REQUEST FOR PROJECT/PROGRAMME FUNDING FROM THE ADAPTATION FUND

Enhancing the resilience inclusive and sustainable eco-human settlement development through small scale infrastructure interventions in the coastal regions of the Mekong Delta in Viet Nam

UN-HABITAT
FOR A BETTER URBAN FUTURE

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ADAPTATION FUND

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category:	Regular
Country/ies:	Viet Nam
Title of Project/Programme:	Enhancing the resilience inclusive and sustainable eco-human settlement development through small scale infrastructure interventions in the coastal regions of the Mekong Delta in Viet Nam
Type of Implementing Entity:	Multilateral
Implementing Entity:	United Nations Human Settlements Programme (UN-Habitat),
Executing Entity:	
Amount of Financing Requested:	$ 6,347,190

Project Summary

The main objective of the proposed project is **"to enhance the resilience, inclusive and sustainable eco-human settlement development through small scale infrastructure interventions in the coastal regions of the Mekong Delta in Viet Nam."** To align with a government request to promote sustainable eco-human settlement in Viet Nam, this project aims to improve the poor and vulnerable communes that climate change impacts have affected the most. It is structured around the following components:

Component 1: Institutional and community capacity building toward eco-human settlement development for supporting enhance local climate response actions (USD 800,000 / **15.11**%)

Component 2: Action plan and strategy development for eco-human settlement, and integrating into planning and policy with participatory approach (USD 600,000 / **11.33**%)

Component 3: Sustainability built through small-scale protective infrastructure (USD 3,694,068 / **69.78**%)

Component 4: Awareness Raising and Knowledge Management (USD 200,000 / **3.78**%)

A. Project Background and Context:

Project approach – problem statement

This project proposal focuses on dealing with saltwater intrusion and coastal erosions in Mekong Delta, which are the major impacts from the climate change. Along with the water resource management and coastal erosion issues, the lack of vertical and horizontal coordination has been bottlenecked for the community to reflect their needs to the provincial and national level policies.

In the Mekong Delta, river water and ground water levels are decreasing, while sea levels, flood tides and salt intrusion are on the rise, the demand for water has also increased in production and daily activities due to industrialisation and population growth. The extraction of groundwater has increased rapidly over the past decades and forms one of the main causes of saltwater intrusion into the groundwater. This intrusion has been accelerated by the on-going sea level rise. Saltwater intrusion of groundwater in the Mekong Delta is a highly complex issue as it heavily depends on varying factors, including changes in water supplies, rising water demands, and the impact of climate change especially sea level rise, drought, and rising temperature. Because of saltwater intrusion of the groundwater, a growing number of provinces in the Mekong Delta are also

experiencing depleted and degraded freshwater supplies for drinking and domestic use especially in dry season. The solution for the saltwater intrusion is, however, very limited and most of them are not cost-effective nor applicable for certain condition of area.

In addition, there is a growing threat along the coastal zone in Mekong Delta regarding the coastal erosion issues due to several causes. Rapid expansion of aquaculture (shrimp farming) in the Mekong Delta has contributed to economic growth and poverty reduction, but has been accompanied by rising concerns over environmental and social impacts. The lack of an integrated approach to sustainable management, utilisation and protection of the coastal zone and economic interests in shrimp farming have led to the unsustainable use of natural resources, thus threatening the protection function of the mangrove forest belt. The coastal zone is also affected by the impacts of climate change. Climate change is predicted to cause an increased intensity and frequency of storms, floods and rising sea levels.

In the case of the Mekong Delta, where water resources management and the coastal erosion are particular challenges, the project aims to establish a holistic approach policy framework balancing the gap between local and national level government and managing climate change risks by providing community-scaled hard interventions with the soft interventions. By providing the community-scaled hard interventions supported with the soft interventions, the overall adaptive capacity of the population in commune will be raised to cope with the impact of climate change.

Socio-Economic Context related to Climate Change

Despite its rapid growth on both economic and social context, Viet Nam is one of the world's most vulnerable countries to climate change impact, including but not limited to; sea level rise, longer and more severe droughts, flooding and tropical cyclones; as is typical with climate change in this region the poorest are the most exposed. By 2050, a 1–3% loss in real GDP is predicted from climate change impacts. Natural disasters have caused average annual economic losses estimated to be at 1–1.5% of GDP over the last two decades, while more than 70% of the population is already exposed to significant natural hazard risk. Ongoing climate disaster events and climate change effects can also set back development gains, particularly as safety net programs have not yet been adapted to support the poor and vulnerable in response to natural hazard shocks.

Mekong Delta is, however, the largest producer of agricultural and aquaculture product in Viet Nam and is suffering the most in economic loss due to Climate Change Impact. The Labor force found in Mekong delta is around 10.3 million (out of a total national labor force of 54.5 million). It is also responsible for more than 13% of national GDP solely for the fishery industry (Viet Nam net, 2016). The Mekong Delta currently has an increasing economic rate of around 11% of GDP annually. In this economic context, climate change issues have a major effect on economic activities in the region, while local residents are exposed to climate change threats it has also presented new opportunities, especially in the coastal region of the Mekong delta.

Environmental Context related to Climate Change

<u>Drought and saltwater intrusion:</u>

In 2016 and 2017 dry season, a record drought in the Mekong Delta region, followed by saltwater intrusion, cost Viet Nam VND 15 trillion ($669 million) due to the heavy toll on agricultural production. It also caused dire humanitarian and other economic impacts: almost half a million households lacked fresh drinking water and experienced food shortages and thousands of affected people had to migrate to urban areas in search of jobs.

Most of the affected provinces of the Delta have begun to secure freshwater by all measures available to them. In many vulnerable communes in Hau Giang, Ben Tre, and Tien Giang provinces, farmers have used water tanks to collect rain-water and drilled wells to extract groundwater. They also have reduced the annual rice crop and switched to cash crops that require less water.

The drought and saltwater intrusion may make it harder for Viet Nam to meet its targets under the Socio-economic Development Plan (SEDP) 2016–2020. These targets include a gross domestic product (GDP) growth rate of 6.5–7.0% a year, and a reduction in the share of poor households by an average of 1.0–1.5% a year. The impact of adverse climate conditions on the economy is already evident: in the first half of 2016, GDP growth was recorded at 5.5%, much lower than the 6.5%

average growth in 2015. The World Bank accordingly lowered its 2016 growth projections from 6.5% down to 6.2 percent. The average GDP growth was recorded at 6.2% for 2016, below the government's 6.7% target.

Like past floods and typhoons, the prolonged drought and saltwater intrusion of 2015–2016 have hurt people's livelihoods and assets, making it difficult for affected households to bounce back and recover. Although disasters do not discriminate, poor and near-poor households are often more exposed to and disproportionately affected by the impacts of disasters. Other disproportionately affected groups include women and ethnic minorities.

Table 1. Overview of Damage Impact of 2015-2016 Drought and saltwater intrusion in Viet Nam

Region	Number of Severely affected Provinces	Production area affected (ha)			Number of Household lacking access to water for consumption and daily use	# of livest ock lost	Total Economic loss (billion VND)
		Rice	Crop	Aquaculture			
National	18	243,762	168,064	69,008	457,796	-	15,023
South Central Coast	3	10,776	15,000	-	43,482	5,126	1,457
Central Highlands	5	17,541	141,756		72,060	494	6,004
Mekong Delta	10 out of 13 (Including Tra Vinh and Bac Lieu	215,445	-	68,916	342,254	933	7,517

Source: MARD 2016

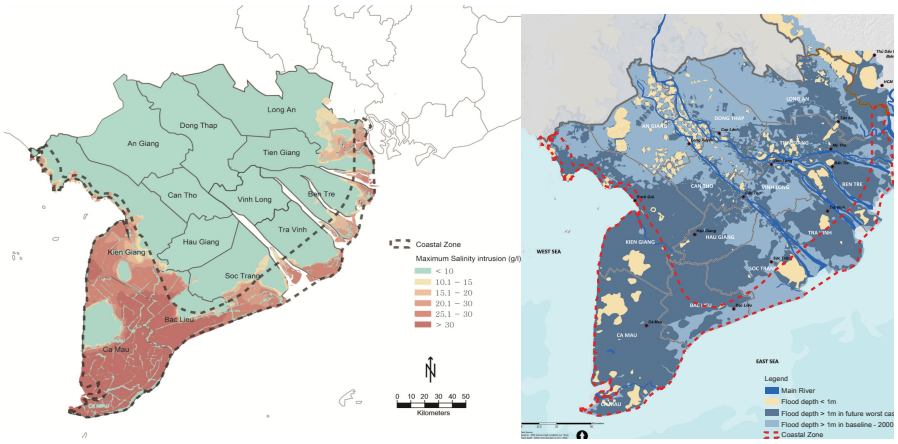


Figure 1. Saltwater intrusion and flooding maps

Coastal erosion:

Viet Nam is one of the world's most vulnerable countries to sea-level rise. Without adaptation an estimated 12 million people face permanent inundation on higher emissions pathways, primarily concentrated in the nation's two low lying mega-river deltas. It is estimated that the Mekong Delta may lose up to half of its land to erosion due to current rampant levels of sand exploitation. 562 erosion locations have been identified with a total length of 786 kilometers in the Mekong Delta. This includes 55 critically endangered locations that are 173 kilometers in length, 140 endangered locations at 97 kilometers in length, and 367 normal erosion spots 516 kilometers long.

Due to rising sea levels, provinces in the coastal zone are highly affected by saltwater intrusion and flooding. Saltwater intrusion varies according to micro-climate conditions such as water flow intensity. The provinces affected with a maximum salinity concentration of 10g/L are all provinces situated in the coastal zone: LongAn, TienGiang, BenTre, TraVinh, KienGiang, SocTrang, BacLieu, CaMau (source: The World Bank, 2016). Moreover, flooding issues continually change the quality and quantity of water sources, leading to changes in ecosystem and increases in the overall number of migrating people.

Figure 2. The images of land degradation in the Mekong Delta

Climate Change Projections and Expected Impacts

Climate Change Projections:

Climate change projections for Viet Nam from IPCC report (2013) show that the southernmost provinces, especially the Mekong Delta Region in particular, will experience increases in temperature resulting in more droughts in the dry season and a slight increase in rain during the wet season. On the other hand, rainfall from the central or northern provinces will lead to increased flood risk in the southern provinces.

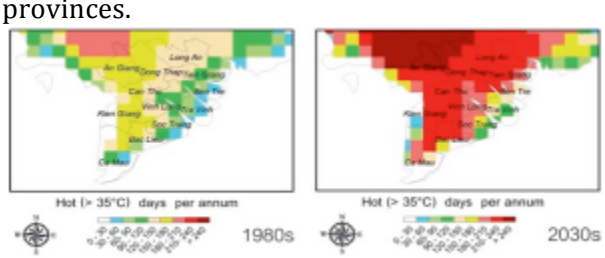


Figure 3. Hot period (number of hot days in a year) in the Mekong River Delta in the 1980s and 2030s (simulated)

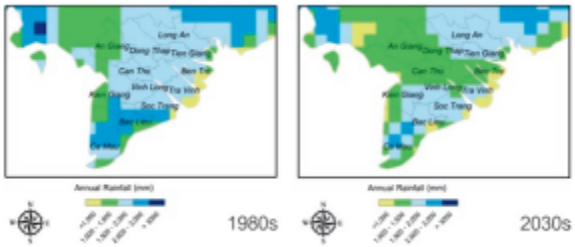


Figure 4. Annual precipitation in the Mekong River Delta in the 1980s and 2030s (simulated)

From figures 3 and 4, it can be observed that the changes in the average temperature and annual rainfall in Mekong Delta vary from province to province. This will increase the frequency of extreme weather events such as floods and droughts and result in rising sea levels with the potential to inundate land or increase salinity.

- ❑ According to the RCP4.5 scenario, the average annual temperature will likely increase by 1.3 to 1.4°C in the mid-21st century and by 1.7 to 1.9°C at the end of the 21st century;
- ❑ According to the RCP8.5 scenario, the average annual temperature will likely increase by 1.8 to 2o C in the mid-21st century and 3.4 to 3.6 at the end of the 21st century;
- ❑ The average maximum temperature increases higher than the average minimum temperature and the increasing trend gradually reduces from northern to southern regions of the Mekong Delta;
- ❑ Annual precipitation is likely to decrease by 10–20% in the future throughout the Delta area;

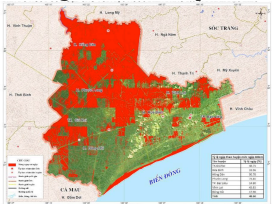
Table 2. Climate Change Projections in Bac Lieu and Tra Vinh

Province	Climate Change	RCP 4.5 scenario			RCP 8.5 scenario		
		2016-2035	2046-2065	2080-2099	2016-2035	2046-2065	2080-2099
Bac Lieu	Change in average annual Temperature	0.7	1.4	1.8	0.8	1.8	3.3
	Change in annual rainfall (%)	9.6	11.0	13.6	11.8s	16.5	18.0
	Change in spring rainfall (%)	8.4	-5.8	9.9	-0.5	-0.1	2.0
	Change in winter rainfall (%)	2.2	3.8	7.8	5.7	9.6	12.7
Tra Vinh	Change in average annual Temperature	0.7	1.4	1.8	0.8	1.9	3.4
	Change in annual rainfall (%)	10.9	15.7	17.7	11.4	14.6	18.2
	Change in spring rainfall (%)	10.9	0.9	7.9	4.9	1.6	2.0
	Change in winter rainfall (%)	4.2	3.6	5.2	6.8	8.5	11.2

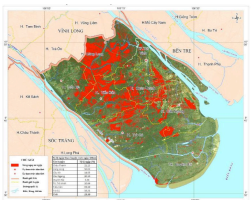
Table 2 shows the climate change projections for change in average temperature and change in annual rainfall trends in Bac Lieu and Tra Vinh in Mekong Delta Region, and this would be one of the main causes of drought and flood. Figure 5 also shows that the change in annual precipitation in the Mekong Delta will decrease by 10-20% in average. Bac Lieu and Tra Vinh province are predicted to be highly affected by drought in the future that can lead to saltwater intrusion, main cause of water shortage.

According to table 3 below, the figures of Tra Vinh and Bac Lieu province show the high risk of land erosion as sea-level rises by different levels in each province. Both provinces are expected to experience the severe challenges from sea level rise.

Table 3. Land degradation map for Bac Lieu and Tra Vinh



Bac Lieu



Tra Vinh

Expected Impacts:

Due to extreme natural hazards from the impact of climate change, human settlement and ecosystem in Viet Nam are becoming devastated, securing access to clean water is becoming an urgent priority. Climate change impacts such as rising temperature, changing rainfall patterns and sea level rise are posing new and bigger risks to human settlement and the environment in this region. The result is that human settlement will be increasingly vulnerable to climate change and extreme natural hazards as they are generally located in high risk areas, typically along riverbanks and in costal lands. The issues of climate change due to increase of temperature and decrease of rainfall has caused the further degradation of several environmental problems including floods, drought, rainfall pattern change, and saltwater intrusion. Based on the projections in Mekong Delta Region in Viet Nam, both provinces are expected to experience temperature rise, rainfall decrease, and sea level rise. Those climate change impact will intense the natural hazard including saltwater intrusion, drought, coastal erosion, and flood. Among the number of losses and damage caused from natural hazards, our project team concluded through consultation with local government and field mission that lacking of freshwater due to saltwater intrusion and coastal erosion is the most severe among other damages and losses.

Focus of Proposal

To deal with the challenges at the project site related to lack of awareness and capacity to the impact of climate change, water resource management, and coastal erosion, the project will focus its actions by providing both hard and soft intervention on highly vulnerable human settlements in the selected project sites. Based on the request from the Viet Nam government and the analysis on relevant projects in Mekong Delta, Bac Lieu and Tra Vinh are selected as the most vulnerable provinces in the Mekong Delta. In these provinces, a number of communes have been identified as targeted project sites to enhance the resilience in the commune level (Vinh Trach Dong with 4,336 of direct beneficiaries/ Hoa Minh and Long Hoa with 24,457 direct beneficiaries). The target areas chosen for the project are characterised by high levels of exposure to severe climate change risks, especially sea-level rise, saltwater intrusion, drought, land erosion and rainfall pattern change. Climate sensitivity is underpinned by rapid urbanization and population growth, underlying vulnerabilities (poverty, limited access to basic services, gender inequalities, weather dependent livelihoods, environmental and ecosystem degradation) and limited adaptive capacity at household, community and governance level. The following will include the specific challenge each commune is facing from the impact of climate change, socio-economic barriers to adapt to the climate change, natural hazard that each project site is exposed, and the possible interventions the project will implement to improve the resilience capacity.

1. Bac Lieu province

1) *Key challenges to be addressed:* Based on the socio-economic barriers and exposure to the natural hazard in the project site, the team found that there are specific challenges including the water management and lack of social inclusion for the planning related to climate change action plan in Bac Lieu. Especially for the resettlement area, where people moved to the site by the government's order in 2013, the project team considered that ensuring the fresh water for drinking should be addressed as the priority in order to secure the quality of life of the population.

