<br><br>Consultation notes<br><br>Verification of design<br><br>Construction supervision, health and safety manager on site.<br><br>Check for compliance with ILO standards | Pre-commencement and post meeting/consultation, local Project Manager<br><br>Pre-construction, certified engineer<br><br>Pre-commencement and daily Contractor<br><br>Pre-commencement, Local Project Manager |

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|---|---|---|---|---|
| | 6 - Specialist labour external to commune workforce may be required. Need to ensure any contractors engaged for rehabilitation works comply with ILO standards, by, for example, providing safety equipment (where necessary), employing adults under contracts, non-discrimination and paying fair salaries above the national minimum wage.<br><br>**Unlikely X Marginal = Low**<br><br>12 – Impact on water quality within adjacent canal during construction (e.g use of cement). Improper design of water gate could impact water quality and flow. Verification of design required upon inception.<br><br>**Unlikely x Marginal = Low**<br><br>13 - The storage of fresh water increases the access to fresh water, which is beneficial to public health.<br><br>**Unlikely x Negligible = Low** | works comply with ILO standards, by, for example, providing safety equipment (where necessary), employing adults under contracts, non-discrimination and paying fair salaries above the national minimum wage.<br><br>12 - Resource efficiency is improved by the installation of the gate and repair of the other two structures. Possibilities to divide the water makes the communes more resilient to longer periods of draught with more efficient resource management.<br><br>13 - Need to ensure all contractors comply with health standards | | |
| 3.2b<br><br>2 canals rehabilitated in Pong Teuk and Angkaol Communes, Kep Province | 4 - The land through which the canals traverse is a combination of public / informal and residential use. This was confirmed via consultations. Project must not impede on tenure arrangements or property rights.<br><br>**Unlikely x Marginal = Low**<br><br>8 - Although inhabitants (including directly affected) proposed and confirmed agreement with rehabilitation of the canals in Angkaol and Pong Teuk Communes, the project will ensure inhabitants are not resettled involuntarily due to changes in water flow.<br><br>**Possible x Marginal = Moderate**<br><br>9 - Rehabilitation works within and surrounding the canal could have an impact on the surrounding natural habitat. Although no critical habitat or protected areas are confirmed in or around the works area, due care needs to be taken to ensure no degradation of natural habitat.<br><br>**Unlikely x Marginal = Low**<br><br>10 - Rehabilitation works within and surrounding the canal | 4 - Neither the capacity building programme nor the rehabilitation of the canals will conflict with human rights. Further follow up consultation through project implementation should be undertaken to ensure all beneficiaries accept works and that tenure arrangements and property rights are not violated.<br><br>8 - The works all involve work on public state-owned land. Therefore, no involuntary resettlement is required. No one is currently occupying the land that is being used, and the repair work on the canals will not involve flooding or any other displacement that could force the resettlement of nearby people. Ongoing consultation through implementation phase should be undertaken to ensure this is still the case.<br><br>9 - The area where the gates are constructed is solely agricultural land. No natural habitat is endangered by canal repair works. Although accessing the terrain temporarily might be crossing private property. To prevent damage to crops, rehabilitation work needs to be planned in between cropping cycles.<br><br>10 - Rehabilitation of the canals can cause temporarily | Attendance sheets with quota numbers and photographs<br><br>Consultation notes<br><br>Verification of design<br><br>Construction supervision, health and safety manager on site.<br><br>Check for compliance with ILO standards | Pre-commencement and post meeting/consultation<br><br>Pre-commencement, certified engineer<br><br>Pre-commencement and daily Contractor<br><br>Pre-commencement, Local Project Manager |

