



## ADAPTATION FUND

# PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

## PART 1: PROJECT/PROGRAMME INFORMATION

Project/Programme Category	Regular
Country/ies:	<b>Sri Lanka</b>
Title of Project/Programme:	Build resilience to climate change and climate variability of vulnerable communities in Mullaitivu District of Sri Lanka
Type of Implementing Entity:	<b>Multilateral (International Organisation)</b>
Implementing Entity:	<b>United Nations Human Settlements Programme (UN-Habitat)</b>
Executing Entity/ies:	<p><b>National level</b> Ministry of Environment</p> <p><b>Local level</b> District Secretariat Central Environment Authority and Disaster Management Centre at District level Department of Agrarian Development Department of Fisheries and Aquatic Resources at District level National Building Research Organisation at District level Disaster Management Centre at District level</p> <p><b>Community level</b> Selected NGO(s) Community Based Organisations and citizen/women groups in target communities Grama Niladhari</p>
Amount of Financing Requested:	<b>USD 2,000,000</b>

### Project Summary:

- To improve climate related socio-economic outcomes in the targeted fishing and agricultural communities through the implementation of community-based adaptation solutions.
- To support climate resilient development and increase institutional and community capacity to adapt to the changing and variable climate.

This project is organised under two strategic components:

1. Developing resilient, adaptive livelihoods in the three (3) selected Divisional Secretariat (DS) Divisions in Mullaitivu District, and,
2. Address capacity needs and gaps in adaptation measures that can reduce vulnerability to climate change and increase coping capacity.

Components		Budget (USD)
Component 1	Developing resilient, adaptive livelihoods in the three (3) selected Divisional Secretariat (DS) Divisions in Mullaitivu District.	1,468,206
Component 2	Addressing capacity needs and gaps in adaptation measures that can reduce vulnerability to climate change and increase coping capacity.	200,000

## Project/Programme Background and Context:

### Geography of Sri Lanka and Mullaitivu District

Sri Lanka is an island located at the tip of Indian subcontinent. There is no landmass located between the southern tip of Sri Lanka and the Antarctic. The island covers a total area of 65,610km<sup>2</sup> of land area including 2,905km<sup>2</sup> of inland water bodies. Maximum width from east-to-west is 240km and length in north-south direction is 435km. Located between 5055' to 9050 North and 79042' to 81053' East, the island has a humid tropical climate. Extensive faulting and erosion over time have produced a wide range of topographic features with three distinguishable elevation zones within the island: the central highlands, the plains, and the coastal belt. All major perennial rivers originate in the highlands spreading in a cartwheel fashion from the centre towards the coast. Most of the island's surface consists of plains located between 30 and 200m above mean sea level. The coastal belt around the country extending up to about 30m above mean sea level consists of scenic sandy beaches indented by bays and lagoons with 1,600km long coastal stretch, with roughly 30% of the estimated population of over 22 million living in coastal areas.

Mullaitivu District is one of the newly created Districts in Sri Lanka in 1979 which is located on the eastern side of the Northern Province of Sri Lanka and is covered by Kilinochchi, Mannar, Trincomalee and Vavuniya Districts with the sea bordering the East. It covers land area approximately 2,516.9km<sup>2</sup> (including forest area excluding large inland water). It is located approximately 340km northeast of Colombo This District and accounts for 3.8% of the country's total area. The Mullaitivu District has five (5) Divisional Secretariat (DS) Divisions, Manthai East, Maritimepattu, Oddusuddan, Puthukkudiyiruppu, Thunukkai and Welioya with 70km of coastal belt and four (4) lagoons namely Kokkulai, Nayaru, Nanthikadal and Mathalan. There are 127 Grama Niladari (GN) Divisions and 624 villages.

Approximately 64.1% of the total land area in the Mullaitivu District consists of forest, agriculture covers nearly 16.9%, range land accounts for 5.2% another 8.7% constitutes of water and homestead and build-up land accounts for 5.1%.