2) *Socio-economic barriers to adapt to the climate change impact:*

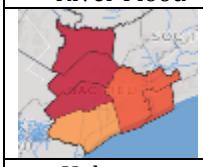
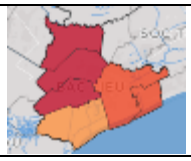
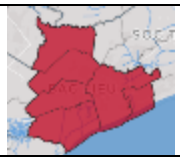
Figure 6. Location of Vinh Trach Dong commune in Bac Lieu

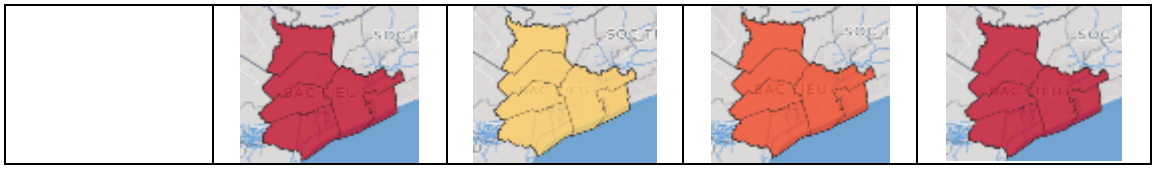
Vinh Trach Dong commune in Bac Lieu is located in the coastal zone in Mekong Delta in Viet Nam as seen in figure 6. As the project team conducted the field mission while developing the concept, the people's committee of Bac Lieu province recommended Vinh Tach Dong commune as our project site. The total population of Vinh Trach Dong is 13,977 and almost 70% of the population is composed of ethnic minority group (Khmer) with 9,728 people. Most of them are suffering from the climate change impact as they are exposed to the impact strongly because they are socially isolated from the community and the accessibility to the basic infrastructure is low compared to other communities according to the local government especially for the water.

As mentioned above, one of the key characteristics of the project site is that population in the area is mostly ethnic minority group who moved to the resettlement area in 2013 by the government's resettlement plan. Through the several consultations with local people and local government, project team found out that the ethnic minority group did not get offered new livelihood resources from the newly settled area so that they still have to commute around an hour to the coastal area. From the focus group interview during the consultation workshop with the women union in Vinh Trach Dong, key challenge they are facing is that women and children are mainly involved for ensuring the household economic status instead of getting proper education. In addition, the water treatment system in the area has not been provided properly enough to provide the adequate clean water for domestic use and drinking. The public buildings in Vinh Trach Dong commune using the groundwater for their domestic use also have a difficulty due to unstable electricity supply.

3) *Exposure to natural hazard:* Based on the projection of climate change in Mekong Delta, Bac Lieu is also expected to experience the severe drought due to temperature rise and the rain pattern change. For the current status, the natural hazards with the worst effects on the region are river flood, urban flood, coastal flood, cyclone, wild fire. Extreme heat is classified as medium level hazard while earthquake, tsunami and water scarcity are defined as low level hazard. From the local government, the most problematic climate hazard from the project site is saltwater intrusion and extreme heat event during the dry season. Due to saltwater intrusion of the ground water, people are suffering from the lack of fresh water for drinking especially for the dry season.

Table 4. Exposure to natural hazard in district of Bac Lieu

River Flood	Urban Flood	Coastal Flood	Earthquake	Tsunami
				
Volcano	Cyclone	Water Scarcity	Extreme Heat	Wild Fire



4) *Possible interventions to cope with the challenges*: For the challenges addressed above in the targeted site especially for the water management, the proposed project aims to provide with the possible intervention on both soft and hard to help the community to adapt to the climate change impact. The soft intervention aims to involve local people to make their own action plan by revising the current social economic development plan to deal with the climate change and reduce the impact to the actual victim from their point of view to ensure the social inclusion of the ethnic minority in the targeted area. For the hard intervention, rainwater harvesting system will be applied as an alternative for water resources. Also, to raise the accessibility to the freshwater for drinking, the water treatment system will be implemented in Vinh Trach Dong.

2. Tra Vinh province

1) *Key challenges to be addressed*: Combined the socio-economic barrier to adapt to the climate change impact and exposure to natural hazard from the project site, the team has identified key challenges to be addressed in Long Hoa and Hoa Minh. Due to the geographic characteristic of both communes and saltwater intrusion, lack of fresh water for drinking, and serious coastal erosion issue are key challenges. Along with the challenges mentioned above, lack of knowledge on climate change impact could have accelerated the impact of climate change allowing people to cut the mangrove plants that were initially provided to cope with the coastal erosion issue in the island.

2) *Socio-economic barriers to adapt to the climate change impact – Long Hoa and Hoa Minh*:

Figure 7. Location of Long Hoa and Hoa Minh commune

Long Hoa and Hoa Minh in Tra Vinh is located along the coastal line of the Mekong Delta. Tra Vinh is one of the provinces belong to the part of delta estuary. Long Hoa and Hoa Minh have been identified as our project sites due to their geographically isolated characteristics. In 2018, Long Hoa has a population of 10,280 and the population is relatively young compared to Hoa Minh, with only 2.9 percent of the resident s are over 60-year-old while Hoa Minh commune shows 7.9 percent of the residents are over 60-year-old among 14,177 of the total population. Unemployment rate from both communes are high (38% for Long Hoa and 42% for Hoa Minh).

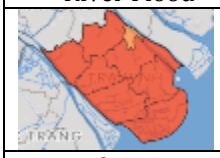
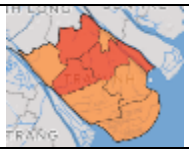
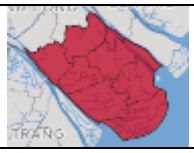
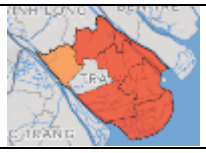
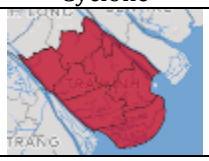
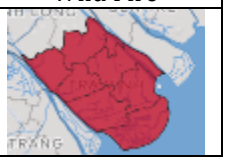
In Long Hoa and Hoa Minh, people are suffering from lacking of fresh water for drinking and living especially in the dry season (see annex1). First, considering the consultation with the local government, there is severe issue related to low accessibility for hygienic rainwater storage system because of lack of financial and technological capacity. Second, people also use water pumps in their own household, but the quality of water from the ground is not sufficient for using as drinking water or water for living due to saltwater intrusion to the groundwater.

For coastal erosion related issues, through the field visit, it has been identified that cutting off the mangrove plants from the local people is one of the main causes accelerating the coastal erosion. Lack of knowledge to the climate change impact and the function of the mangrove plant might make them cut it for the instant benefit, and lack of regulation regarding the issue could have also impacted the population. Since both communes are located in the island, the importance of prevention to the coastal erosion should be highlighted from the policy level. Mangrove plantation is not sufficiently provided in the area to protect the coast and river banks from erosion.

3) *Exposure to natural Hazard*: In Tra Vinh, the natural hazards with the greatest effect on the region are **coastal flood, cyclone, and wild fire**. River Flood, urban Flood, tsunami and extreme heat are classified as medium level hazard while earthquake and water scarcity are

defined as low level hazard. To find out and confirm the level of natural hazard in Tra Vinh, the project team has consulted with the local government. The most problematic climate hazard from the area is identified as saltwater intrusion and coastal erosion mainly due to the geographic location of both communes.

Table 5. Exposure to natural hazard in district of Tra Vinh

River Flood	Urban Flood	Coastal Flood	Earthquake	Tsunami
				
Volcano	Cyclone	Water Scarcity	Extreme Heat	Wild Fire
				

4) *Possible interventions to cope with the challenges*: For the challenges addressed above especially for the water management and coastal erosion, the proposed project aims to provide with the possible intervention on both soft and hard to help the community to adapt to the climate change impact. To reduce the main impact of identified challenges in both communes, the project will include the main hard interventions – water treatment system and coastal erosion prevention system. Along with the hard intervention, soft intervention such as capacity building will be applied to the local people to improve the awareness to climate change impact and enhance the overall capacity dealing with the expected impact in the future.

B. Project Objectives:

The main objective of the proposed project is **"to enhance the resilience, inclusive and sustainable eco-human settlement development through small scale infrastructure interventions in the coastal regions of the Mekong Delta in Viet Nam."** To align with the request from the national and local governments to promote the sustainable eco-human settlement in Viet Nam, the project takes a comprehensive and holistic approach which combines a number of horizontally and vertically interrelated resilience approaches towards the strengthening of institutions, communities, ecosystems and physical, natural and social assets. It is structured around the following components below.

C. Project Components and Financing:

Table 6. Project Components

Project Components	Expected Outcomes	Expected Concrete Outputs	Amount (US$)
1. Institutional and community capacity building toward eco-human settlement development for supporting to enhance local climate response actions	**1.1** Increase awareness on resilience of human settlements and ecosystem as a result of enhanced institutional capacity **1.2** Strengthen knowledge of climate change adaptation	**1.1.1** National induction workshop **1.1.2** Guidance and training materials development for vulnerability and risk assessment at the local levels **1.1.3** Planning toolkits and training materials development for planning approach, strategy and action plan development on climate change resilience **1.1.4** Project team (facilitators) training enabling facilitation of eco-friendly settlement strategy and action plan development (for supporting Component 2.1.1 and 2.2.2) **1.2.1** Training workshops enabling national/provincial/district/commune to set up eco-human settlement strategy and action plan development	800,000 (15.11%)

		for climate change adaptation	
In line with Adaptation Fund outcome 1 and 2			
2. Action plan and strategy development for eco-human settlement, and integrating into planning and policy with participatory approach	**2.1** Develop provincial/district/commun e level's action plan and strategy for eco-human settlement based on local people's needs **2.2** Develop policy framework for integrating climate action and strategy into planning will be developed	**2.1.1** Action plan and strategy development for eco-human settlement (provincial, district, and commune level) **2.2.1** Policy framework development for integrating local people's action plans and strategies for eco-human settlement into planning (provincial level) **2.2.2** Integrating developed/revised action plan and strategy into the relevant/existing planning and policy (provincial level)	600,000 (11.33%)
In line with Adaptation Fund outcome 3 and 7			
3. Sustainability built through small-scale protective infrastructure against climate change impact	**3.1** Increase community adaptive capacity with climate resilient and development sectors, and increase ecosystem resilience in response to climate change **3.2** Enhance local people's capacity for management and operation of provided infrastructures	**3.1.1** Prevention of the saltwater intrusion and protection of the ground water through water treatment system and rainwater harvesting **3.1.2** Prevention of coastal erosion with green (eco-friendly) erosion rehabilitation and control system: elastocoast[1] **3.2.1** Capacity building to a working group for the sustainable operation and management of provided hard interventions *for more detailed information for the hard intervention, please see Annex 1	3,694,068 (69.78%)
In line with Adaptation Fund outcome 4, 5, and 6			
4. Awareness Raising and Knowledge Management	**4.1** Enable conditions for scaling up and replicating the project related to enhancing the climate change adaptation capacity	**4.1.1** Lessons learned and best practices regarding resilient urban community development/housing are generated, captured and distributed to other communities, civil society, and policy-makers in government appropriate mechanisms **4.1.2** Regional advocacy and	200,000 (3.78%)

[1] [1] Elastocoast is mentioned in the UNFCCC as the new technology for climate change adaptation which protects the dikes by absorbing the force of the breaking waves and slowing down the water masses.

		replication for developing the effective policy framework	
In line with Adaptation Fund outcome 3			
5. Project Activities			5,294,068
6. Project/Programme Execution cost			555,877
7. Total Project/Programme Cost			5,849,945
8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if appreciable)			497,245
Amount of Financing Requested			**6,347,190**

Table 7. Project Calendar

Milestones	Expected Dates
Start of Project/Programme Implementation	06-2020
Project/Programme Closing	06-2023
Terminal Evaluation	01-2023

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. The Project Components

The components of the project support the integrated approach to improving knowledge of climate-resilience and strengthening the protective infrastructure through improved institutional capacity, better local-level planning and community-level implementation.

The action taken by this project will be targeted to benefit the most vulnerable people in the region. To do this, a combination of soft and hard measures is proposed to ensure that resilience at the household and commune level is strengthened sustainably through enhancing the adaptative capacity that responds to current and future needs.

Soft measures include institutional and community capacity building and action plans. These are designed to target the most vulnerable settlements, and to design and implement the most necessary actions in order to improve the adaptive capacity at commune and district level.

Hard measures will comprise of investments on the small-scale protective infrastructure and eco-friendly intervention designed to increase the resilience of the project site.

With a strong mix of the soft and hard interventions, it is anticipated that local resilience at household, community and human settlement level will be sustainably strengthened.

The specific needs of women, elderly, people with disabilities, ethnic minorities: Khmer and youths will be considered at all stages of the project. This will be achieved through engaging representatives of these vulnerable groups in community and stakeholder consultations in the planning process, through a community-based approach and through 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[2].

Component 1: Institutional and community capacity building toward eco-human settlement[3] development for supporting to enhance of local climate response actions

Principal purpose of component 1 is to contribute to the development of the holistic planning and strategies for eco-human settlements against the impact of climate change. Thus, this component will focus on 1) increasing the awareness on resilience and ecosystems as a result of enhanced institutional capacity and 2) strengthening the knowledge of climate change adaptation through the framework development and orientation of institutional capacity building. Component 1 is

[2] Development driven by people/Support Paradigm: when people stays at the center 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.

[3] "Promoting sustainable human settlements development" is the subject of Chapter 7 of Agenda 21, which calls for 1) providing adequate shelter for all; 2) improving human settlements management; 3) promoting sustainable land-use planning and management; 4) promoting the integrated provision of environmental infrastructure: water, sanitation, drainage and solid waste management; 5) promoting sustainable energy and transport systems in human settlements; 6) promoting human settlements planning and management in disaster-prone areas; 7) promoting sustainable construction industry activities; and 8) promoting human resource development and capacity-building for human settlements development.

expected to support the capacity building of government officials and practitioners in order to enable them to set up an eco-human settlement strategy and climate change action plan.
The institutional capacity could be achieved through national induction workshop, guidance, planning toolkits and training materials development for vulnerability and risk assessment, and planning approach, strategy, and action plan and training.
The training workshop will be held at the national and provincial level for enhancing the institutional capacity. It could enhance the horizontal (climate change is a crosscutting issue) and vertical coordination to deal with the climate change impact. Training workshop enables nation, province, district, and commune to set up eco-human settlement strategy and action plan development for climate change adaptation.

Component 2: Action plan and strategy development for eco-human settlement, and integrating into planning and policy with participatory approach

Component 2 will support the development of holistic planning for eco-human settlement. This component will focus on 1) developing provincial/district/commune level's action plan and strategy for eco-human settlement based on local people's needs 2) developing policy framework for integrating climate action and strategy into planning. It might lead that local's demand can be integrated into planning at the policy level for climate change adaptation.
Action plan and strategy for eco-human settlement will be developed at the local level through dialogues and training workshops in order to identify the challenge and needs of the climate change adaptation. For example, the green and blue network will be developed. More specifically, the role of the 'Green Network' is to protect ecosystems and coastal erosion against the impact of climate change such as flooding, and storm surge. The 'Blue Network' is a part of planning for protecting water related impacts from climate change and natural hazards. These networks will be included in the planning for the integrated development strategies and climate change action plans. It will then result in the outcome of "mainstreaming climate change adaptation into the eco-human settlement planning". To reflect the needs of local people for climate change adaptation into planning and policy at the provincial and national level, policy framework development will be necessary. It might support the increase of resilience capacity of local people.
The proposed intervention will be presented as part of the integrated planning for eco-human settlement strategy and action plan development. To ensure awareness and ownership over the project, stakeholders and locals from the targeted areas will participate in all steps (training, planning, implementation, monitoring, etc.) of the project. The integrated planning for resilience capacity will be based on the component2. UN-Habitat's P4CC[4] approach ensures that activities are feasible, effective and acceptable to communities, and this ensures a solid framework for the participatory approach. District and commune levels' trainings and workshops will be conducted. These will help local people understand the impacts of climate change and the importance of forwarding planning. Also, the demand for support will be identified and a sectoral approach can be applied to it.

Component 3: Sustainability built through small-scale protective infrastructure

The component aims at enhancing climate resilient infrastructure systems in human settlements. Due to the projected climate change impacts and disasters already occurring in coastal areas, ecosystem and human settlement can only be protected through physical intervention (with the support of the soft interventions above). This component will increase resilience through hard measures as follows:

- Prevention of the saltwater intrusion and protection of the ground water through appropriate water treatment system
- Prevention of coastal erosion with green (eco-friendly) erosion rehabilitation and control system: elastocoast

[4] P4CC's principles are to be strategic; meaning implementation should make the best use of the resources (financial, human and time) available, values-based; meaning that actions should be based on what matters most to com-munities, participatory; that the project should engage as many different stakeholders as possible throughout the project cycle, and integrated; meaning it should align with other plans and policies insofar as possible.