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| | could have an indirect impact on biological diversity.<br><br>**Unlikely x Marginal = Low**<br><br>12 - Impact to water quality within adjacent canal during construction (e.g use of cement). Improper design of canal could impact water quality and flow. Verification of design required.<br><br>**Unlikely x Marginal = Low**<br><br>13 - The rehabilitation of the canals prevents flooding, therefore reduces chances of negative effects on public health by reducing the spread of contaminated water.<br><br>**Unlikely x Marginal = Low** | disturbance of species living in the canals. By doing the work in sections and keeping the water flow at all times will limit the damage to species.<br><br>12 - Resource efficiency is improved by relining the canals. The larger discharge capacity makes the commune less vulnerable to climate change and allows for more efficient resource management.<br><br>13 - Need to ensure all contractors comply with health standards. | | |
| 3.3<br><br>Prevention of salt water ingress through improved channels | 4 - The land through which the canals traverse is a combination of public / informal and residential use. This was confirmed via consultations. The investment must not impede on tenure arrangements or property rights.<br><br>**Unlikely x Marginal = Low**<br><br>8 - Although inhabitants (including directly affected) proposed and confirmed agreement with embankment and water gates the project needs to ensure inhabitants are not resettled involuntarily due to changes in water flow.<br><br>**Unlikely x Marginal = Low**<br><br>9 - Embankment works and construction of water gate could have an impact on the surrounding natural habitat. Although no critical habitat or protected areas are confirmed within the works area, all care needs to be taken to ensure no degradation of natural habitat.<br><br>**Unlikely x Marginal = Low**<br><br>10 - Embankment works and construction of water gate could have an indirect impact on biological diversity.<br><br>**Unlikely x Marginal = Low**<br><br>12 - Impact to water quality within adjacent canal during | 4 – Embankment works and construction of water gate is not anticipated to raise any issues regarding human rights. Further follow up consultation through project implementation should be undertaken to ensure all beneficiaries accept works and that tenure arrangements and property rights are not violated.<br><br>8 - There is no resettlement required as a result of this investment. Design is developed to improve water flow amenity in both directions.<br><br>9 - The investment will define the boundary between salt water mangrove and cultivated rice paddies. As such it will help to prevent further erosion of the mangrove forest. The presence of a dam and water gate across the river will also form a barrier to downstream flow of solid waste entrained in the river, which could then be removed more easily rather than flushing out to sea. In this sense, the project provides two positive benefits to the natural habitat; 1) the defence and protection of mangroves, and 2) the protection of the ocean against solid waste.<br><br>The works will require heavy components and machinery to be brought to site, and there is currently no suitable road for large vehicles to access to within 1km. Therefore, a temporary trackway will need to be installed to enable access. There is a risk of environmental impact if the temporary road is not satisfactorily constructed and safely removed again after the | Attendance sheets with quota numbers and photographs<br><br>Consultation notes<br><br>Verification of design<br><br>Construction supervision, health and safety manager on site.<br><br>Check for compliance with ILO standards | Pre-commencement and post meeting/consultation<br><br>Pre-commencement, certified engineer<br><br>Pre-commencement and daily Contractor<br><br>Pre-commencement, Local Project Manager |