### National climate change scenarios

Due to a combination of political, geographic, and social factors, Sri Lanka is recognised as vulnerable to climate change impacts, ranked 100th out of 181 countries in the 2017 ND-GAIN Index.<sup>1</sup> Empirical studies have shown that 96% of the disasters in Sri Lanka are caused by climate, such as flooding, droughts, landslides and extreme winds and is considered as a country with high climate risk (Figure 1). According to the Global Climate Risk Index, 2018, Sri Lanka was ranked the second most climate change affected country in 2017.<sup>2</sup>

Empirical studies have shown that extreme heat threatens human health and living standards, particularly for outdoor labourers in urban areas without adequate cooling systems; this will particularly impact communities in Sri Lanka's Northern region. In addition, there is also potential for adverse implications to Sri Lanka's large tourism sector. Temperature rise is likely to put downward pressure on agricultural yields, including key staples such as rice, and may impact negatively on national and household food security.<sup>3</sup> The current rate of sea level rise in coastal areas of Asia is reported to be 1-3 mm/year which is marginally higher than the global average. However, the specific rate of rise in seas immediately surrounding Sri Lanka is not known.<sup>1</sup>

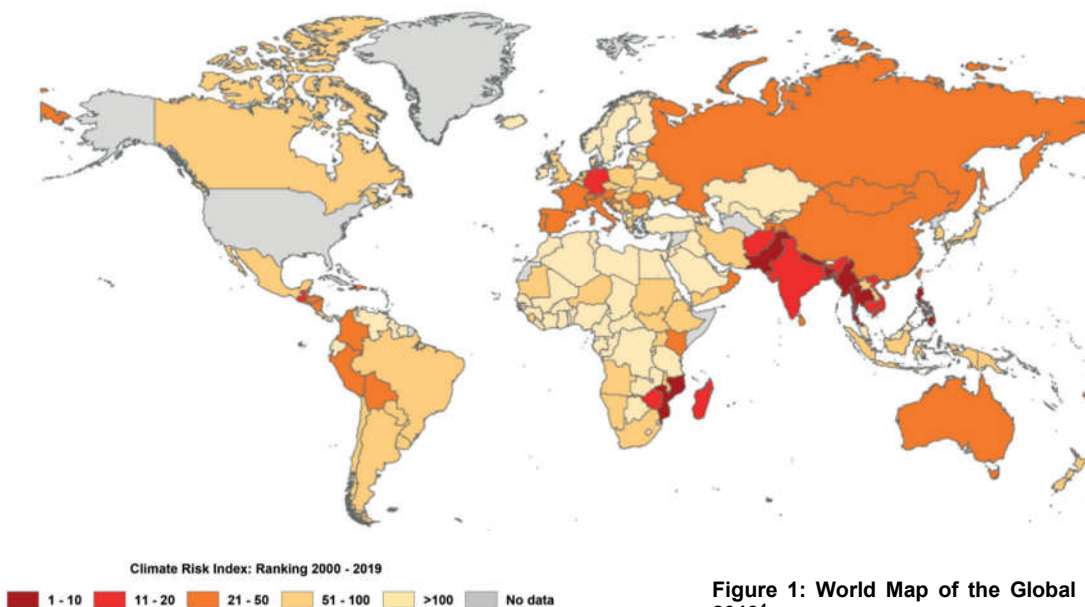


Figure 1: World Map of the Global Climate Risk Index 2000 – 2019<sup>4</sup>

<sup>1</sup> World Bank Group and Asian Development Bank (2020). Climate Risk Country Profile: Sri Lanka. <https://www.adb.org/publications/climate-risk-country-profile-sri-lanka>

<sup>2</sup> Germanwatch (2018). Global Climate Risk Index 2018: Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2018.