The project will be both innovative and efficient by using, where possible, the People's Process as a means to implement activities. The People's Process mobilises local people from the affected/target areas to take decisions regarding their resilience, to play an active role in the implementation of the measures and support them in implementing this process. Through this process communities/beneficiaries will have greater ownership of the process of building resilience, and will result in reduced implementation costs. This will be also supported by the capacity building of operation and management to local people for the sustainability.

Component 4: Awareness Raising and Knowledge Management

This component will ensure that project implementation is fully inclusive, that all stakeholders are informed of products and results and that they have access to these for replication. Moreover, this component will also contain specific activities to further replicate and scale up the project. This will be done by:

- Lesson learned and best practices regarding resilient urban community development/housing are generated, captured and distributed to other communities, civil society, and policy-makers in government appropriate mechanisms; and
- Regional advocacy and replication;

Lessons regarding increasing the resilience of communities against climate change impact need to be captured, and local government officials need to be trained to ensure the sustainability of this project and effective replication of the best practices. All knowledge products generated will be made available on a digital format in English and Vietnamese.

B. Economic, Social, and Environmental Benefits:

By implementing a combination of soft and hard intervention, this project is expected to provide reductions in future climate related economic, household and livelihood losses, and reduction in vulnerabilities of women, indigenous people and youth, and reduction in environmental degradation. For example, through providing the appropriate measures related to water management, the project is expected to achieve the provision of fresh water for drinking. Moreover, the project will bring numerous social benefits. Women and youth specifically will be involved in the planning, assessment and implementation of all components. In the consultation process, focus group interviews will be conducted with women and youth unions in order to encourage them to fully participate in the project.

Table 8. Overview of Economic, Social and Environmental Benefits

Type of Benefit	Baseline	With/After Project
Economic	Climate change is already leading to economic and livelihood losses, especially caused by sea level rise and floods, but also by droughts. Less capacity for livelihood strategy and resources in the communities No planning (action plan and strategy) for livelihood strategy and resources Locals face high damage and financial losses as a result Low quality of drinking water Fluctuation of the water price depending on the seasons (wet/dry) Lack of knowledge sharing platform and financing capital	Reduction in economic and household losses due to increased resilience of institutions, communities and physical and natural assets, ecosystems and livelihoods. High economic costs of natural hazard caused by damage on infrastructure and assets can be mitigated; Labour intensive works will bring more job opportunities for youths and women and reduce unemployment rate; New climate-resilience infrastructure and service contributes to economic benefits Community participation in infrastructure projects will benefit the community and livelihood strategy is also to primarily be sourced from the community. Additionally, resilient technologies will be imparted and provide new livelihood opportunities. The technology using the renewable energy will bring more affordable priced water with the business model provided by the project; Create environment for development partners to invest for scale-up and replication

Social	Poor quality infrastructure in the target areas further drive vulnerability, and create additional challenges such as a lack of safety. Natural hazards can increasingly be considered as drivers of poverty and lead to financial losses, and compound social problems such as sanitation, food security, community safety issues especially for women, elderly, disabled people and youth Increasing inequality in the resettlement areas shows that the poorest are not sharing in the proceeds of the country's rapid economic growth Lack of accessibility of fresh water for drinking;	Reduction in climate induced poverty, fatality rates, diseases and food security and safety issues due to increased resilience of institutions, communities and physical and natural assets, ecosystems and livelihoods. Health benefits can be leveraged; community involvement brings ownership of the intervention and a higher probability of sustainability; Capacity development directs involvement in adaptation actions, increases the resilience capacity of the most disadvantaged in the provinces. New climate-resilience infrastructure and service contributes to social well-being. The benefit of the project will ensure that actions target the poorest and most vulnerable, including women, youth ethnic minorities and the elderly. Social inclusion and accessibility will be increased;
Environmental	Severe environmental degradation has taken place throughout the coastal area of Viet Nam Climate change is already leading to negative environmental impacts, especially differences in temperature and precipitation, leading to floods and droughts, which in turn leads to above factors and erosion, ecosystem degradation, etc Ecosystem degradation leads to reduction of livelihood options and health issues and flood risks Saltwater intrusion leads to the fresh water shortage, health issue, and low productivity of agriculture	This project will contribute to the reduction in climate and human induced environmental degradation and losses; Rainwater harvesting will provide alternative water source to local people and groundwater can be protected; Coastal erosion protective system will support the recovery of the ecosystem and also reduce the impact of sea level rise; The development of the coastal erosion protective system will participate in the reduction of the impact of natural hazards such as storm; Promotion of ecosystem-based adaptation in the communities, leading to environmental benefits

C. Cost-Effectiveness of the Project:

When the project undertakes action planning, cost effectiveness, adaptation-cost effectiveness, 'time to adaptation benefits' and 'no-regret' will all be factors in prioritising investments. This is standard practice according to UN-Habitat's well-established 'Planning for Climate Change' methodology. Also, the technical partner of KEITI conducted feasibility study for hard infrastructure implementation in Component 3. Thus, business model, cost-benefit analysis, site specification, technological design, estimated budget, number of interventions, beneficiaries, socio-economic and environmental benefits were identified and analysed in the feasibility study.

Cost effective investment

Table 9. Beneficiaries and budget for the hard intervention

Project site	Water Treatment System			Rainwater Harvesting System			Elastocoast/Mangrove plantation		
	# of intervention	# of beneficiary	Budget (USD)	# of intervention	# of beneficiary	Budget (USD)	# of intervention	# of beneficiary	Budget (USD)
Vinh Trach Dong, Bac Lieu	1	2,664 (indirect: 15,925)	383,652	3	1,672 (indirect: 15,925)	695,348	-	-	
Hoa Minh, Tra Vinh	2	3,372 (indirect: 14,177)	701,130	-	-		Red: 860m Yellow:	25,199	1,070,200

Long Hoa, Tra Vinh	4	2,440 (indirect: 11,022)	507,913	-	-		8,260m		
TOTAL	7	8,476	1,592,696	3	1,672	695,348	9,120	25,199	1,070,200

Table 10. Brief Cost Effectiveness Analysis of Proposed Adaptation Options

Proposed Action	Cost Effectiveness Criteria		Alternative Action	Cost Effectiveness Criteria	
3.1.1 Constructing new and restoring old water related system and infrastructure in highly saltwater intrusion locations (Blue Network)	Future cost of climate change	✓	Building sea walls for protecting saltwater intrusion and sea level rise	Future cost of climate change	✓
	Project efficiency	✓		Project efficiency	×
	Community involvement	✓		Community involvement	✓
	Cost/Feasibility	✓		Cost/Feasibility	×
	Environmental and social safeguarding risks	✓		Environmental and social safeguarding risks	More Risk
3.1.1 Rain water harvesting (Blue Network), especially water supply, to drought location.	Future cost of climate change	✓	Extending the water supply network (piped water) and construct wells for underground water	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
3.1.2 Prevention of coastal erosion with green (eco-friendly) rehabilitation and control system	Future cost of climate change	✓	Building sea wall and dykes	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

According to Section B, the project, especially hard infrastructure investment, will result in numerous economic, social and environmental benefits to locals. However, the prevention of saltwater intrusion has limited solution, and building sea wall has more vicious challenges. Thus, in this project, UN-Habitat and the government of Viet Nam focus on the development of solution for local communities. This would lead to more community participation and the increase of local ownership. Moreover, the benefits to socio-economic and environmental factors have been accounted for the analysis of cost-effectiveness. For example, renewable energy will be implemented for 3.1.1 hard infrastructures and this will lead cost-effectiveness in sustainable operation and management.

Cost effectiveness for the 'Hard' with 'Soft'

The project focuses on maximizing the size of the hard/tangible component (68.85%) to benefit the most vulnerable populations. Where the project makes investments in soft activities, these will either a) directly support the hard investments (i.e training in installation or operation and maintenance), or b) invest in strengthening commune/district level planning – which will help to sustain and replicate the benefits of the project. For example, the costal erosion can be interrelated with mangrove deforestation. Due to the lack of policy and compliance, the investment of mangrove forestation became useless. Thus, the project can contribute to the development of policy framework based on the gap between hard and soft intervention.

Cost effective operation through community contribution

UN-Habitat will implement the hard components of the project through the People's Process where possible. The project will be implemented in close partnership with communities and local

government institutions. This implementation approach has been shown to reduce implementation costs by 20-30% over the life of the project by using community labour instead of external contractors, procuring local materials where they are available. Moreover, the capacity of operation and management can be improved with community participation. With the support of provincial government, the teams of operation and management, and monitoring will be established at local level. Also, a business model for sustainability will be developed with community participation, and this would financially support for sustainable operation and management. Furthermore, each provincial government has a plan to contribute counterpart funds for developing environment toward achieving sustainable operation and management.

D. Project Consistency with National or Sub-National Sustainable Development Strategies:

This project is consistent with national and sub-national development strategies of Viet Nam on Socio Economic Development Plan, Climate Change Adaptation, and Sustainable Development. The Socio-Economic Development Plan (SEDP) is the main plan for socio-economic development in Viet Nam and thus action plan and strategy need to be integrated into SEDP to obtain the support of national and provincial government. This helps all levels of society in Viet Nam to participate in the planning of their province, district and commune. This is a driving factor in reform of local planning which can include climate-related action.

In the 2016 -2020 Socio Economic Development Plan, there are two development plans for dealing with environmental issues and it addresses the response to climate change. Along with international climate policy grounded in the UNFCCC, Viet Nam has developed its own strategies through government policies and strategies to achieve the Sustainable and Climate Change Adaptation goals. ***Resolution 24/NQ/TW (2013) on Responding to Climate Change by Central Party Committee*** has taken on the role of the mainstream agency on policies for climate change adaptation.

As shown in Figure 8, National Climate Change Strategy and National Green Growth Strategy are under ***Resolution 24/NQ/TW (2013) on Responding to Climate Change by Central Party Committee*** to support national policy in achieving the adaptation goal against climate change in Viet Nam.

The National Climate Change Strategy (NCCS, 2011) states that Mekong Delta is one of the world's three most vulnerable deltas (together with the Nile Delta in Egypt and the Ganges Delta in Bangladesh) to rising sea levels. According to climate change scenarios, in late 21st century, Viet Nam's yearly mean temperature will go up by 2-3 degrees. The total amount of yearly and seasonal rainfall increases while the rainfall in dry seasons will decrease. Sea level is estimated to rise by 75 cm to 1 m compared to the 1980-1999 period. To cope with the challenges from climate change impact, Viet Nam has been trying to improve public awareness and capacity of responding to climate change.

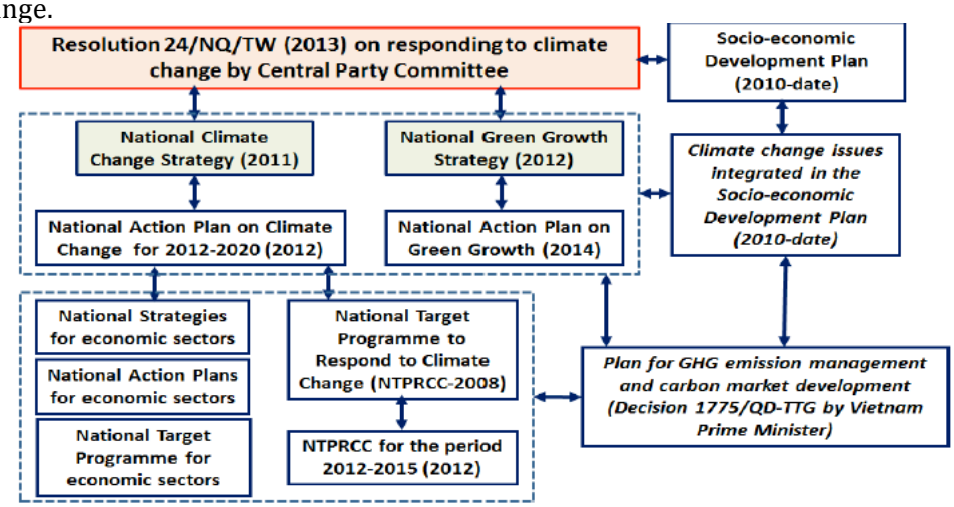


Figure 8. Evolution of Climate Change Policies in Viet Nam

Based on NCCS, the National Target Program to Respond to Climate Change (NTP-RCC) has been developed as the umbrella program for guiding the framework for the Government of Viet Nam's efforts in adaptation and mitigation of climate change risk. The Ministry of Natural Resources and Environment developed the program and is responsible for its implementation.

The Viet Nam Green Growth Strategies (VGGS, 2012) as a means to achieve a low carbon economy and to enrich natural capital, will become the principal direction in sustainable economic development; While GGS suggested overall strategies to achieve sustainable development goals in mitigation, some of the components related to climate change adaptation.

In November 2017, the Government Resolution 120/NQ-CP on Sustainable and Climate-Resilient Development of the Mekong Delta of Viet Nam was signed by PM Nguyen Xuan Phuc in a conference on sustainable development in the Mekong Delta. The principal solutions in Resolution 120 are well fit to the activities in the proposed project. Through the Mekong Delta Workshop in June, 2019, the Viet Namese government released 'joint statement from development partners in Mekong delta working group'. In the statement, the importance of water security to adapt to the climate change impact in Mekong Delta has been highlighted along with the integrated water resource management.

Implementation of the Paris Agreement (PIPA) tries to be suitable to development circumstances of Viet Nam and the level of international support received; Needs to follow direction from Parties, Government and inherit viewpoints, undertaking activities for climate change response and green growth which have been and are being implemented, and take advantage of opportunities presented by the Paris Agreement. Adaptation continues to be the main focus of the implementation of the Paris agreement in Viet Nam

Table 11. Project Alignment with Government Priorities

Measure	Resolution 24/NQ/TW (2013) on Responding to Climate Change by Central Party Committee	Green Growth Strategy (GGS)	National Climate Change Strategy (NCCS)	National Determined Contribution (NDC)	National Target Program to Climate Change (NTP)	National Action Plan on Climate Change in 2012-2020	Sustainable Development Strategy (SDS) for 2011-2020	Plan for Implementation of the Paris Agreement (PIPA)
❑ Institutional and community capacity building toward eco-human settlement development for supporting to enhance local climate response actions		△		✓	✓			✓
❑ Action plan and strategy development for eco-human settlement, and integrating into planning and policy with participatory approach		✓	✓		✓	✓	✓	
❑ Sustainability built through small-scale protective infrastructure	✓	△	✓	✓			△	
❑ Awareness Raising and Knowledge Management	✓	△	✓		✓			✓
✓: sufficient support /△: need more support /: no support								

Table 13 shows how the proposed project aligns with policies, strategies and plans of the Vietnamese government. Accomplishing main four components above, the proposed project will support national development goal based on the assessment of national strategies of Viet Nam and also provide additional support on the other components related to climate change adaptation.

E. Compliance with Relevant National Technical Standards:

All project activities are in compliance with existing rules, regulations, standards and procedures endorsed by the government, as shown in the following table. In addition, compliance with tools are discussed below:

Table 12. Project Compliance

Expected Concrete Outputs / Intervention	Relevant rules, Regulations, Standards and Procedure	Compliance, Procedure and Authorizing Offices
1.1.1. National Induction Workshop	**Res 120 3d**: Coordinate investment activities in a uniform, inter-regional, inter-sectoral and targeted manner/ **Prime Ministers Decision No. 1393/QĐ-TTg** Establishment of Green Growth Strategy for Viet Nam	Prime Minister, MPI, MOC, NCC, MOFA, PPC, MARD, MONRE will be involved; Engage government officials to share knowledge;
1.1.2. Guidance and training materials development for vulnerability and risk assessment	**UN-Habitat Planning for Climate Change/ Res 120 3a**: The Mekong Delta development model must be human-centered, serve people and narrow the gap between the rich and the poor; in the context of climate change and the impact of extraction and use of water on the Mekong River upstream / **Circular No. 27/2015/TT-BTNMT MONRE** on strategic environmental assessment, environmental impact assessment and environmental protection plans. **Circular 08/2016/TT-BTNMT MONRE**, Article 5: Assessment of the impact of Climate change/ Article 7: Assessment of National Climate	Maximize use of existing VA tools/guidelines to minimize tool fatigue and to build on experiences in-country, where possible Ministry of Planning and Investment (MPI), NCC, MONRE, MARD ministries and relevant local authorities, PPC Develop the guidance and training materials in compliance with the policy, laws, guidelines and draft strategy;
1.1.3. Planning toolkits and training materials development for planning approach, strategy and action plan development on climate change resilience	**Decree No. 18/2015/ND-CP** of the Government concerns Environment protection planning, Strategic environmental assessments / **Circular No. 27/2015/TT-BTNMT** MONRE on strategic environmental assessment and protection plans / **Res 120 4d**: Formulate a master plan for sustainable and resilient development of the Mekong delta / **Res 120 5b**: Review, complete and prepare the planning for land use, use of water resources, environmental protection, extraction and sustainable use of bank natural resources of the Mekong Delta. **Decision No. 2139/QD-Ttg Prime minister**, Approving the National Strategy for Climate Change **Prime Ministers Decision No. 1474/QD-Ttg**, Establishment of National Action plan on Climate change in the period 2012-2020 **Decision No. 672/QĐ-BTNMT MONRE** in 2017 on Establishment of Action plan for responding to climate change of MONRE period 2016-2020. **Decision No. 811/QD-BXD MOC** in 2016 Establishment of Action plan for responding to climate change of MOC period 2016 -2020 **Circular 08/2016/TT-BTNMT MONRE**, Regulating the impact assessment of Climate change and National climate assessment/ Article 6: Assessment of Climate change Adaptation and Mitigation solutions.	MONRE, MPI, MOC, MARD will be involved; Provide planning tools and training materials for a comprehensive and holistic climate change adaptation strategy according to the environmental protection law and in compliance with Government development planning approach.