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| | construction (e.g use of cement). Improper design of embankment and water gate could impact water quality and flow. Verification of design upon inception required.<br><br>**Unlikely x Marginal = Low**<br><br>13 – The sub-project should benefit public health by improving crop production. There are no anticipated negative effects.<br><br>**Unlikely x Negligible = Low** | completion of the works.<br><br>The works adjoin mangrove forest and it will be necessary to widen the footprint of the existing path separating the mangrove from the agricultural land. Care should be taken to minimise the impact on the mangrove.<br><br>10 - Material imported to construct the raised embankment should be environmentally screened to ensure that there are no invasive species brought to site.<br><br>12 - Environmental safeguards should be applied during the construction works to ensure no cement or oils are allowed into the environment.<br><br>13 - All contractors will comply with health standards and regulations. | | |
| **Output 3.4a**<br><br>O Thmar Reservoir rehabilitated to increase water storage capability Kep Province<br><br>**Output 3.4b**<br>Roness reservoir rehabilitated for enhanced safety and storage<br><br>**Output 3.4c**<br><br>Coastal flood protection | 4 - The land in which both existing reservoirs are structured is a combination of public / informal and agricultural use. This was confirmed via consultations. Project must not impede on tenure arrangements, property rights or result in landlessness.<br><br>**Unlikely x Marginal = Low**<br><br>6 - Specialist labour external to commune workforce may be required. Need to ensure any contractors engaged for rehabilitation works comply with ILO standards<br><br>**Possible x Negligible = Low**<br><br>8 - Although inhabitants (including directly affected) proposed and confirmed agreement with the need to enhance the reservoirs. The project needs to ensure inhabitants are not resettled involuntarily due to changes in water flow and or the status of the surrounding land.<br><br>**Unlikely x Marginal = Low**<br><br>9 – Works on the reservoir could have an impact on the surrounding natural habitat. Although no critical habitat or protected areas are confirmed within or immediately outside the works area, due care needs to be taken to ensure no degradation of natural habitat. | 4 - Enhancements to the reservoir are not anticipated to raise any issues regarding human rights. Further follow up consultation through project implementation should be undertaken to ensure all beneficiaries accept works and that tenure arrangements and property rights are not violated.<br><br>6 - Labour rights and safety are of particular interest by restoring the reservoir. Choosing a contractor with the right requirements in this project is highly essential for risk mitigation. Engineering certification required.<br><br>Need to ensure any contractors engaged for rehabilitation works comply with ILO standards, by, for example, providing safety equipment (where necessary), employing adults under contracts, non-discrimination and paying fair salaries above the national minimum wage.<br><br>8 - The works all involve work on public state-owned land. Therefore, no involuntary resettlement is required. Project implementation to ensure no change to settlements.<br><br>9 - The water reservoir is not appointed as natural habitat protection area. However, all care will be taken through construction to ensure no degradation of natural habitat.<br><br>10. The waterbody in its current state is home to vegetation and aquatic plant life, but has no official status as natural | Attendance sheets with quota numbers and photographs<br><br>Consultation notes<br><br>Signatures of acceptance of works and locations<br><br>Verification of design<br><br>Construction supervision, health and safety manager on site.<br><br>Check for compliance with ILO standards | Pre-commencement and post meeting/consultation, Local Project Manager<br><br>Pre-commencement, certified engineer<br><br>Pre-commencement and daily, Contractor<br><br>Pre-commencement, Local Project Manager |

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| embankment in Kep and Angkaol constructed | **Rare x Marginal = Low**<br><br>10 - Embankment works and construction of water gate could have an indirect impact on biological diversity.<br><br>**Rare x Negligible = Low**<br><br>12 - Impact to water quality within reservoir and adjacent canal system during construction (excavation work). Improper design could impact water quality and flow. Verification of design required.<br><br>**Unlikely x Marginal = Low**<br><br>13 – The enhanced reservoir should benefit public health by improving crop production. There are no anticipated negative effects.<br><br>**Rare x negligible = Low** | habitat. O Thmar is not a natural lake and it is not in a protected area, however, excavation work will lower the biological diversity temporarily. The use of a silt curtain or to contain sediment during dredging works will be implemented to protect aquatic plants as far as possible.<br><br>12 - Water resources management enlarges with the enhancement of the reservoir. Creating a more sustainable fresh water source. | | |
| 3.5<br><br>Resilient Housing designs developed and demonstrations constructed (both provinces) | 2- All groups in the target communes were consulted in depth, no expression of concern of unequal access. There exists a risk that an intervention may not be accessible to the entire community. Research and consultation undertaken confirms expectation that entire communes would benefit.<br><br>**Rare x Marginal = Low**<br><br>3 - Impoverished and informal settlements, women, elderly, disabled and youth (where possible) have been consulted, however there is always a risk that marginalised and vulnerable groups may be negatively impacted due proposed interventions. There are no anticipated issues regarding marginalised groups as none were identified as being located within these communes.<br><br>**Unlikely x Marginal = Low**<br><br>4 - The land to which these interventions is applicable is a combination of public / informal and residential use. This was confirmed via consultations. Project must not impede on tenure arrangements or property rights.<br><br>**Rare x Marginal = Low** | 2 – This project will not exacerbate existing inequities. Education opportunities provided within this project will be targeted to the marginalised and/or enhance the local capacity of the region which is in turn beneficial to all. The location of demo houses will be on state public land and re-confirmed before construction to ensure access and equity for all beneficiaries.<br><br>3 - This project should:<br>provide new economic and livelihood options to the marginalised;<br>improve housing resilience for the marginalised and vulnerable.<br><br>Continued consultation with any minority groups identified during project implementation.<br><br>4 - Continued consultations will take place throughout project implementation to ensure all beneficiaries accept works and that tenure arrangements and property rights are not violated.<br><br>5 - The housing resilience project will aim to provide equal training opportunities to both men and women. Women will benefit from resilient houses because they are more likely to stay at home, are more likely to be affected by damage to houses and are more likely to source materials for the repair of | Attendance sheets with quota numbers and photographs<br><br>Consultation notes<br><br>Signatures of acceptance of works and locations<br><br>Construction supervision, health and safety manager on site.<br><br>Check for compliance with ILO standards<br><br>Monitor new builds where possible, record design and construction details. | Pre-commencement and post meeting/consultation, Local Project Manager<br><br>Pre-commencement and daily, Contractor<br><br>Pre-commencement, Local Project Manager |