<sup>3</sup> Ibid

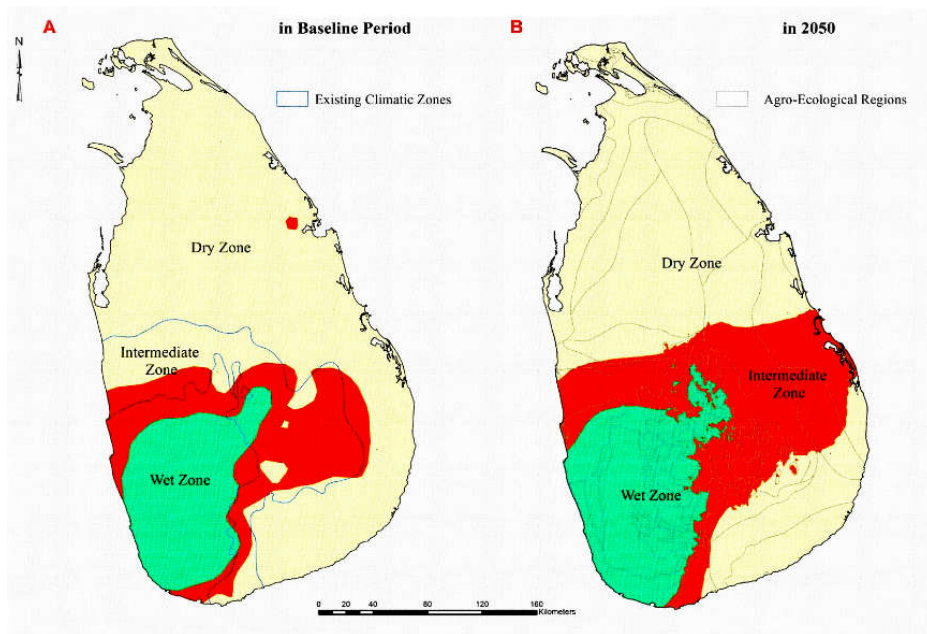
<sup>4</sup> Ibid

The World Bank Group and the Asian Development Bank (2020) emphasise that without adaptive action, the projected increase in the frequency and intensity of extreme precipitation events may put lives, livelihoods, and infrastructure at risk through their link with riverine flooding, flash floods, and landslides. Moreover, increased incidence of flooding experienced by Sri Lanka also brings the potential for enhanced disease transmission, an area demanding further research and disaster risk reduction efforts. Projected changes are expected to impact on Sri Lanka's poorest and most marginalised communities most strongly, exacerbating poverty and inequality.<sup>5</sup> Estate, rural and urban settlements will have to confront and adapt to these extreme events and the associated physical risks as such extreme weather events induced by changes in climate will certainly alter livelihoods further.

**Current climate in Mullaitivu District**

The Northern Province of Sri Lanka is considered a significant climate vulnerable region of Sri Lanka<sup>6</sup> and Mullaitivu District is one of the five administrative districts of the Northern Province. Mullaitivu District belongs to the Dry Zone (Figure 2) which has four (4) agro-ecological regions and falls under the Dry Zone with bimodal rainfall pattern. Average annual rainfall varies from 1300mm to 2416mm. Temperature range from 23.0°C to 39.30°C. During Northeast Monsoon from early October to January get high rainfall leading to floods and annual temperature is low during this period. Meteorological conditions such as rainfall, temperature, wind and sunshine have changed considerably in their intensity, term and duration over recent decades. With the changed weather patterns, the intensity of natural hazards such as floods, cyclones and droughts have risen also increasing the vulnerability.

Mullaitivu District regularly experiences droughts, floods, strong winds and lightning and being a coastal area is open to the threat of coastal hazards. The salinity of water is increased during the drought period with inundations, saltwater intrusion, resulting in lack of drinking water and water for agriculture, pollution of waterways, wells, decreasing agricultural crop yields, seasonal increases in waterborne diseases and increased soil erosion from heavy rainfall events. These have caused significant loss to property on a number of occasions over several years.