1.1.4. Project team (facilitators) training enabling facilitation of eco-human settlement strategy and action plan development (for supporting component 2.1.1 and 2.2.2)	**Res 120 3d**: Coordinate investment activities in a uniform, inter-regional, inter-sectoral and targeted manner/ **Prime Ministers Decision** **No. 1393/QĐ-TTg** Establishment of Green Growth Strategy for Viet Nam	Prime Minister, MPI, MOC, NCC, MOFA, PPC, MARD, MONRE will be involved; Engage government officials to share knowledge;
1.2.1. Training workshops, enabling national/provincial/ district/commune to set up eco-human settlement strategy and action plan development for climate change adaptation	**Res 120 3d/Res 120 4d**: Continue to complete the mechanism for coordinating the development of the region and ecological sub-region the focus shall be given to smart management of Viet Nam and the Mekong Delta/ **Prime Ministers Decision No. 1393/QĐ-TTg**	MONRE, MOC, MARD, and MPI will be involved; Local government (provincial departments, district and commune PCs) will participate Achieving this output is aligned to the Government's priority of boosting region's economy as well as strengthening climate change resilience;
2.1.1 Action plan and strategy development for eco-human settlement (province, district, commune levels)	**Res 120 2d/UN-Habitat Planning for Climate Change/ Res 120 5g**: - Review, amend and implement the planning for regional construction planning, urban and rural planning, rearrangement of population and relocation of houses along rivers, canals and ditches to minimize the risk of erosion. Keep houses safe from natural disasters/ **Decree No: 16/2003/QH11 Construction Law / Resolution No. 51/2001/QH10;** **Law on Urban Planning** **Law on Organization of Local Government, No. 77/2015/QH13**	MONRE, DONRE and other provincial departments, and district and commune PCs, will be involved; Comply with all urban planning laws, while also aiming to develop local capacity through involvement in the planning process, allowing better local understanding of how to benefit from project implementation in the long term;
2.2.1 Policy framework development for integrating local peoples' action plans and strategies for eco-human settlement into planning	**Res 120 4d** **Res 120 5g** **Decision No. 672/QĐ-BTNMT MONRE** Article 1: Building and Improving institutions, policies and legal documents on climate change in Viet Nam **Decision No. 811/QD-BXD MOC** Article 2.2: Review, edit and add legal documents, standards, technical construction guidelines related to climate change and sea level rise.	MONRE, MARD, PPC, will be involved;
2.2.2 Integrating developed/revised action plan and strategy into the relevant/existing planning and policy	**Res 120 2d/Res 120 3c:** Switch the development model according to the ecosystems to ensure suitability for natural conditions, people and natural laws/**Prime Ministers Decision No. 1393/QĐ-TTg** Establishment of Green Growth Strategy for Viet Nam/ **Law on Water Resources (LWR) Order No. 15/2012/L-CTN** of July 2, 2012, on the promulgation of law **Prime Ministers Decision No. 1474/QD-Ttg** Article 5: Strengthen management capacity and developing policy mechanism on climate change	MONRE, MARD, PPC, will be involved; Communities by holding workshops to improve community actions to climate change adaptation. MONRE and PPC will support these workshops.
3.1.1 Prevention of the saltwater intrusion and	**Res 120 3b/Res 120 3c /Prime Ministers Decision No. 1393/QĐ-TTg**	MONRE, DONRE and relevant departments in

protection of the ground water through water treatment system and rainwater harvesting	**Establishment of Green Growth Strategy for Viet Nam / Decree No. 201/2013/ND-CP** Detail regulations for implementing some articles of the Water Resources Law **Circular 39/2016/ TT-BTNMT MONRE** on Technical regulations on monitoring and investigation on saline intrusion areas. **Circular No. 47/2017/TT-BTNMT MONRE** on Supervision of the extraction and usage of water resources **Circular No. 27/2014/TT-BTNMT MONRE** on Regulating the registration for groundwater extraction form of dossier for issue, extension, modification, re-issue of water resource permit. **Circular 75/2017/TT-BTNMT MONRE** prescribing the protection of groundwater in drilling and excavation activities and groundwater exploration and exploitation. **Decree No. 167/2018/NĐ-CP Government** Prescribing the restriction on groundwater extraction **National Technical regulation No. QCVN 07-1:2016/BXD MOC** on Infrastructure works – Water supply infrastructure	PPC, and commune PC will be involved; (DOH, DARD) Improve structure for water management in compliance with Government resolution of water as a core element;
3.1.2 Prevention of coastal erosion with green(eco-friendly) rehabilitation and control system: elastocoast	**Res 120 5g / Decree No: 16/2003/QH11 Construction Law / Decree No. 43/2014/ND-CP detailing the implementation of some articles of the Law on Land/ Law on Water Resources (LWR) Order No. 15/2012/L-CTN of July 2, 2012, on the promulgation of law** **Decision 106/2004/QĐ-TTg,** Approving the list of communes in coastal spits and islands, which meet with exceptional difficulties **Decision 79/2002/QĐ-BNN,** Promulgating amendments and supplements to spending norms of the project on protection and development of coastal submerged land areas in south Viet Nam **Decision 09/2002/QĐ-BNN,** Promulgating the regulation on organisation of the implementation of project for afforestation on coastal sandy areas of southern central Viet Nam **Decision 668/TTg,** On the natural disaster reduction orientation and measures and the programs for key socio-economic development of coastal cent **Decision 172/2007/QĐ-TTg,** Approving the national Strategy on natural disaster prevention, fighting and reduction till 2020 **Decision 193/2006/QĐ-TTg,** Approving the Program on population distribution in natural disaster- and special difficulty-hit areas, border regions, islands, areas inhabited by free migrants, and important and very important areas of protective forests and strictly protected zones of special-use forests in the 2006-2010 period, and orientations up to 2015	MONRE, DONRE and relevant departments in PPC, and commune PC will be involved Improve climate-resilience infrastructure according to national policy and law on land, and in compliance with Government resolution of keeping properties safe from floods, droughts, storms and sea level rise; Respect all prohibited actions under LWR;
3.2.1 Capacity building	**Res 120 4d / Res 120 5g**	MONRE, DONRE and

to a working group for the sustainable operation and management of provided hard intervention	**Decision No. 672/QĐ-BTNMT MONRE** Article 3: Raising awareness and training human resources on climate change adaptation **Decision No. 811/QD-BXD MOC** Article 3.5: Propaganda and dissemination of knowledge; training for awareness raising and capacity building	relevant departments in PPC, and commune PC will be involved; Organize working group for the management; Consider Res 120 5g when implementing the planning for management;
4.1.1. Lesson learned and best practices regarding resilient urban community development/housing are generated, captured and distributed to other communities, civil society, and policy-makers in government appropriate mechanisms	N/A	N/A
4.1.2. Regional advocacy and replication for developing the effective policy framework	N/A	N/A

F. Other Funding Sources:

Analysis took places of the listed projects and programmes in Mekong delta to avoid overlapped projects in the same region and interventions. The table below lists relevant projects, either recently completed, ongoing or about to start in the Mekong Region, that UN-Habitat can complement and synergise with the proposed project. They have been identified based on in-depth consultations with the national and local governments and international agencies from targeted regions and through desk research.

There are many projects and programmes in Mekong Delta Region for climate change adaptation (e.g. by the World Bank, USAID, UNDP, SECO, GIZ and among others). None of the projects, however, is focusing solely on enhancing the climate adaptation capacity in the commune level targeted by this project with bottom-up approach from the local level to the national level through both hard and soft interventions.

Most of the projects in Mekong Delta Region have focused on community level capacity building or else policy and institutional level capacity building without providing the hard intervention while the proposed project would like to focus on providing hard environmental-related infrastructure in small scale with suitable capacity building for the ownership of the community. Several projects, however, were identified for providing complimentary potential with this project. An analysis of lessons learned from these projects is as below (Table 15).

Table 13. Relevant Projects and their Complimentary Potential

Relevant Project/ Programme	Relevant Interventions and Lessons Learned	Complimentary and Duplication Potential
Bac Lieu Province		
UNDP/Expanding models of rice-shrimp cultivation for efficient management and sustainable use of alkaline lands in Bac Lieu (June 2015 - June	*Relevant Interventions:* Community awareness raising and capacity building to manage land as well as water resources; effective exploitation of saline-alkaline lands for rice cultivation; development and expansion of rice-shrimp farming model using rice variety, all of which contribute to poverty reduction and new rural development of the region; *Lessons Learned:* Raising awareness should be	*Non-Duplication:* UNDP Project was in same targeted area but in different scale (provincial level) and also focused only on soft intervention *Complimentary:* Through component2 (integrated planning), the proposed project will make synergy by developing the

2018)	included for the sustainability of the project	integrated planning against climate change impact
The World Bank/Scaling-Up Urban Upgrading Project (Approval Date: 30 May 2017 Closing Date: 31 Dec 2023)	*Relevant Interventions:* Improving access to infrastructure in priority city areas and improve urban planning in the participating cities; *Lessons Learned:* The World Bank tried to give the training after the hard intervention for the ownership to the community for the facilities	*Non-Duplication:* Different targeted area/ The World Bank project targeted urban area in Mekong delta regions *Complimentary:* The proposed project will take this project as an example for the framework to implement component 2 and 3;
GIZ/Sustainable Development of Coastal Protected Forests (Wetlands) in Bac Lieu Province (Oct 2008 - Oct 2011)	*Relevant Interventions:* Activities to restore coastal forests have been supported, including the afforestation of 100 hectares of coastal strip incorporating biodiversity considerations; about five hectares were planted with rare endemic mangrove species; *Lessons Learned:* The project generated alternative sources of income for coastal communities, which do not damage the coastal forests.	*Non-Duplication* GIZ project focused on protecting the biodiversity in coastal zone *Complimentary:* Through the consults, UN-Habitat identified several areas for potential cooperation including providing with the data in the region for installation of component 3 from GIZ;
USAID/Enhanced Capacity of the Viet Nam Red Cross (2017-2019)	*Relevant Interventions:* Project activities include developing hazard risk reduction and disaster preparedness plans *Lessons Learned:* USAID utilized a community-based approach to help communes better prepare for and increase their resilience against disaster	*Non-Duplication:* USAID project focused on disaster risk reduction and disaster response. Only soft intervention is taken. *Complimentary:* The proposed project will use community-base approach through components 2 and 3 for developing the action plan
Tra Vinh Province		
ICCG/Strengthening capacity of Khmer women in adapting to climate changes in Tra Vinh province, Viet Nam (20-Apr-2017 - 20-Dec-2017)	*Relevant Interventions:* The goal is to strengthen quality of human resources of Khmer women in the Tra Vinh province, to mitigate and adapt to climate change impacts. *Lessons Learned:* The outcome of this project will be increased adaptive capacity of community in the Tra Vinh province to climate change	*Non-Duplication:* ICCG project focused only on soft intervention through community level capacity building *Complimentary:* Through component2 (integrated planning), the proposed project will make synergy by developing the integrated planning against climate change impact; considering minority group for the project
IFAD/Rural Development: Project for Adaption to Climate Change in the Mekong Delta in Ben Tre and Tra Vinh Provinces (11- Dec- 2013 - 30-Mar-2020)	*Relevant Interventions:* Building the capacity for climate change adaptation with participating communities, institutions and provinces for the agriculture and rural development sector; Investing in sustainable rural livelihoods by providing the financial means and facilities to scale up the results of community-based research and development in this sector *Lessons* Learned: Involving community could be the key element to implement the project successfully	*Non-Duplication:* IFAD focused on providing sustainable livelihood resource *Complimentary:* From the consult, UN-Habitat figured out IFAD is planning to start the new project from 2020 and both agencies agreed on future collaboration;
Mekong Delta Region		
USAID/Mekong ARCC Climate Change Impact and Adaptation Study for the Lower	*Relevant Interventions:* Improvements to canal networks including an emphasis on maintenance are required to cope with more intense flood events, particularly to ensure effective drainage of fields and waterways	*Non-Duplication:* USAID project targeted provinces of Chiang Rai, Gia Lai, Kien Giang, Khammouan, Mondulkiri uplands *Complimentary:* The proposed

Mekong Basin (2011-2016)	*Lessons Learned:* USAID highlighted ways of applying scientific findings at a community level that are helping to raise awareness	project will apply scientific findings through Feasibility Study to help raising awareness through component 4;
USAID/Smart Infrastructure for the Mekong (SIM) (2013-2018)	*Relevant Interventions:* Sustainable Infrastructure for the Mekong will provide Lower Mekong partner governments with rapidly deployable technical assistance from the U.S. Government's premier scientists and engineers to mitigate potential negative social and environmental consequences from large infrastructure projects. *Lessons Learned:* USAID could include peer review consultations and technical training for policy makers, however it only provided with facilitators	*Non-Duplication:* USAID project only focused on soft intervention (training, consultations) and it targeted whole Mekong region in collaboration between 4 different countries. (Viet Nam, Cambodia, Laos, and Thailand) *Complimentary:* The proposed project will include consults along with the training for policy makers through component2;
USAID/Improving Water and Sanitation Services in Asia (2013-2015)	*Relevant Interventions:* The water links alliance seeks support from private sector and development partners to expand positive impact to urban water service *Lessons Learned:* USAID and Water Links collaborated with development partners including international development agencies, civil society groups	*Non-Duplication:* USAID project only targeted water access of urban communities. *Complimentary:* The proposed project will also collaborate with international agencies and civil society for the scale-up project through knowledge management on component 4;
IUCN/Building Resilience to Climate Change Impacts-Coastal Southeast Asia - Ben Tre (Jan-2011 - Dec-2014)	*Relevant Interventions:* community working groups developed through the BCR project had contributed to the improvement of natural-resource management and use. Workshop teams discussed alternative solutions and methods of community involvement, which IUCN will use as valuable feedback for its work in the future *Lessons Learned:* Bottom-up approach through community working group would be the key to achieve sustainable management	*Non-Duplication:* IUCN project was carried out in Thanh Hai and Thanh Phong communes of Ben Tre province. *Complimentary:* Through component 3, the proposed project will also have community working group to achieve sustainable management
Netherlands Embassy/The Mekong Delta Plan (2015-2025)	*Relevant Interventions:* The Delta Plan contains guidelines for government, donors and international financial institutions on moving from planning to implementation and placing investment projects in a long-term context. *Lessons Learned:* Delta Plan contains guidelines for government, donors and international agencies for climate change information on Mekong Delta	*Non-Duplication:* Different scale *Complimentary:* The Mekong delta plan can be the milestone for the proposed project in overall components; Knowledge platform could be formed with the collaboration with the Mekong delta plan (Component4)
GIZ/Integrated coastal and mangrove forest protection Mekong provinces to adapt to climate change (June 2011- July 2018)	*Relevant Interventions:* the scope of the interventions and the cooperation system are well defined and aimed at achieving the impact identified at the results level as well as by the programme objective indicators. *Lessons Learned:* The monitoring system developed by GIZ is excellent and can be used on our monitoring stage	*Non-Duplication:* GIZ project was carried out in five provinces, which are An Giang, Kien Giang, Ca Mau, Bac Lieu and Soc Tran. *Complimentary:* The monitoring system can also be applied to the proposed project; Through the consults UN-Habitat identified several areas for potential cooperation; GIZ also provided with the data in the region for component3;

JICA/Ben Tre Water Management Project	*Relevant Interventions:* The project will provide saltwater intrusion control facilities in Ben Tre Province in southern Viet Nam, where saltwater intrusion is damaging crops. *Lessons Learned:* JICA only provided the facilities in big-scale for the whole province, thus it was hard to cover the small communes for the drinking water	*Non-Duplication:* JICA project targeted Ben Tre province. *Complimentary:* The facilities provided by JICA for saltwater intrusion can collaborate with the small-scale water desalination and purification system(component3); Through consults, JICA and UN-Habitat found the area that both agencies can make synergies in the future;
Netherlands Embassy/Water Treatment Project (July - 2017 - Dec-2019)	*Relevant Interventions:* The project will deliver sanitation for residents and industries whose wastewater is currently discharged and untreated, resulting in high levels of environmental pollution. *Lessons Learned:* The environmental benefits will be visible in a significantly improved water quality	*Non-Duplication:* Different scale. This project included the construction of huge pumping stations, and pipeline network, while the proposed project will carry out small infrastructure intervention. *Complimentary:* The case from Netherlands embassy could be the example for installation of component3 (hard intervention);
Netherlands Embassy (PPP)/Climate Change and Water Supply in the Mekong Delta, Viet Nam (Apr-2013 – Mar-2017)	*Relevant Interventions:* The public private partnership (PPP) will improve drinking water supply by increasing availability and reducing climate change effects on three water companies in or adjacent to the Mekong Delta *Lessons Learned:* PPP approach could be the option for the up-scale the project in the future	*Non-Duplication:* Netherland Embassy project targeted Soc Trang Province *Complimentary:* PPP approach could be the option for the up-scale the project in the future through component 4 with the business model provided from feasibility study;

G. Capturing and Disseminating Lessons Learned:

A dedicated component (4) addresses awareness raising, knowledge management, and communication. While this provides the cornerstone for capturing and disseminating lessons learned, other project components directly contribute to knowledge management mechanisms and dissemination of lessons learned from local to national and to international levels.