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| | 5 – There exists a risk that housing resilience capacity building focuses predominantly on the male population.<br><br>**Unlikely x Marginal = Low**<br><br>6 - Specialist labour external to commune workforce may be required. Need to ensure any contractors engaged for rehabilitation works comply withILO standards.<br><br>**Unlikely x Marginal = Low**<br><br>13 – There is a risk that if proper training is not provided for housing resilience, safety issues may continue.<br><br>**Unlikely x Marginal = Low** | houses<br><br>6 - Safety equipment will be required for workers on the site. For further general information on Core Labour Rights as part of the Environmental and Social Safeguard approach of the project, please refer to the proposal document, Part II, Section K.<br><br>The housing resilience program assists with the provision of safer housing for the marginalised during adverse weather events. Extensive training is also provided under Output 1.2<br><br>Continued engagement with community with regards to development of housing styles and construction techniques, and development of hazard maps is critical. | | |
| 3.6<br><br>Raised embankment and Watergate repair in Ou Ohkna Heng Commune, P. Sihanouk Province. | 2 – All groups in the target communes consulted in depth, no expression of concern of unequal access. There exists a risk that an intervention may not be accessible to the entire community. Research and consultation undertaken confirms expectation that entire communes would benefit.<br><br>**Rare x Marginal = Low**<br><br>3 – Impoverished and informal settlements, women, elderly, disabled and youth (where possible) have been consulted, however there is always a risk that marginalised and vulnerable groups may be negatively impacted due proposed interventions. There are no anticipated issues regarding marginalised groups as none were identified as being located within these communes.<br><br>**Unlikely x Marginal = Low**<br><br>5 – There exists a risk that this investment (while being implemented) focuses benefits predominantly on the male population with regards to local labour force.<br><br>**Unlikely x Marginal = Low**<br><br>6 – Specialist labour external to provincial workforce may be required. Need to ensure any contractors engaged for rehabilitation works comply withILO standards | 2 - The investment will deliver reduced instances of salt water ingress into agricultural land, improving the likelihood of high crop yields and protecting the income and food supply for a significant number of people in the Prey Nob district. The agricultural and fishing communities living in the informal areas of settlement will experience improved access and improved food security.<br><br>The investment will not discriminate in the services it provides to the target beneficiaries.<br><br>3 - There are no anticipated issues regarding marginalised groups. There is some old data to suggest that small number of undocumented ethnic Vietnamese live in Prey Nob district, but this was cross-checked with the elected Commune Council representatives and provincial level officials, who both assert that all undocumented ethnic Vietnamese have now been formalized and given Cambodian identity papers.<br><br>As above, there is no potential for discrimination in the benefits provided by the infrastructure this investment will provide.<br><br>5 - In the poor communities affected by the proposal it was observed that women tend to take more of a household and community management role and therefore they are likely to benefit further from the community's improved crop yield, as they will be likely to take on the role of selling surplus crops. | Attendance sheets with quota numbers and photographs<br><br>Consultation notes<br><br>Signatures of acceptance of works and locations<br><br>Verification of design<br><br>Construction supervision, health and safety manager on site.<br><br>Check for compliance with ILO standards<br><br>Monitor groundwater when possible | Pre-commencement and post meeting/consultation, Local Project Manager<br><br>Pre-commencement, certified engineer<br><br>Pre-commencement and daily, Contractor<br><br>Pre-commencement, Local Project Manager<br><br>Commune representatives |

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| | **Unlikely x Marginal = Low**<br><br>8 – Although inhabitants (including directly living along the embankment/sea defence) proposed and confirmed agreement with the need to prepare water gate and low points along sea defence project needs to ensure inhabitants are not resettled involuntarily due to changes in water flow.<br><br>**Unlikely x Marginal = Low**<br><br>9 – Works on the sea defence and water gate could have an impact on the surrounding natural habitat. Although in many areas the existing mangroves have been cleared and cut down for use as building materials, they are now considered protected area and all care needs to be taken to ensure no degradation of natural habitat.<br><br>**Possible x Marginal = Moderate**<br><br>10 – Works on the sea defence and construction of water gate could have an indirect impact on biological diversity.<br><br>**Unlikely x Marginal = Low**<br><br>11 – There will be necessary but controlled $CO_2$ emissions associated with the construction period only.<br><br>**Unlikely x Marginal = Low**<br><br>12 – Impact to water quality within estuary and adjacent canal system during construction (grading works, use of cement). Improper design could impact water quality and flow. Verification of design required.<br><br>**Unlikely x Marginal = Low**<br><br>15 – There is a risk that improper design and construction of the sea defence and water gate repair works may result in negative impacts to soil and underlying groundwater condition. Design verification and construction supervision required.<br><br>**Unlikely x Critical = Moderate** | The men will benefit from improved yields from their labours. If the road overtops less frequently there will also be improved access to the market for all.<br><br>6 - Safety equipment will be required for workers on the site. For further general information on Core Labour Rights as part of the Environmental and Social Safeguard approach of the project, please refer to the proposal document, Part II, Section K.<br><br>Need to ensure any contractors engaged for rehabilitation works comply with ILO standards, by, for example, providing safety equipment (where necessary), employing adults under contracts, non-discrimination and paying fair salaries above the national minimum wage.<br><br>8 - There is no resettlement required as a result of this investment implementation. Without this investment, resettlement of the informal communities living along the ocean side of the embankment would be inevitable.<br><br>9 - The investment will help to maintain the boundary between salt water mangrove and cultivated rice paddies. As such it will help to prevent further erosion of the mangrove forest. There are areas of mangrove to seaward of the existing flood defence embankment that appear to have been previously cleared for cultivation but are now returning to nature. A separate investment will address re-planting these areas.<br><br>10 - Material imported to repair and consolidate the embankment should be environmentally screened to ensure that there are no invasive species brought to site.<br><br>11 - The investment will help to offset the effects of climate change for the poor local communities. There will be necessary but controlled $CO_2$ emissions associated with the construction period only. However, this will be temporary and controlled via use of modern, well-maintained equipment and pollution control measures<br><br>12 - Environmental safeguards will be applied during the construction works to ensure no cement or oils are allowed into the environment. The works will reduce the instances of | | |