At the local level, a participatory approach involving communities, local authorities and will lead to increased local knowledge on planning, constructing and maintaining resilient infrastructure. Project demonstration sites will contribute to sharing lessons and training through local disseminators and tools and guidelines, this will take place from the beginning of the project and throughout its implementation. The project will also use a participatory monitoring process, which will enable the beneficiary communities under component 4.

At the national level, this project will allow other vulnerable regions in Viet Nam to draw on this framework and lessons learned through replication and scale-up of good practice. Information obtained through this project will be consolidated in reports, then tools and guidelines will be developed for resilient and sustainable urban communities for developing and upgrading human settlement. The partnering departments of the various ministries at the regional level will directly link with the ministries at the national level to facilitate national wide dissemination.

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

At the international level, projects related to climate change, especially for eco-human settlement and community level infrastructure may benefit from the proposed project. UN-Habitat is plugged into a number of international mechanisms. The Knowledge Centre on Cities and Climate Change (K4C) provides a knowledge management platform for Climate Change Adaptation and Human

Settlement Interventions. It is proposed to use this platform to disseminate the lessons learned from this project.

Table 14. Project Outputs and Related Learning Objectives, Indicators and Products

Expected Concrete Outputs / Intervention	Learning Objectives (LO) And Indicators (I)	Knowledge Products
1.1.1. National Induction Workshop / Project team (facilitators) training enabling facilitation of eco-human settlement strategy and action plan development	(LO): Improved awareness and local vulnerability and strategies sharing (I): Number of participating government officials, Number of strategies shared Number of local plans reflecting climate change adaptation/resilience	*Workshop report and documentation* *(Concept note, Agenda and List of Participants)*
1.1.2. Guidance and training materials development for vulnerability and risk assessment at the local level	(LO) Develop the guidance and training materials for mainstreaming climate change adaptation into the planning (I) Number of guidance and training materials Quality of participants on the development of materials Pilot workshop with practitioners	*Training materials, guidelines for vulnerability and risk assessment at the local level*
1.1.3. Planning toolkits and training materials development for planning approach, strategy and action plan development on climate change resilience	(LO) Develop the planning tools and training materials for planning approach, strategy, and action plan for comprehensive and holistic climate change adaptation (I) Number of guidance and training materials Quality of participants on the development of materials	*Planning toolkits and training materials, comprising of planning approach, resilient infrastructure, and technical standards, environmental and social safeguards*
1.1.4. Project team (facilitators) training enabling facilitation of eco-human settlement strategy and action plan development (for supporting component 2.1.1 and 2.2.2)	(LO): Improved Climate Change awareness and enhanced knowledge of government officials at all levels and trainers for development of action plan and strategy (I): Number of trainers/participants Project tools for planning approach and guidance Number of workshops	*Training report and training materials* *Guidelines comprising of assessment and planning approach, resilient infrastructure, and technical standards, environmental and social safeguards and community action planning*
1.2.1. Training workshops enabling national/provincial/district/commune to set up eco-human settlement strategy and action plan development for climate change adaptation	(LO): Improved Climate Change awareness and enhanced knowledge of government officials at all levels and trainers for development of action plan and strategy (I): Number of participating national and local government officials Project tools for planning approach and guidance Number of workshops	*Training report and training materials* *Guidelines comprising of assessment and planning approach, resilient infrastructure, and technical standards, environmental and social safeguards and community action planning*
2.1.1. Action plan and strategy development for eco-human settlement (Provincial, district, and commune level)	(LO) Develop community based eco-human settlement planning and strategy Revise the climate change adaptation action plan through the workshop (I) Number of action plan and strategy development work shop Number of revised eco-human settlement strategies and action plans Number of developed eco-human settlement strategies and action plans	*Community based eco-human settlement strategy and planning* *Revised action plan and strategies for climate change adaptation* *Revised action plan and strategy for climate change adaptation* *Revised community planning for climate change adaptation*
2.2.1. Policy framework	(LO) Integrated planning with eco-human	*Integrated planning with*

development for integrating local people's action plans and strategies for eco-human settlement into planning (provincial level)	settlement action plan and strategy for climate change adaptation (I) Number of integrated planning Number of workshop and meeting at local levels (LO): Improve local action for climate change adaptation and planning Integrate climate change action plan and strategy into community planning (I): Number of local action workshop Number of local plans reflecting climate change adaptation / resilience	*eco-human settlement action plan and strategy for climate change adaptation* *Provincial SEDP that included climate change action plan and strategy from local levels*
2.2.2. Integrating developed/revised action plan and strategy into the relevant/existing planning and policy (Provincial level)	(LO): Develop the policy framework for integrating of planning Revise policy framework for integrating Develop policy for climate change adaptation with the action plan and strategy at local levels (I): Number of dialogue event Number of meeting with local government Guidance for revising policy framework Number of integrated planning with eco-human settlement for climate change adaptation	*Guidance for revising policy framework* *Revised policy framework for integrating action plan and strategy into planning* *Integrated planning with eco-human settlement for climate change adaptation*
3.1.1. Prevention of the saltwater intrusion and protection of the ground water through water resource management system: water purification and rainwater harvesting	(LO) Improve the physical infrastructure for water management (I) Number of hard infrastructures in communities Feedback report	*Technology for water management system* *Implementation plan and report*
3.1.2. Prevention of coastal erosion with green (eco-friendly) erosion rehabilitation and control system: elastocoast	(LO) Improve the green (eco-friendly) erosion rehabilitation and control system (I) Number of hard infrastructures in communities/ feedback report	*Technology for green (eco-friendly) erosion rehabilitation and control system Implementation plan and report*
3.2.1. Capacity building to a working group for the sustainable operation and management of provided hard intervention	(LO) Improve locals' capacity of operation and maintenance/ Enhance implementation arrangement and governance (I) Number of manuals and video clips for operation and maintenance Number of training workshop Number of meeting with working group and appointed agencies	*Workshop feedback report* *Manual and video clips for operation and maintenance* *Governance for operation and maintenance* *Monitoring plans*
4.1.1. Lesson learned and best practices regarding resilient urban community development/housing are generated, captured and distributed to other communities, civil society, and policy-makers in government appropriate mechanisms	(LO): Sharing of lessons learned and best practices for other regions in Mekong Delta (I): Number of platforms used for sharing Number of workshops for sharing experience and best practices	*Dissemination through regional organisations and websites* *Sharing experience and best practice materials* *Workshop and feedback report*
4.1.2. Regional advocacy and replication for developing the effective policy framework	(LO): Scaling up the good practices to the policy level and other funds (I) Number of knowledges sharing workshop at local level	*Reports of dialogue and knowledge sharing workshop* *Meeting minutes and partnership documents for*

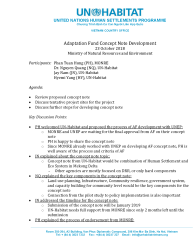
	Number of further investment and cooperation meeting	*further investments*

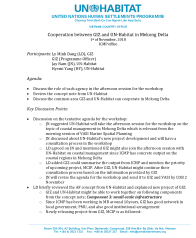
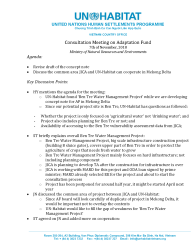
H. The Consultation Process:

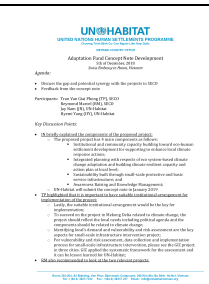
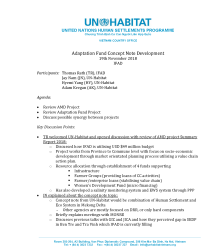
All the consultation processes took place to effectively investigate the current status of the project site and develop the strategies for the project. The idea of the project started from the field mission to the coastal region of the Mekong Delta between 10 and 14 September 2018. In the field mission, the impact of climate change was specifically identified at provincial and district level. In the meetings with provincial level government officials, current status of the impact of climate change was discussed, and economic, social and environmental related issues were also considered. In the first meeting with the national designated entity, Ministry of Natural Resources and Environment (MONRE), the possibility of cooperation between UN-Habitat and MONRE for the project development was identified. National level consultation meeting was held on 7th of November with various stakeholders and experts. The additional meetings at the national level focused primarily on alignment with national priorities (as identified in Section D) and coordination with other development partner initiatives (outlined in Section F). Coordination with the relevant agencies was mainly about synergizing with other projects, avoiding overlaps and identifying lessons from the projects in Mekong Delta.

Community level consultation was held in December with vulnerability and risk assessment. In the community consultations women, indigenous people, elderly, and youth have been part of the consultation process. The objective was to understand the local climate change impact/effects per community, individual communities' adaptive capacity, the demand for resilience capacity building and barriers to building resilience, specific resilience building needs and interests and concerns regarding the proposed project in general. The meetings at the local level considered the thematic and geographic focus and the pre-identified target communities.

Table 15. Stakeholder Consultation Meeting Held

Agency	Consultation objective	Outcome	Conclusion	Photo
MONRE (Oct. 23rd, 2018)	Show the interest of AF project development and implementation / Confirm focal point willingness/ Establish preferred target areas/Ensure coordination with other ongoing adaptation activities and policy alignment	MONRE coordinated for consultation meeting and supported UN-Habitat for administration MONRE decided to support UN-Habitat to organize the consultation workshop at local level MONRE also promised to support to find the most vulnerable communities for the AF project development	Set up the consultation meeting on 7 November 2018 Shared the experience that MONRE support UNEP's AF project development UN-Habitat received the full support of MONRE for project development	
MONRE (Nov. 7th, 2018)	Collect the feedback of the project from government officials and experts Discuss the potential project sites for the project Find the gap between existing and UN-Habitat projects	Various departments in MONRE and experts participated in the consultation meeting Shared the experience and knowledge about the current local situation Reviewed the developing project and its draft of the concept note	Narrowed down for the project locations: Bac Lieu and/or Tra Vinh Components and activities in the draft would be revised Collected the data about ongoing and planned projects in the Mekong Delta Collected data for identifying the gap between existing UN-	

			Habitat projects	
Province officials in two provinces (Dec. 5th – 11th, 2018)	Agree on target sites/Understanding climate change vulnerability, integrating climate change action into urban planning/highlight possible adaptation investments	Data collection, possible project sites were introduced and visited Understanding of current status of the impact of climate change, provincial priorities for climate change adaptation, and the level of awareness of climate change	Identified the needs from the locals for the project through their feedbacks Collected the socio-economic and environmental data from communes	
Commune officials in two provinces (Dec. 5th – 11th, 2018)	Agree on the target sites/Understanding climate change vulnerability, integrating climate change action into urban planning/highlight possible adaptation investments/understanding community coping mechanisms/Barriers to building resilience	Data collection, possible project sites were introduced and visited Understanding of current status of the impact of climate change, district and commune levels priorities for climate change adaptation, and the level of awareness of climate change	Locals understood about the project and benefits from the implementation Identified the real needs from locals and obtained the feedback about the projects recognized the challenges that locals face because of the impact of climate change checked the awareness on the impact of climate change and climate change adaptation	
GIZ (Nov. 1st, 2018)	Ensure synchronicity with the GIZ integrated Coastal Management Project in the Mekong Delta	For site selection process, GIZ supported their new information system from ICMP Their ICMP was not focused on Bac Lieu and Tra Vinh, thus AF project can fill the gap. GIZ could provide data of MD when UN-Habitat develops its concept note for Adaptation Fund.	Project site could be overlapped, but we should focus on how we make the synergy within the same project site through proper cooperation GIZ also suggested to focus on river erosion since the informal settlement along the river accelerates the river bank erosion. The resettlement of the informal sector along the river is urgent issue for the government.	
JICA (Nov. 2nd, 2018)	Ensure synchronicity with the JICA Ben Tre Water Management Project and share the data from JICA's Feasibility study,	Identified the gap between JICA's and UN-Habitat's AF project in terms of geography and context: JICA project mainly focuses on hard infrastructure, and not including planning component.	JICA and UN-Habitat do not share the same project site, however the proposed technologies from both agencies are related to water treatment system	

	vulnerability assessment, and climate change projection	JICA's project is a big scale infrastructure construction project, thus they cannot cover the whole region by community level. Thus, they only can cover the around of Ben Tre City and upper area of the province.	JICA will share the information as the project from JICA will be implemented in Ben Tre in 2019	
SECO (Dec. 4th, 2018)	Gain experience from SECO on the implementing modality for multi-lateral climate finance projects Synergize with other projects, avoiding overlaps and identify lessons learned	Having suitable institutional arrangement for implementation of the project is the key; To succeed on developing the project in MDR, reflection of the local needs is important; Identifying local's demand and vulnerability and risk assessment are the key aspects for small-scale infrastructure intervention project;	SECO suggested the relevant projects with the proposed project: WB project in urban climate resilient project in Can Tho could be the good reference for developing the small-scale infrastructure; GIZ project in Anh Giang, Kien Giang, and Cau Mau on sustainable drainage system link to green infrastructure	
NISTPASS (Oct. 29th, 2018)	Gain knowledge and practices for environmental technology application at local level	Data collection Possible project sites were introduced and potential environment related technology would be introduced with understanding of current status of the impact of climate change, district and commune levels Priorities for climate change adaptation, the level of awareness of climate change	clarifying how to transform outputs to outcomes is essential to ensure a real change Having a dialogue events for integration needs to be applied at local level	
ISPONRE (Oct. 31st, 2018)	Find the gap in the Viet Namese context and seek advice for project site selection	Noted that there is also a need to prove more resilience for activities. Added that the component of knowledge sharing should be scalable for the implementation.	Revising the planned activities Considering about ecosystem approach with agricultural base	
IFAD (Nov. 19th, 2018)	Review AMD Project and Adaptation Fund Project, and discuss possible synergy.	Notes the agencies challenges, such as the lack of details. Offers to share useful of IFAD reports for the project implementation. Notes the need of communication with PPC for further details.	The gaps perceived in Ben Tre and Tra Vinh are being filled by IFAD.	

Stakeholder's Meeting (March. 7th, 2018)	Discuss on the implementation arrangement with the various stakeholders for the sustainable management of each component	The three options of the frame for the implementation arrangement were suggested to the stakeholders Through the discussion with MONRE, DONRE of Bac Lieu and Tra Vinh, and observers (JICA, GIZ, and KEITI), one of the options has been selected	The further discussion on the implementation arrangement will be taken place along with more involvement of the local government such as DOC, DARD for the working group	
National Consultation Workshop (June 4th, 2019)	Get comments and feedbacks from the various stakeholder's including international donors, local experts, and government officials	53 participants attended Comments and feedback for the hard intervention regarding on the background and bottlenecks were discussed from NAWAPI, GIZ, ISPONRE, CARE international, and WWF were shared on the stage	Based on the comments and feedbacks from the participants, the project team is trying to consult with the fountaine1001 and GIZ	
Meeting with Bac Lieu/Tra Vinh (June 6th -7th, 2019)	Ensure the sustainable operation and management from the local government (organizing the working group)	DOC, DARD, and DOH in each province participated in the meeting as the potential working group members Commune leaders understood the concept of the project	Tentative roles and procedures of each activities have been discussed. Once the project gets approved, more detailed roles and responsibilities for each government department will be discussed	

I. Justification of Funding Request:

The proposed project components, outcomes and outputs fully align with national and local government/institutional priorities/ identified gaps and with the needs of the target communities and vulnerable groups as identified through project analysis. It will also align with the Adaptation Fund's seven outcomes 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 of Viet Nam's climate change response. UN-Habitat is well placed to execute the proposed project based in its human settlements related climate change work in the Asia-Pacific Region and its strong presence in Viet Nam. It has a history of strong partnerships with national and sub-national government agencies, a wide range of other stakeholders and most importantly communities with vulnerabilities.

Whilst the planned interventions are strongly rooted in national and local priorities the reshaped global development and climate change agenda provide further guidance. In particular, sustainable development Goal (SDG) 11 (and several of its targets); Make cities and human settlements inclusive, safe, resilient and sustainable, and Goal 6, (and its targets), Ensuring availability and sustainable management of water and sanitation for all will be addressed by the project. The New Urban Agenda emerged as an outcome of the Third United Nations Conference on Housing and Sustainable Urban Development (Habitat III, in Quito, October 2016) will also be utilised as a framework to guide this project.