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| | | pollution by improving performance of the existing embankment and water gates to better control flood flows.<br><br>15 - The investment should reduce the instances of salinization and soil degradation by preventing upstream salt water ingress. This will improve the quality of the agricultural soil. Design and construction methodologies to be certified by a suitably qualified engineer. | | |
| 3.7<br><br>Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province | 2 – All groups within communes consulted in depth, no expression of concern of unequal access. There exists a risk that an intervention may not be accessible to the entire community. Research and consultation undertaken confirms expectation that entire communes would benefit.<br><br>**Unlikely x Marginal = Low**<br><br>5 - There exists a risk that installation of drainage and rainwater system focuses predominantly on the male population with regards to installation work.<br><br>**Unlikely x Marginal = Low**<br><br>6 – Specialist labour external to provincial workforce may be required. Need to ensure any contractors engaged for rehabilitation works comply withILO standards<br><br>**Unlikely x Marginal = Low**<br><br>12 - Impact to water quality within surrounding catchment due to redirected runoff water (containing sediment) and flow in adjacent water ways. Improper design could impact water quality and flow. Verification of design required.<br><br>**Possible x Marginal = Moderate**<br><br>13 - The enhanced drainage system will redirect captured runoff and there is a low risk of contaminants entering the surrounding water ways and indirectly impacting on public health.<br><br>**Unlikely x Marginal = Low** | 2 - The new drainage system and landscape works along the road will improve safety from flooding to all stakeholders in this area. All stakeholders will get benefit from this project.<br><br>Every housing in this area can connect their rainwater pipe direct or indirect to the system.<br><br>Proactive measures will be taken to ensure that people (and especially sellers, who are primarily women) can still access the market while the works are ongoing.<br><br>5 - The project is primarily designed to benefit women. It is estimated that 90% of the sellers in the market are women, so the incomes that will be safeguarded and increased as a result of the project will primarily be women's<br><br>6 - Unskilled labour will be provided by the community. Safety issues are critical as labourers will be working in the vicinity of National Road 4, the main highway between Sihanoukville and Phnom Penh. Safety training and appropriate equipment will be given.<br><br>For further information about the general provisions for the safety of workers, and the safeguarding of their labour rights, please see Part II, Section K of the proposal.<br><br>12 - The waste and pollution at discharging point is taking account into the design. It is necessary to have an eco-treatment system at the discharging point.<br><br>13 - The better drainage system will reduce the stagnant water. Disease from virus, bacteria and microorganism can be decreased as a result. | Attendance sheets with quota numbers and photographs<br><br>Consultation notes<br><br>Signatures of acceptance of works and locations<br><br>Verification of design<br><br>Construction supervision, health and safety manager on site.<br><br>Check ILO certification of contractors | Pre-commencement and post meeting/consultation, Local Project Manager<br><br>Pre-commencement, certified engineer<br><br>Pre-commencement and daily Contractor<br><br>Pre-commencement, Local Project Manager |
| 3.8 | 2 - All groups within communes consulted in depth, no | 2 – This investment will deliver improved warning and understanding of high tides and enable better preparation for | Attendance sheets with quota numbers | Pre-commencement and post meeting/consultation, Local |

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| Tide gauge with early warning system broadcast capabilities installed | expression of concern of unequal access. There exists a risk that an intervention may not be accessible to the entire community. Research and consultation undertaken confirms expectation that entire communes would benefit.<br><br>**Unlikely x Marginal = Low**<br><br>6 - Specialist labour external to provincial workforce may be required. Need to ensure any contractors engaged for rehabilitation works comply withILO standards<br><br>**Unlikely x Marginal = Low** | protection against sea water ingress into agricultural areas. This will help build local resilience to all the communities living in close proximity to the sea in Prey Nob district. It is generally the case that the poorest and most marginalized live in informal settlements on the edge of the mangrove and these communities stand the most to gain from improved flood warnings.<br><br>6 - Safety equipment will be required for workers on the site. For further general information on Core Labour Rights as part of the Environmental and Social Safeguard approach of the project, please also refer to the proposal document, Part II, Section K.<br><br>Need to ensure any contractors engaged for rehabilitation works comply with ILO standards, by, for example, providing safety equipment (where necessary), employing adults under contracts, non-discrimination and paying fair salaries above the national minimum wage. | and photographs<br><br>Consultation notes<br><br>Signatures of acceptance of works and locations<br><br>Verification of design<br><br>Construction supervision, health and safety manager on site.<br><br>Check for compliance with ILO standards | Project Manager<br><br>Pre-commencement, certified engineer<br><br>Pre-commencement and daily Contractor<br><br>Pre-commencement, Local Project Manager |

## Environmental and Social Safeguards Responsibility Table

| Project Components | Expected Concrete Outputs | Expected Concrete Outcomes | Amount (US $) | Executing Entity | Executing Partner | Agency responsible for safeguards oversight | AF-principles |
|---|---|---|---|---|---|---|---|
| **Component 1**<br><br>Community-scale knowledge and capacity enhanced to sustain the | **Output 1.1.**<br><br>Community capacity built to collect and manage solid waste and waste water | **Outcome 1.**<br><br>Communities in the target areas are able to manage their infrastructure, | **$106,145** | NCSD | Provincial Department of Environment, Kep and Preah Sihanouk Provinces | UN-Habitat | **1, 2, 5** |
| | **Output 1.2.** | | **$82,995** | NCSD | Provincial Department of Land Management, | UN-Habitat | **1, 2, 5** |