The project aims to maximize the funding amount for the local investment component (component 3); funding allocation of the 'soft' components is required for complementarity/support for component 3 in order to achieve sustainability and quality assurance of the project.

Table 16. Overview of Impact of AF funding compared to no funding (baseline) related to expected project outcomes

Project Objectives	Baseline (without AF)	Additional (with AF)	Comment / Alternative Adaptation Scenario
Institutional and community capacity building toward eco-human settlement development for supporting to enhance local climate response actions	There are no detailed plans for human settlement and ecosystem Lack of awareness on climate change impact No support plans for local climate response actions in terms of human settlement and ecosystem	There will be detailed plans for human settlement and ecosystem Public can understand the climate change impact Develop the plans for local climate actions in terms of human settlement and ecosystem	Local people will adapt to the impact of climate change and the local government could revise the plan by themselves. However, it would not be the well-structured adaptation and will not be efficient and effective without the intervention. The enhancement of adaptive capacity will be limited in terms of eco-human settlement planning
Action plan and strategy development for eco-human settlement, and integrating into planning and policy with participatory approach	Lack of integration of climate action plans and strategies into provincial, district and commune level plans Community level demand is not reflected into the plans	Will Identify the demand from community level This demand can be developed to local climate response actions This action plans will be integrated into the socio-economic development plans. Green and Blue network can be set up and support local people to strengthen climate-resilience	Planning will be developed, but it would not be the comprehensive one. No holistic approach will be implemented for responding the climate change Without the intervention, the opportunity to reflect the impact of climate change at local level into provincial and national level planning will be limited, and the actual challenges and financing mechanism for climate change related projects will not be captured
Sustainability built through small-scale protective Infrastructure	National government and local authorities could not adapt to climate change impacts through the proper infrastructure due to lack of funding source and technological capacity. Also, it is hard to identify which infrastructures are necessary at local level, and to allocate the resources effectively	Project site will be facilitated for water management and coastal erosion prevention based on the local level consultations conducted. Local government and community can utilize the infrastructures for strengthening climate-resilience through capacity building on the operation and management	Without undertaking actions through the People's Process, adaptation actions would not be participatory ensuring local ownership or generate the levels of local ownership achieved by this project
Awareness Raising and Knowledge Management	Local levels (district and communes) have limited knowledge of resilient planning and protection of human settlement Less coordination of vertical governance and	Local government will be aware of climate change and its impact. Knowledge will be increased and the likelihood of follow up finance for additional investment will be increased Experience and practice	Without these interventions, the chances of wider knowledge generation and follow-up financing would be severely limited

	knowledge management	sharing platform will be developed Limited resources at local can be effectively allocated with the platform	

J. Sustainability of the Project:

Institutional Sustainability

The project will pave the way for the national government and local authorities in Viet Nam to sustain and up-scale the project to vulnerable settlements in other regions, by utilising the planning tool equipped through the proposed project and sharing lessons learned from the project. The project will strengthen the strategies and plans to cope with climate change adaptation in Viet Nam at multiple levels.

Moreover, for infrastructure operation and maintenance, working group will be organized along with project office at provincial level. The working group and project team will develop the strategy for infrastructure operation and maintenance with technical teams. With the consultation of local authorities, DONREs in the provinces will lead the project implementation with cooperation of relevant departments and agencies.

Table 17. Implementation arrangement of Infrastructure

Infrastructure	Lead agency	Working Group	Implementation Agency
Water resource management system	Department of Natural Resources and Environment	Department of Agriculture and Rural Development Department of Health EVN SPC	Commune and District People's Committees Water Resource Management Agency under DARD
Rain water harvesting		Department of Construction EVN SPC	Commune and District People's Committees Head of public buildings
Costal erosion rehabilitation		Department of Agriculture and Rural Development	Commune and District People's Committees

Moreover, tentative implementation governance was arranged through several consultation meetings with relevant agencies at national and local levels. This implementation arrangement was developed with the consideration of sustainability of the project.

This implementation arrangement could lead the increase of community-based ownership, because communes and districts will be able to participate in working group. Also this working group can act as a monitor for sustainability.

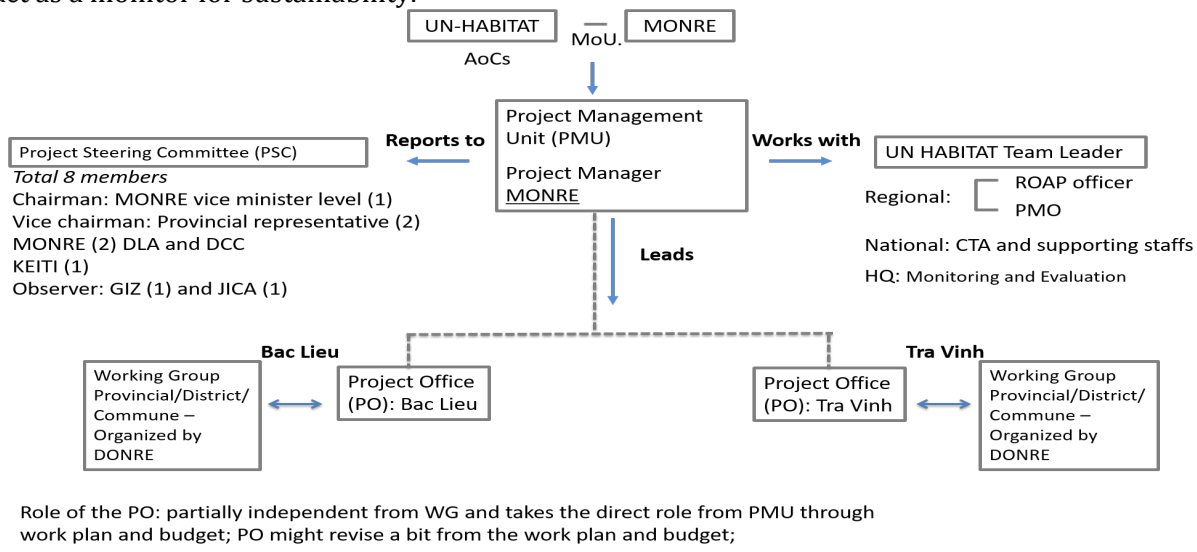


Figure 9. Implementation arrangement of the project

Economic Sustainability

Adaptation is a highly important economic activity in the targeted areas. In most of the targeted settlements, people rely on tanker-supplied or bottled water, which is expensive. This project will enable people to access water in a sustainable manner at much lower cost. Thus, the business models are set up for water treatment system based on the feasibility study. Also, water treatment system will be installed with renewable energy, which is solar power and this will lead to the decrease of maintenance and operation cost, and the water price as well. Setting up the business model and using renewable energy will result in much higher sustainability for maintenance and operation after the project termination.

Technological sustainability

Hard infrastructures will be designed and constructed using resilience and build back better principles. This will enhance the durability/sustainability significantly. With the principles, feasibility study for hard infrastructures in water and eco-friendly infrastructures for coastal erosion was conducted with experts from KEITI. The detailed information is attached as Annex 1. For achieving technological sustainability, UN-Habitat and F.S. teams had several consultation meetings with local governments and locals in order to identify the demand for the infrastructures and difficulties of locals in operation and maintenance. As a result, operation and maintenance agencies and mechanism were appointed before the project start and discussed with commune PCs about trainings for operation and maintenance. By implementing the project through the People's Process methodology, people will take ownership for the design and construction of the infrastructures.

Social Sustainability

In implementing the project, communities will gain greater awareness of climate change and adaptation, and vocational skills to build and maintain infrastructure. Also, ethnic minorities in target areas were considered as the priority of the project.

Environmental Sustainability

The project will make use of local materials in line with environment safeguards, where possible. The project will be implemented in the Mekong Delta and as such, activities undertaken in this area will make special consideration of the delicate environment. The project will also make provisions for the protection of the environment through its safeguarding procedures. As shown in Section K, below, 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.

Scale up and Replication

In Component 4, the policy framework for sharing the experience and practices will be developed and it would contribute that Viet Nam government can continuously support the project after the termination of the project. In terms of institutional, economic and technological sustainability, the project considers the scale up and replication in the Mekong Delta region. Also, Component 2 will support 'mainstreaming climate change adaptation into planning' at local level, and for this process, the project supports to develop policy framework for national and provincial governments. Thus, this will lead scale up and replication of the project in Viet Nam.

Community led Business Model for Sustainable Operation and Management

For sustainable operation and management, this section proposes a visible business strategy for saltwater treatment system. After the discussion with 1001 Fountain, which is NGO for producing water to the public in Cambodia and Viet Nam, they are also developing similar business model with same technology in Viet Nam.

The project aims to promote such solutions/technologies that are socially and culturally acceptable and economically affordable for the poor households and communities. At the same time these solutions should be commercially profitable by the markets so after the project exhausts its designed life, the technologies are mainstreamed.

Economic feasibility study considering the business model for scale up is performed to evaluate the feasibility as investment project after the project funded from Adaptation Fund. In this business model

concept, the construction cost is considered as investment cost which is the most different factor from the analysis of grant model.

1. Grant model

The Grant model assumes that financing for the system were granted by Adaptation Fund and this only considers the sustainable operation and management.

Table 18. Basic assumption

Category		Description
Project duration	Reference date	Jan, 2019
	Construction period	6 months (Jan. ~ Jun. 2020)
	Operation period	20 years (Jul.2020 ~ Jun. 2040)
	Annual operating days	Water supply: 365 days
Financing	Funding ratio	Public sector: 100.00 %
		Private sector: 0%
Revenue and cost	Operating revenue	Production cost: satisfying 10 % of O&M cost
	Operating costs	Labor cost, electric power cost, general expense, maintenance cost
Other assumptions	Discount rate	10.0% assumed
	Corporate tax	20.0% (single tac rate)
	Inflation rate	3.0% assumed
	Exchange rate	KRW/USD = 1,179 assumed

Table 19. Result of economic feasibility study for grant model

	Operating cost (USD/year)	Sales (USD/year)	Production cost (USD/ton)	B/C (before tax)	B/C (after tax)
Long Hoa Secondary school	11,211	12,333	2.3	1.03	1.03
Truong Tieu Hoc Long Hoa A	10,010	12,111	3.5	1.03	1.03
Truong Mau Giao	15,829	17,412	2.1	1.03	1.03
School Complex	12,701	13,971	3.4	1.03	1.02
Replacement Aarea	15,955	17,551	1.8	1.03	1.03

As a result of analysis, B/C ratio from all cases is over 1.0, accordingly, all systems with grant model is economically feasible. This means that the cost of operation and management can be covered by sales, and this will lead the increase of sustainability.

2. Investment model

Investment model will consider about the sustainability of the project after the AF project completed. This business model will contribute the scale up and replication of the project to other Mekong Delta region, and also support policy framework development for climate change adaptation with appropriate technology.

1) Estimate of total investment coast and financing structure

Estimate of total investment cost

The total project cost including construction cost, test operation was estimated 269,524USD and the total investment cost including contingency (price index) and construction interest was estimated at 274,064 USD. Revenue will be 35,000 USD; thus, the return of Investment will be 7.8 years.

Table 20. Breakdown of total investment cost

Category	Amount (USD)	Ratio (%)	Remarks
Construction cost	215,806	78.7	
Incidental cost	53,718	19.6	Transport, test & commissioning
Contingency	2,919	1.1	Inflation rate
Construction interest	1,621	0.6	
Total investment cost	274,064	100.0	

Table 21. Breakdown of construction cost by facility

Category	Amount	Ratio (%)	Remark
Desalination system	215,806	100.0	
Total	215,806	100.0	

Table 22. Quarterly financing plan

Category	Total	Q1, 2020	Q2, 2020	Ratio	Remarks
Equity	54,813	54,813	-	20.0	

Borrowed	219,251	92,630	126,621	80.0	
Total	274,064	147,443	126,621	100.0	

2) Estimate of operating revenue and cost

Operating revenue in this project consists of the revenue from water supply through the desalination system.

Table 23. Basic assumption for operating revenue

Category	Water supply	Days	Production cost	Inflation
Revenue from water supply	9.4 ton/day	365 days	10.1 USD/ ton	3.0%

Production cost was estimated considering 10% of project earning rate and estimated sales during the operation period was 976,910 USD and average annual sales during the operation period is **48,846 USD.**

Estimate of operation cost

Operation cost consists of labor cost, electric power cost, general expenses and maintenance cost. Annual inflation rate of 3% was applied.

Table 24. Breakdown of operating cost

Category	Amount	Ratio (%)	Remarks
Labor cost	6,614	60.1	2019 constant price
Electric power cost	630	5.7	
General expenses	1,624	14.7	
Maintenance cost	2,143	19.5	
Total	11,010	100.0	

The total operating cost occurring from the facilities during the operating period was estimated at 309,290 USD, which corresponds to approximately 31.7% of the total sales. In detail, labor cost accounts for 60.1% of the total electric power cost 5.7%, general expenses 14.7% and maintenance cost 19.5%.

Community Affordability

The water price from the newly built infrastructure will be lower than the prices in the market, thus there is no issue about community affordability, and the proposed business model can support sustainability of the water treatment system.

K. Environmental and Social Risk and Impacts:

The proposed project seeks to fully align with the Adaptation Fund's Environmental and Social Policy (ESP). Outlined below is a summary of the findings of the preliminary screening and assessment process that has been carried out to evaluate the environmental and social impacts and risks of the entire project. There is also a categorization of the project and a completed risk and impacts checklist.

UN-Habitat conducted a preliminary project screening of environmental and social risks according to the 15 principles outlined in the AF's Environmental and Social Policy based on analyzing information available at the project design stage. The potential risks identified and preventive or mitigation measures planned are presented below (Table 20).

The project has been and will be further designed to generate positive economic, social and environmental impacts. It will achieve this by using inputs from local authorities and by incorporating best practices from other projects, while also placing specific priority on inputs from women and marginalized and vulnerable groups in target communities. The adaptation measures proposed in the full proposal will be selected together by the communities and local authorities, making sure they are culturally and locally appropriate

As shown in Table 21 the project seeks full alignment with Adaptation Fund's Environmental and Social Policy (ESP) and will also be screened according to UN-Habitat's new Environmental and Social Safeguards policy. This section briefly describes the initial analysis of environmental and social impacts of the project based on the ESP

Activities under Component 1, 2 and 4 have been categorized as low risk (Category C). Despite this, steps will be taken to ensure that no environmental or social impacts can occur. This includes the use of quota systems for involving women and marginalized and vulnerable groups in the planning processes and ensuring transparency of the execution of all activities, such as posting attendance lists and outcomes of meetings and trainings.

As such, the activities under component 3 are to fit into medium risk (Category B) or low risk (Category C). This is due to the scope of the proposed numerous interventions; they are characterised by their small scale and very localized nature, they will be proposed and co-managed by communities where possible, who have a stake in avoiding environmental and social impacts.
In Component 3, small-scale water resource management system built to provide clean and safe water for drinking and coastal erosion prevention system will be considered for hard infrastructure intervention. These aspects are currently being explored through community and stakeholder engagement, and for social and environmental risk impact, further safeguard analysis will be implemented with feasibility studies. This means that the potential for direct impacts is small and localized, that there can be few indirect impacts, and that transboundary impacts are highly unlikely. Given this, cumulative impacts are also unlikely. Because of the nature of activities under components 3 the entire project is regarded as a medium risk (Category B) project.