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| adaptation benefits of the project's investments | Communities in target areas have been trained on resilient house construction techniques | maintain its functionality and autonomously adapt to the future impacts of climate change | | | Urban Planning and Construction, Kep and Preah Sihanouk Provinces | | |
| | **Output 1.3.**<br><br>Communities have been organised to manage, monitor and maintain the infrastructure investments under Component 3 | | **$95,569** | NCSD | Provincial Halls of both provinces, NCDD, Department of Planning | UN-Habitat | **1, 2, 5** |
| | | **TOTAL** | **$284,709** | **NCSD** | **Provincial Halls of both Provinces, Department of Environment, Department of Planning,** | **UN-Habitat** | |
| **Component 2**<br><br>Government planning and technical capacity enhanced to sustain and enhance the project's adaptation benefits | **Output 2.1.**<br><br>Government officers at the provincial and district levels trained to plan effectively for sustaining and enhancing the project's adaptation benefits | **Outcome 2.**<br><br>Capacity enhanced at the provincial and district level to manage, monitor and maintain the project's benefits, as well as enhance and replicate its approach. | **$76,734** | NCSD | Provincial Halls, Department of Water Resources and Meteorology, Department of Land Management, Urban Planning and Construction, Department of Environment, Fisheries Administration (both provinces for all departments) | UN-Habitat | **1, 2, 5** |
| | **Output 2.2** | | **$123,845** | NCSD | Provincial Halls, NCDD, Department | UN-Habitat | **1, 2, 5** |

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| | Government officers at the provincial and district provided with comprehensive technical training to manage, operate and maintain the infrastructure | | | | of Planning (both provinces) | | |
| | **Output 2.3**<br><br>Institutional systems strengthened to monitor adaptation investments and replicate their benefits | | **$91,656** | NCSD | Fisheries Administration | UN-Habitat | **1, 2, 5** |
| | **Output 2.4**<br>Knowledge from the project implementation is captured and disseminated to local and national stakeholders, focusing on sustainable adaptation actions and policy enhancement | | **$76,256** | NCSD | Ministry of Environment | UN-Habitat | **1, 2, 5** |
| | | **TOTAL** | **275,000 (6.59%)** | **NCSD** | **Department of Water Resources and Meteorology, Kep Province** | **UN-Habitat** | |
| **Component 3**<br><br>Resilience built through investment in small-scale protective and basic service infrastructure | **Output 3.1.**<br>285ha of Mangroves restored in Kep and Angkaol Communes, Kep Province | **Outcome 3.**<br><br>At least 62,521people have access to protective natural and social assets and/or benefit | $208,704 | NCSD | Department of Water Resources and Meteorology, Kep Province | UN-Habitat | 2, 5, 9, 10 |
| | **Output 3.2**<br>Water gates repaired in 3 locations in Pong Teuk and Angkaol (a) | | $5,328 (a) | NCSD | Department of Water Resources and Meteorology, Kep Province | UN-Habitat | 2, 3, 6, 12, 15 |

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| and natural assets | 2 canals rehabilitated in Pong Teuk and Angkaol Communes, Kep Province (b) | from physical infrastructure to reduce the climate vulnerability. (AF outcome 4 and 5) | $76,050 (b) | | | | |
| | **Output 3.3**<br>Prevention of salt water ingress through improved channels | | $185,000 | NCSD | Department of Land Management, Urban Planning and Construction, Kep and Preah Sihanouk Provinces | UN-Habitat | 2, 5, 9, 10, 12, 15 |
| | **Output 3.4**<br>3.4a O Thmar Reservoir rehabilitated to increase water storage capability Kep Province<br><br>3.4b Bank strengthening work at Roness Reservoir to provide additional water retention and safety.<br><br>3.4c) Coastal flood protection embankment in Kep and Angkoal constructed | | $660,040<br><br>$1,304,000<br><br>$126,150 | NCSD | Department of Water Resources and Meteorology, Preah Sihanouk Province | UN-Habitat | 2, 5, 6, 10, 12, 15 |
| | **Output 3.5**<br>Resilient Housing designs developed and demonstrations constructed (Both provinces | | $89,000 | NCSD | Department of Land Management, Urban Planning and Construction, Preah Sihanouk Provinces | UN-Habitat | 2,3,4,5,6 ,13 |
| | **Output 3.6**<br>Raised embankment and Watergate repair in Ou Ohkna | | $97,750 | NCSD | Department of Water Resources and Meteorology, | UN-Habitat | 2, 3, 5, 9, 10, 12 |