Table 25. Possible risks and mitigation measures

AF environmental and social principles	No further assessment required for compliance	further assessment and management required for compliance	Possible Mitigation Measures
Compliance with the Law		Possible conflicts over land ownership Failure to comply with laws relating to procurement procedures Construction works of coastal erosion and installation of water treatment system may be on private land or public land which may restrict to some kind of construction activities. Since the technology transfer to local people to establish water treatment system is not a community owned business model as private company or cooperative to manage the operation.	Only citing infrastructure on public land. Engagement with Department of Natural Resources and Environmental for land use and Department of Construction for approval Integrating legal compliance into all training - Consult the legal procedures to establish a community owned business model
Access and Equity		That certain groups are denied access to infrastructure, or that preferential access is given to others - There is possible dispute with existing drinking water suppliers in the area when treatment system installed since the price is 70% of the market price. So, there is a risk that the project's objective to provide fresh water for drinking the price will increase after the project finished and the marginalized and poor may not be able to access to that water source. - Since the water treatment plan is located in school or kindergarten there are two possible related to the safety of schoolchildren if people come to collect the water - In all community's households lacking access to clean water is more than 80 % but the project water plan can only provide clean water for limited number of people (e.g. only 1,500/10,200 people in Long Hoa commune). There is a potential risk of conflict when it comes to water shortage in long time and other water	Community management with rules ensuring that equal access is guaranteed - New business model to make sure the price stable for the poor and marginalized over time - Mechanism for safety of children should be put in place - Consult with local stakeholders to develop criteria for selection of most suitable user groups/water users in order to reduce risk of conflicts among water users in the area. - Weather forecast and climate change scenarios need to be integrated in the local plan in term of water management and security

		plans are not there yet.	
Marginalized and Vulnerable Groups		There would be small number of vulnerable groups to access to livelihood resources. Particularly during the construction work to strengthen coastal erosion areas using elastocoast, the access to coastal areas when local people may cultivate agriculture. See Access and Equity category in the table	Community co-management with rules ensuring that equal access is guaranteed
Human Rights		Human rights breaches can arise from denying access to water and other basic services, or from land conflicts, for example Construction work to upgrade sea dykes may be given to strong and skilled workers, women and unskilled workers may not be able to participate in the construction work. See Access and Equity category in the table	At project proposal stage, and in line with UN-Habitat's Project Management Cycle and Work Flow policy, the project will further be screened for its adherence to three cross-cutting issues which are: gender, human rights and climate change. The Human Rights Officer of UN-Habitat will ensure that the project is designed to respect and adhere to the requirements of all relevant conventions on human rights.
Gender Equity and Women's Empowerment		Women could be denied access to infrastructure, or excluded from making critical decisions Women and children are in charge of collecting water in prolonged drought seasons in rural areas which put an extra burden into their shoulder. There will be low risk that women could be denied to access to water infrastructure. However, if it is the case the impact will be significant	The project design will ensure that gender considerations are included in all project interventions, with a specific focus on capacity building on the all levels as well as activities on the ground. During the development of the full project proposal, the Gender Officer of UN-Habitat will be consulted to ensure that the project follows best-practice guidelines. - Involving women and Local Women Union along process and especially after project finish - The activities under Component 3 will create employment enabling some marginalized and vulnerable groups including unemployed youth and women to access employment.
Core Labor Rights		Labour rights may not be respected when contracting communities Despite the fact that the chemical for elastocoast does not have any harmful components, Labour can be affected by chemicals.	All community contracts must be scrutinized to ensure they comply with both Vietnamese law and international standards. The relevant national labour laws guided by the ILO labour standards will be followed throughout project implementation. The safety manual[5] will be provided.
Indigenous Peoples		The certain minority group can be denied to access to infrastructures and excluded from the process of decision	Community management with rules ensuring that equal access is guaranteed and participating in the

[5] BASF (2019) Safety data Sheet

		making - In both Tra Vinh and Bac Lieu, a major percentage is Kinh people, followed by the Khmer and Chinese ethnic (e.g in Tra Vinh, over 29% of the population is ethnic Khmer, 5-6% is ethnic Chinese and a small Cham population). There is a possible risk that the minorities are excluded from consultation process and might have limited access to infrastructure. That can cause social conflict if no measure puts in place to manage risk	process of decision making - Identify how many percent of project beneficial is minorities - Involving the minorities in the consultation process especially gate keepers from minority communes and in the management of hard infrastructure constructed by projects or infrastructure existing in the region.
Involuntary Resettlement		Possible eviction arising from conflicts over land ownership	Tenure security is part of UN-Habitat's core mandate. In the event that resettlement is necessary to protect life in case of an urban area in high risk, the due process as laid out in national and international laws will be followed. UN-Habitat has a long experience in participatory planning in high risk area avoiding systematically involuntary resettlement
Protection of Natural Habitats		While damage to natural habitats and threats to biological diversity are unlikely, there is a possibility that construction work undertaken or reforestation measures may adversely impact on local biodiversity Mangrove reforestation is a good measure not only conserving the biodiversity loss due to aquaculture activities but also protecting community from soil erosion. However, there are potential risks: - The plantation areas are not suitable for mangrove - The planted mangrove species are not indigenous ones which might decrease the survivor rate of new planted.	Environmental Impact Assessment will be conducted and the damage will also be investigated at full project stage. Socio-economic and environmental Risk Mitigation plan will be developed at full project stage. - Community consultation and involvement in identifying the plantation areas and originated mangrove species - Community co-management mechanism is in place to ensure the survivor of new planted.
Conservation of Biological Diversity			
Climate Change	X	N/A	This project is inherently an adaptation project and as such no maladaptation is foreseen. The project will not provide or install infrastructure or appliances that result in increased emissions Solar power will be used as a part electric source to operate the water purification system which reducing cost and emission.
Pollution Prevention and Resource Efficiency		Construction of infrastructure generates waste There are potential chemical substances used in elastocoast materials can be released into the	Incorporating waste management and disposal into design. Strictly follow the handling procedure when mixing chemicals with gravels.

		water which might affect the aquatic and mangroves	Chemical residues must be collected and stored in safe places before transferring to hazard/chemical waste treatment facilities. The environmental effects of chemicals used in elastocoast are analyzed by BASF and ARCADIS[6], mentioning the compounds pose no threat to the aquaculture environment and the components are non-toxic and naturally degradable.
Public Health		The technology for water treatment system in this project is membrane processes. which is for removal of bacteria, microorganisms, particulates, and natural organic material, and inorganic contaminants from water. There is a low risk in term of human health effects due to contamination. However, the test for the effectiveness of RO in removing organic and non-organic materials have done in other places. Since there is potential risk of releasing chemical substance in Elastocoast.	No public health issues are foreseen, and improving public health is a secondary impact area of this project. - To mitigate the possible risk even though it is low, the test of effectiveness of water treatment system should be done at the project sites to show the evidence to local authorities who are in charge of local public health. - In order to mitigate the potential risks to public health, user guideline/procedure provided by supplier company should be followed and onsite environmental management plan is deployed during the construction phase.
Physical and Cultural Heritage	X	N/A	No physical or cultural heritage impacts are foreseen; however, this will have to be reviewed when the activities are being developed in more detail at full proposal stage.
Lands and Soil Conservation		The physical demarcation of areas at risk for limiting urban development will seek to protect risk areas and critical natural habitats from urban development Since project will not be able to cover all the vulnerable areas of soil erosion there is potential risk that the change of water dynamic and flow may affect other areas which are not protected by Elastocoast. (e.g. 136 households in Con Phung village – Long Hoa commune needs resettlements due to tide destroyed the shore of 69 shrimp ponds, and 650m of dyke is in risk of land erosion). Elastocoast will cover limited number of dykes.	Soil conservation will be enhanced through afforestation components as protective measures for land erosion control. - Careful calculation and anticipated impacts of Elastocoast intervention to find best place to introduce the intervention - Monitoring erosion rate of the upgraded area and the surrounding locations.

[6] ARCADIS (2010), Polyurethane Bonded Aggregate Revetments Design Manual, 23p

The environmental and social impact assessment will consider all activities proposed by the project, event those that, at this stage, are considered 'soft' activities and have been placed in risk level Category B or C.

PART III: IMPLEMENTATION ARRANGEMENTS

This following section will be completed at a later stage of the project

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government[7]

H.E Dr. Tran Hong Ha, Minister, Ministry of Natural Resources and Environment	Date: *2019 July 15th*

SOCIALIST REPUBLIC OF VIET NAM
MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT

Hanoi, 15. July 2019

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

Subject: Endorsement for the Concept Proposal on "Enhancing the resilience, inclusive and sustainable eco-human settlement development through small scale infrastructure interventions in the coastal regions of the Mekong Delta"

In my capacity as designated authority for the Adaptation Fund in the Socialist Republic of Vietnam, I confirm that the above national concept project proposal is in accordance with the government's priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the coastal region of the Mekong Delta, Socialist Republic of Vietnam.

Accordingly, I am pleased to endorse the above concept project proposal with support from the Adaptation Fund. If approved, the project will be implemented by United Nations Human Settlement Programme (UN-Habitat) and executed by Ministry of Natural Resources and Environment of Vietnam and national partners.

Yours sincerely,

Ký bởi: Bộ Tài nguyên và Môi trường
Email: btnmt@monre.gov.vn
Cơ quan: Bộ Tài nguyên và Môi trường
Ngày ký: 15.07.2019 10:50:08 +07:00

Dr. Tran Hong Ha
Minister of Natural Resources and Environment
Socialist Republic of Vietnam

Address: 10 Ton That Thuyet street, South Tu Liem district, Ha Noi, Viet Nam
Tel: +84 4 37956868, Fax: +84 4 38359221, E-mail: icd-monre@monre.gov.vn, Website: http://www.monre.gov.vn

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.

B. Implementing Entity certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans including Socio Economic Development Plan (2016-2020), National Climate Change Strategy, National Green Growth Strategy, National Action Plan on Climate Change for (2012-2020), National Action Plan on Green Growth and Resolution 120 for the development of the Mekong Delta, 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 this project/programme.
For. Pumgdong OIC. **Raf Tuts** Director, Programme Division UN-Habitat
Date: *Ju;y, 29, 2019* | Tel. and email: +254-20-762-3726 Raf.tuts@un.org
Project Contact Person: Laxman Perera, Human Settlements Officer, UN-Habitat Regional Office for Asia and the Pacific (ROAP)
Tel: +81-92-724-7121 Email: Laxman.Perera@un.org

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Annex1. Detailed Description for Technology in Component 3

Water Resource Management System

1. Site Description

1) Project sites

Water treatment system and rainwater harvesting system are expected to be applied in 2 communes, 6 project sites in Tra Vinh Province and 1 commune, 4 project sites in Bac Lieu Province. These sites are the most vulnerable area in terms of water quality and access to clean and fresh water.

2) Current status analysis

(1) Tra Vinh Province

The proposed target sites in two communes of Tra Vinh Province are indicated on the figure below, and overall current status of each sites are described in the following table.

Figure 1. Location of project site in Long Hoa Commune(Left) and Hoa Minh Commune(Right)

Location	Number of households	Households lacking access to clean water	Water Quality	Water consumption
1) Long Hoa Secondary School	2,547 households	2,182 households (85.67%)	TDS: 783 mg/L Turbidity:0.38NTU	3~4 ㎥/day
2) Truong Tieu Hoc Long Hoa			TDS: 669 mg/L Turbidity: 1.43NTU	3~4 ㎥/day
3) Truong Tieu Hoc Long Hoa A			TDS: 731 mg/L Turbidity: 4.54 NTU	3~4 ㎥/day
4) Truong Mam Non Long Hoa			TDS: 836 mg/L Turbidity: 13.8 NTU	3~4 ㎥/day
5) Truong Mau Giao	3,309 households	1,166 households (35.24%)	TDS: 1,240mg/L Turbidity: 1.33 NTU	2~3 ㎥/day
6) School Complex			TDS: 1,109 mg/L Turbidity: 2.18 NTU	2~3 ㎥/day

(2) Bac Lieu Province

The proposed target sites in Vinh Trach Dong Commune, Bac Lieu Province are indicated on the figure below, and overall current status of each sites are described in the following table.

Figure 2. Location of project site in Vinh Trach Dong Commune

Location	Number of Residents (households)	Households lacking access to clean water	Water Quality	Water consumption
7) Resettlement Area	3,185 households	1,564 households (49.10%)	TDS: 1,130 mg/L Turbidity: 2.95 NTU	-
8) Truong Tieu Hoc Ngo			TDS: 1,109 mg/L Turbidity: 2.57 NTU	4.3 ㎥/day
9) Troung Thcs Nguyen Hue			TDS: 1,129 mg/L Turbidity: 2.18 NTU	4.2 ㎥/day
10) Kindergarten (Troung Mau Vang Anh)			TDS: 1,129 mg/L Turbidity: 2.18 NTU	3.9 ㎥/day

2. Data collection

1) Quantitative data

- GIS spatial data: Shape file(shp) data informing geospatial features of the site. / Provided from data sharing platforms[8]
- Numerical map: Digital map containing various geospatial information such as topography and location of ground surface, water, underwater, buildings. / Purchased from the local government (DONRE) Digital information of various
- Precipitation data: Annual precipitation data. / Purchased from Vietnam Hydrological and Meteorological Administration (VHMA)
- TDS data: Amount of dissolved inorganic and organic substances in a liquid, which is used as an indicator for water quality. / Measured in project site by project technical team
- Other information from local government: Information on water-related facilities including treatment capacity, process, operation budget, power consumption, number of supplied households, water price, etc. needed for installation of technology

2) Qualitative data

(1) Consultation with local government

The following ideas were discussed during the meetings with the local government (DONRE of Tra Vinh and Bac Lieu)

- The current circumstances for saltwater intrusion and damages toward local people were discussed along with the lack of countermeasures to cope with the saltwater intrusion.
- The information about water usage and sources, particularly for the drinking water of local people was addressed from the local government.
- For the implementation and monitoring process including the technical transfer and maintenance issues, the related agencies were mentioned for the future involvement considering the authorization process for the installation of facilities.

[8] https://data.opendevelopmentmekong.net/, http://www.gfd.com.vn/

(2) Information from field visit

The information regarding the current management of water treatment facilities and other related issues were discussed including the awareness of local people for the water quality

3. Technology

1) Rainwater harvesting system (RWH)

(1) Background

Rainwater harvesting (RWH) is defined as a method for inducing, collecting, storing and conserving the rainwater for reuse on-site rather than allowing it to run off. By using rainwater one can increase water availability and reduce water demand from the water supply network, can mitigate urban flooding and can improve the quality of groundwater. Also RWH helps to reduce the fluctuation of water supply between rainy season and dry season by enabling the community people to effectively store rainwater.

Commonly used RWH constitutes of catchments, transportation, first flush and storage facility. The catchment area is the area where the rainfall or water runoff is initially captured and the technology adopted in this project will use roof-top of a house as a catchment area.

In the roof-top method, water from rainfall is collected in vessels at the edge of the roof or channeled to a storage system via gutters and pipes. Tiled roofs, or roofs sheeted with corrugated mild steel are preferable, since they are the easiest to construct and give the cleanest water. Roof-top collection is suitable for household or school level application and can provide freshwater for domestic purposes and small-scale farming.

(2) Design

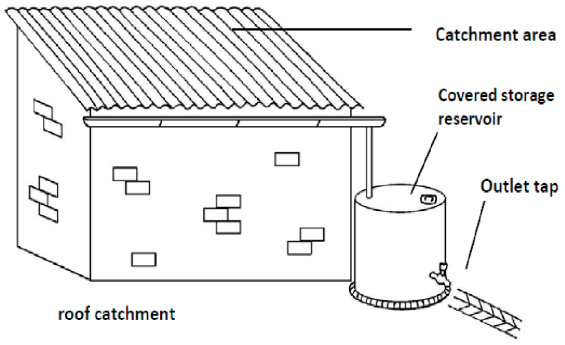


Figure 3. Design of roof-top rainwater harvesting

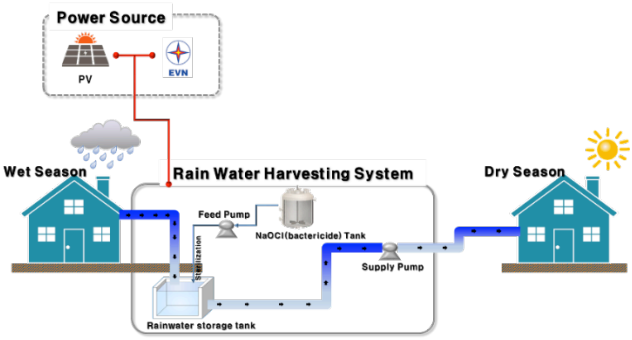


Figure 4. Mechanism of rain water harvesting system

2) Water Treatment System

(1) Background

A membrane is a thin layer of semi-permeable material that separates substances when a driving force is applied across the membrane. Membrane processes are increasingly used for removal of bacteria, microorganisms, particulates, and natural organic material, which can impart color, tastes, and odors to water and react with disinfectants to form disinfection byproducts. The membrane system, which is going to be applied for this project mainly focuses on produce fresh water from salt water of the ocean or brackish water, and can effectively remove all inorganic contaminants from water as shown below.

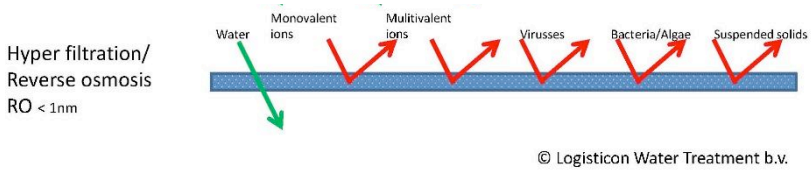


Figure 5. Reverse Osmosis Membrane Technique

(2) Design

Water treatment is consisted of intake pump, storage tank, cartridge filter, and membrane unit. The electricity power needed for the operation of the system will be partially mobilized from photovoltaic (solar) and grid which make the system both environmentally and economically sustainable. The mechanism of the technology is described specifically below.