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| | Heng Commune, P. Sihanouk Province | | | | Preah Sihanouk Province | | |
| | **Output 3.7**<br>Drainage and Rainwater Harvesting installed at Veal Rinh Market, P. Sihanouk Province | | $712,905 | | Department of Land Management, Urban Planning and Construction, Preah Sihanouk Province | UN-Habitat | 1, 2, 6, 12 |
| | **Output 3.8**<br>Tide gauge with early warning system broadcast capabilities installed (Tide Gauge in Ou Okhna Heng Commune, Prey Nob District) | | $52,380 | | Department of Water Resources and Meteorology, Preah Sihanouk Province | UN-Habitat | 2, 3, 6, 12 |
| | | **TOTAL COMPONENT 3** | **$3,517,507 (86.81% - Total for Component 3** | | | | |
| | 5. Project/Programme Execution cost (9.5 %) | | **$437,788** | UN-Habitat | | | |
| | 6. Total Project/Programme Cost | | **$4,608,295** | UN-Habitat | | | |
| | 7. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable) (8.5 %) | | **$391,705** | UN-Habitat | | | |
| | | **Amount of Financing Requested** | **$5,000,000** | | | | |

## 2. Environmental and Social Management Plan

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.

1. Risks management arrangements

(i) ***Responsibilities***: direct management responsibility for the ESMP will be under the Programme Manager. The Programme manager will have oversight and final compliance responsibility. Any changes or additional activities that are required during the project's implementation, and that fall within allowable limits set by the Adaptation Fund, will need to be approved by the Project Management Committee, depending on the scale of the activity and the change to it. This plan, as well as any changes to the risk landscape, will also be presented to the Project Management Committee.

***(ii) Management and implementation of the investments:*** All project activities have been screened against the 15 environmental and social risk areas during the project preparation phase (as described extensively above). The outcomes of this, and any updates to it, will be presented during the project inception workshop 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 risk mitigation measures necessary to comply with 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. Ongoing compliance will be covered by the M&E budget, outlined in the main project document.

*2.* ***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:

(vi) The project MoU and Agreement of Cooperation with NCSD, the focal point and executing entity, will include a detailed reference to the Environmental and Social Risk Screening (both that presented above and in the investment sheets) and this ESMP, and the necessary safeguarding measures identified, particularly compliance with the law, indigenous people, gender issues, and labour and safety standards.

- 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: Refetences to relevant Humans rights declarations will be included in all legal agreements with all sub-contractors.
- Principe 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.

(vii) 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

(viii) Continuous coordination will take place with focal points in NCSD, MoE and from the sub-national government in Kep and Preah Sihanouk Provinces to ensure compliance with the ESP and national laws, standards and policy priorities.

(ix) Capacity building and awareness raising; the programme manager, executing entity and executing partners, as well as target communities, will receive training/capacity building and briefings to understand, monitor and manage the 15 principles, the ESMP and in particular their responsibilities with regard to executing the project in a way that ensures compliance with the Environmental and Social Policy of the Adaptation Fund

*3.* ***Risk monitoring arrangements:***

(i) This monitoring programme, commensurate with actions identified above, and routine project monitoring will report to the Adaptation Fund in the annual, mid-term 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 programme manager. The team leader will have oversight / final compliance responsibility. When changes or additional activities are required, monitoring indicators will be changed or added, as required.

## 3. Project Grievance mechanism

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 affected by the project will be made aware of the grievance mechanism for any criticism or complaint of an activity.

This mechanism considers the special needs of different groups as well as gender considerations. A combination of mailboxes (at Commune level), confidential persons in the community and telephoning options offer an immediate way for employees and people affected by the project to 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. The project will place equal weight on written and verbal reporting of grievances, recognizing that literacy rates are somewhat below 100% across the target area.

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.

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

UN HABITAT
FOR A BETTER URBAN FUTURE