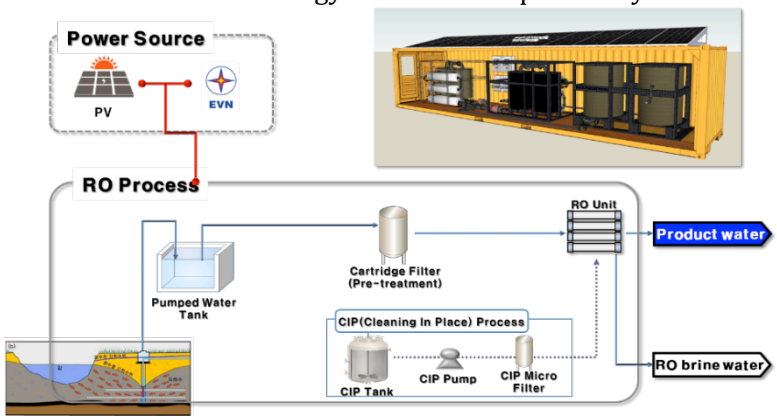


Figure 6. Mechanism of the water treatment system

3) Adopted Technologies and details by location

Province	Commune	Location	Water Source	Technology Type	Capacity
Bac Lieu	Vinh Trach Dong	Truong Tieu Hoc Ngo	Rain water	Rainwater harvesting system	4.3 m³/day
		Troung Thcs Nguyen Hue			4.2 m³/day
		Kindergarten (Troung Mau Vang Anh)			3.9 m³/day
		Resettlement Area	Ground Water	Water treatment system	22.7 m³/day
Tra Vinh	Long Hoa	Long Hoa Secondary School	Ground Water	Water treatment system	15 m³/day
		Truong Tieu Hoc Long Hoa			15 m³/day
		Truong Tieu Hoc Long Hoa A			9.4 m³/day
		Truong Mam Non Long Hoa			9.4 m³/day
	Hoa Minh	Truong Mau Giao			22.7 m³/day
		School Complex			11.2 m³/day

4. Budget & Beneficiaries

1) Beneficiaries

Total estimated beneficiaries from water treatment system would be 10,148 people.

Key beneficiaries would include:

Province / Commune	Site	Direct Beneficiaries	Indirect Beneficiaries	Description & Rationale
Tra Vinh Long Hoa	Long Hoa Secondary School	1,496 people	2,182 households	Beneficiaries will be provided with clean fresh water for their drinking and domestic use.
Tra Vinh Long Hoa	Truong Tieu Hoc Long Hoa			
Tra Vinh Long Hoa	Truong Tieu Hoc Long Hoa A	944 people		
Tra Vinh Long Hoa	Truong Mam Non Long Hoa			
Tra Vinh Hoa Minh	Truong Mau Giao	2,252 people	1,166 households	
Tra Vinh Hoa Minh	School Complex	1,120 people		
Bac Lieu Vinh Trach Dong	Truong Tieu Hoc Ngo	842 people	1,564 households	
Bac Lieu Vinh Trach Dong	Troung Thcs Nguyen Hue	551 people		
Bac Lieu Vinh Trach Dong	Kindergarten (Troung Mau Vang Anh)	279 people		

Bac Lieu Vinh Trach Dong	Resettlement Area (Huu nghi)	2,664 people		

*Direct beneficiaries: Residents living within 1 km radius

*Indirect beneficiaries: Households lacking access to clean water

Beneficiaries is shown in following figures

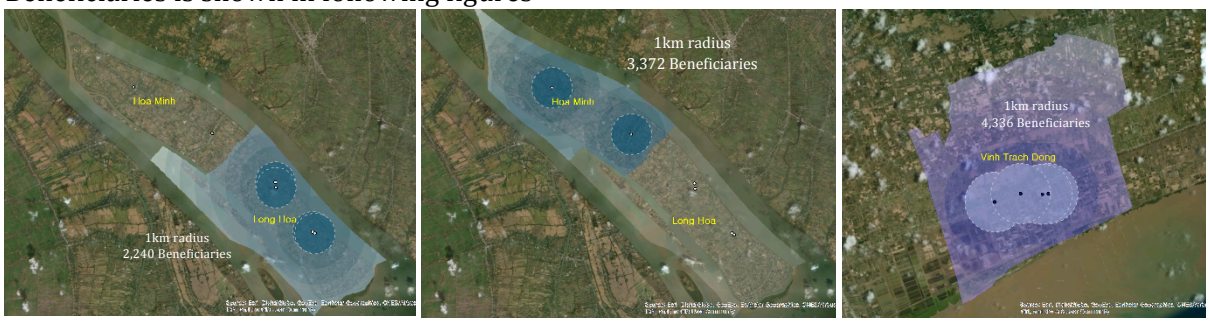


Figure 7. Beneficiaries mapping for each commune

2) Budget

The estimated cost for the water purification facility would be as follows:

(1) Water Treatment System

Commune	Long Hoa Commune		Hoa Minh Commune		Vin Trach Dong
Location	Long Hoa secondary school	Truong Tieu Hoc Long Hoa A	Tuong Mau Giao	School Complex	Resettlement Area (Huu Nghi)
Civil-engineering/ Construction work	14,783	14,783	26,087	26,087	26,087
Membrane System	126,957	124,348	203,478	158,261	203,478
Photovoltaics	14,348	8,609	28,696	14,348	28,696
Transportation	12,696	12,435	20,348	15,826	20,348
Intake	17,391	17,391	17,391	17,391	17,391
18L Auto capper	17,391	17,391	17,391	17,391	17,391
Kiosk	13,913	13,913	13,913	20,870	13,913
Installation construction	25,391	24,870	40,696	31,652	40,696
Commissioning	15,652	15,652	15,652	15,652	15,652
Sub Total 1(USD) - by Location	258,522	249,391	383,652	317,478	383,652
Sub Total 2 (USD) - by commune		507,913		701,130	383,652
Total (USD)					**1,592,696**

(2) Rainwater Harvesting System

Commune	Vin Trach Dong		
Location	Kindergarten (Troung Mau Vang Anh)	Truong Tieu Hoc Ngo	Troung Thcs Nguyen Hue
Rian water storage tank	156,522	156,522	130,435
Sterilization system	5,217	5,217	5,217
Photovoltaics	4,348	4,348	4,348
Transportation	913	913	913
Roof improvement work	10,435	10,435	10,435
Initial rain water treatment device	13,043	13,043	13,043
Rainwater collecting piping	15,217	15,217	15,217
Installation construction	31,304	31,304	26,087
Commissioning	5,217	5,217	5,217
Sub Total 1(USD) - by Location	242,217	242,217	210,913
Sub Total 2 (USD) - by commune			695,348

Total (USD)	695,348

(3) Total

Water Treatment System (USD)	1,592,696
Rainwater Harvesting System (USD)	695,348
Grand Total (USD)	**2,288,044**

5. Implementation

1) Risks & Safeguard Issues

The possible risks and safeguard issues are described in Section K, and the details will be elaborated in the full-size project proposal.

2) Community Engagement

The People's Process of UN-Habitat will be adopted through the implementation to bring the successful community engagement. In the installation process for the facilities, the local labor is expected to be involved, and the monitoring system will be operated in the commune level which leads to overall community participation in the project.

Coastal Erosion Preventive System

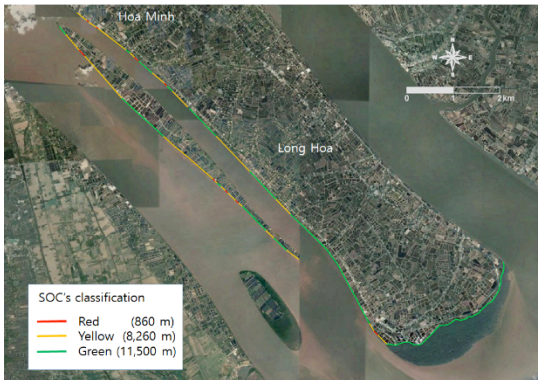
1. Site description

1) Project site

The protective technology, elastocoast is expected to be applied in the coastal areas in Long Hoa and Hoa Minh Commune. The communes are located in the estuaries of Mekong Delta where the coastlines are prone to continuous soil erosions. The proposed target area is indicated on the beside figure, on which the technology will be implemented and benefit the two communes.

2) Current Status

The status of coast (SOC) in the target area is analyzed with the vulnerability criteria, which is assessed in three levels. The SOC of the project site is depicted in the beside figure, and the most vulnerable areas are indicated with red color. Those zones are the eroded coastlines directly exposed to the sea due to severe damages of soil and mangrove forests, which need immediate protective measures.



2. Data collection

1) Quantitative data

- GIS spatial data: Shapefile(shp) data provided from data sharing platforms[9]
- Numerical map: Digital data purchased from the local government (DONRE)

2) Qualitative data

- Consultation with local government: the following ideas were discussed during the consultations with the local government (DONRE of Tra Vinh)

[9] https://data.opendevelopmentmekong.net/, http://www.gfd.com.vn/

1) There were discussions on project cover area and the timeline for the project implementation referring to the similar previous projects. In particular, the local government noted on the cost-effectiveness issue for the project.
2) The Director General of DONRE suggested planting the mangrove trees with other comprehensive approaches.
3) There were other discussions on the prevention of project overlapping and licensing procedures for constructions.
- Visual Materials: Videos and photos taken during the field mission to figure out the spots impacted by coastal erosions.
- Information from field visit: Discussions with the Chairpersons of each commune and local residents on the circumstances regarding the coastal erosions.

3. Technology

1) Design

- The general designs for the elastocoast[10] (also referred to as bio-coast) is depicted in the below figure 1.1. As shown in the figure, elastocoast (porous-coast) will be applied on the shore area which would be the between the mangrove trees and the land. The section design is described in the figure 1.2 which shows the structure of layers for the elastocoast.

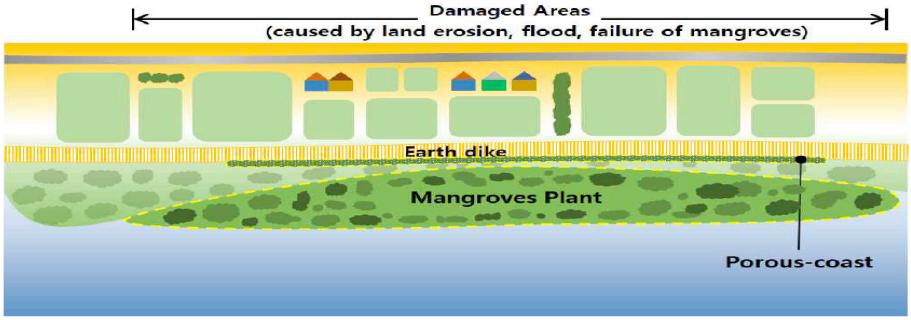


Figure 8. Thematic design for the technology implementation

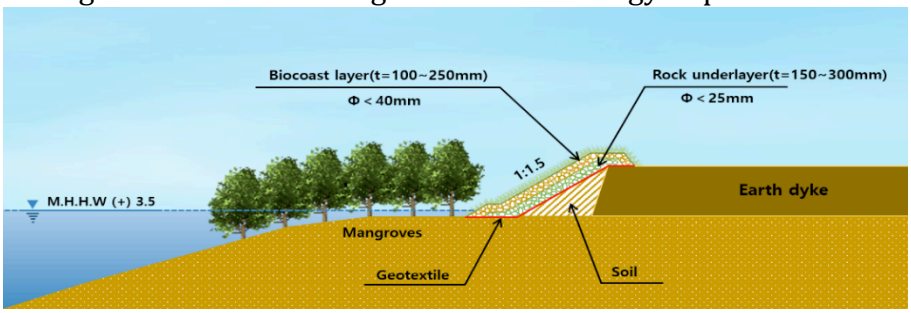


Figure 9. Section design for the elastocoast

2) Description

There are 9 expected locations for the technologies to be applied, which are selected under the criteria of vulnerabilities for coastal erosions. The detailed information on protection technologies applied in each specific location are described in the following table. The total area for the mangrove plantation would be 8,240 ㎡, 540m for the length of Elastocoast, and 860m for the total protected coastline of the island.

Zone	Coastal Protection Facility Plan		Protected Coastline (m)
	Mangrove Plant area (㎡)	Elastocoast length (m)	
SOC-R01	870	80	80
SOC-R02	600	60	60
SOC-R03	980	-	80

[10] Elastocoast is mentioned in the UNFCCC as the new technology for climate change adaptation which protects the dikes by absorbing the force of the breaking waves and slowing down the water masses.

SOC-R04	400	-	50
SOC-R05	1,550	150	150
SOC-R06	500	-	70
SOC-R07	670	-	60
SOC-R08	780	-	60
SOC-R09	1,890	250	250
SUM	8,240	540	860

3) Installation Process

The process for the installation of the elastocoast would be as follows:

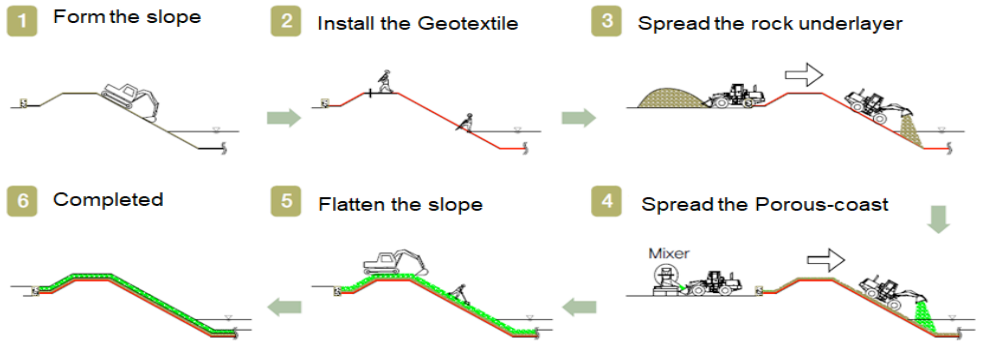


Figure 10. Description for the installation process of elastocoast

4. Budget & Beneficiary

1) The estimated budget:

Description	Cost (USD)	Estimation Rationale	Notes
Elastocoast	810,400	Total Length: 540 m	The cost for the design covers the topographic survey
Mangrove (Red)	6,100	Total Area: 8,240 ㎡	
Mangrove (Yellow)	20,000	Total Area: 80,000 ㎡	
Construction	81,000	10% of the construction cost	
Design	68,700	7.65% of the construction cost	
Construction Supervision	84,000	14,000 USD per month / person	
TOTAL			1,070,200 USD

2) Beneficiaries include:

The whole population of two communes in Tra Vinh, 25,199 people would be regarded as the beneficiaries of the elastocoast facilities, in that the protection of coastal areas of the island will provide the safe human settlements for local people in the long-term period. Furthermore, the locals living adjacent to the coastal line of the island would be the expected direct beneficiaries considering the vulnerability of their residential area due to the constant erosions of soil.

Protected Area	Estimated Quantity	Descriptions & Rationale
Protected coastline length (m): Red line	860 m	Total length of coastline protected by the preventive technologies including the mangrove plantation
Mangrove plantation protected area (ha); Yellow line	8 ha	Total estimated area will have Mangrove restoration
Protected aquaculture pond area (㎡)	61,490 ㎡	Total estimated area of local aquaculture pond protected through the technology applied in the coastlines

3) Environmental & Socio-Economic Benefits

The protective technology would have benefits in both environmental and socio-economic perspectives. By applying the technology and preventing the erosions of coastlines, the ecosystem will be protected and recovered, considering the elastocoast allows the plants to grow on the site.

Furthermore, this will provide the safe and sustainable environment for economic activities that are practiced along the coastlines of local area, which would also let people live in secured living environment.

5. Implementation

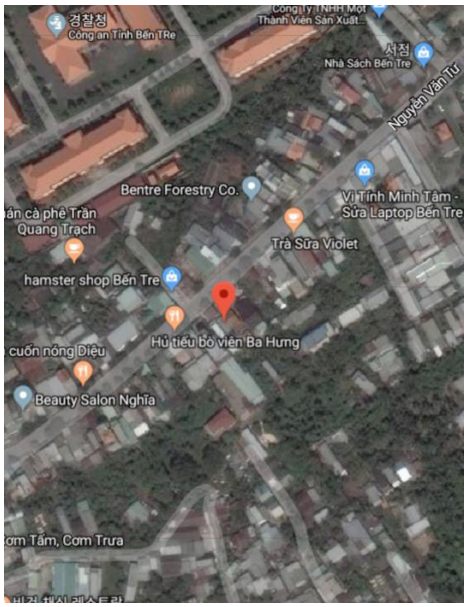
1) Risks & Safeguard Issues

The possible risks and safeguard issues are described in Section K, and the details will be elaborated in the full-size project proposal.

2) Community Engagement

In the overall process of implementation, the People's Process of UN-Habitat will be adopted to achieve successful community engagement. Referring to the discussion with the DONRE, mangrove planting is being practiced through local people along with the seedlings and labor costs provided from the local government. Also, the monitoring system in the commune level has been identified and harnessing the system would lead to community participation. In addition, the project can take the advantage of the national event for the tree planting which can promote the mangrove planting in local areas.

Annex_2 Willing to pay study: Case Study of Ben Tre (DANIDA Project)



Water purification facility of Nguyễn Văn Tư (Address: 31d Nguyễn Văn Tư, Phường 7, Bến Tre)

The project implemented by DANIDA (Danish International development agency) installed the RO (Reverse Osmosis) filter for the purification to provide the clean water in the Mekong Delta. The project was completed at the end of 2017 and the project cost was about 220,000 USD. The capacity of the facility is 8m3/hr, 200tons/day. The power is provided from the solar system with retrofitting the existing water treatment plant. 17 PV panels expected 13kW and the installed main pump capacity 12kW.