**Figure 2: Changes in climatic zones boundaries of Sri Lanka<sup>7</sup>**

The Mullaitivu District experiences inundation, coastal erosion and degradation of shorelines, salinisation of estuaries and freshwater aquifers, and changes to and migration of coastal ecosystems and habitats. During the monsoon rains, significant parts of the Mullaitivu gets inundated, and conversely, dries up during the dry period (Figure 3) and also experiences saltwater intrusion that increases salinity levels in lagoons affects marine fish breeding grounds and habitats, resulting in reduced quantity and quality of catch and adverse impacts on fisheries livelihoods. Warnings are issued to Mullaitivu District during the Northeast Monsoon Season (NEMS) -- December, January and February and Second Inter Monsoon Season (SIMS) -- October and November to avoid the severe impacts due to flood occurrences.<sup>8</sup> Mullaitivu District is considered as one of the districts with a very high vulnerability to climate change and is adversely affected by recurrent disasters, particularly the annual monsoons (Figure 4).

According to UNDRR, Sri Lanka is highly vulnerable to climate change due to its low elevation and high dependence on the ecological systems<sup>9</sup> and agriculture sector is expected to suffer the highest costs, especially in districts such as Anuradhapura, Jaffna and Mullaitivu in which communities rely on farming activities.<sup>10</sup>

<sup>5</sup> Germanwatch (2018). Global Climate Risk Index 2018: Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2018.  
<sup>6</sup> UN-Habitat (2015). *Mullaitivu. Disaster Risk Reduction and Preparedness Plan: Towards a Sustainable and Resilient City*. UN-Habitat, Sri Lanka.  
<sup>7</sup> Manthirithilake, H. (2010). *Environmental Change and Water Security*. Workshop on "Future Earth" Colombo, 18<sup>th</sup> September 2013.  
<sup>8</sup> Nagamuthu, P. and Kandiah, R. (2015). Occurrences of Flood Hazards in the Northern Region of Sri Lanka. *South Asia Journal of South Asian Studies* 3 (3)2015:363-376.  
<sup>9</sup> UNDRR (2019). *Disaster Risk Reduction in Sri Lanka: Status Report 2019*. Bangkok, Thailand, United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific.  
<sup>10</sup> Wickramasinghe, K. (2019). *Talking Economics. Linking Disaster Risk Management into Economic Policy Planning in Sri Lanka*, 13 March.

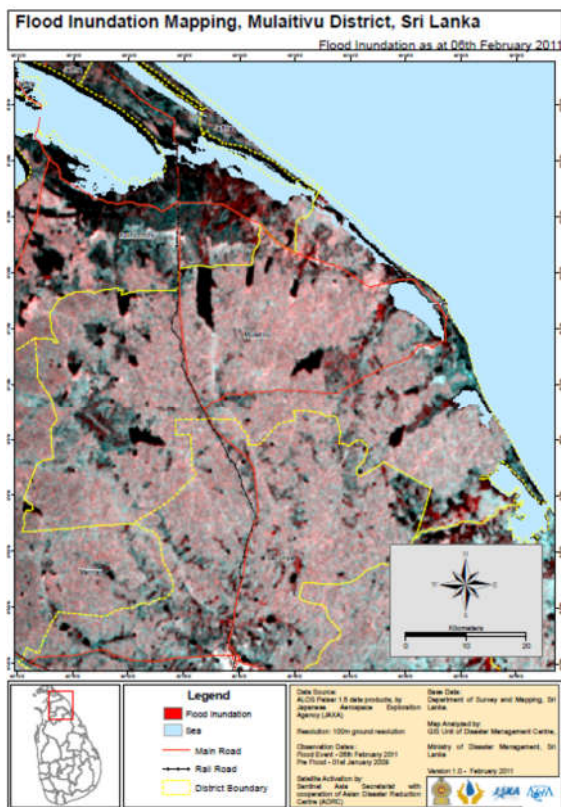


Figure 3: Inundation Map, Mullaitivu District<sup>11</sup>

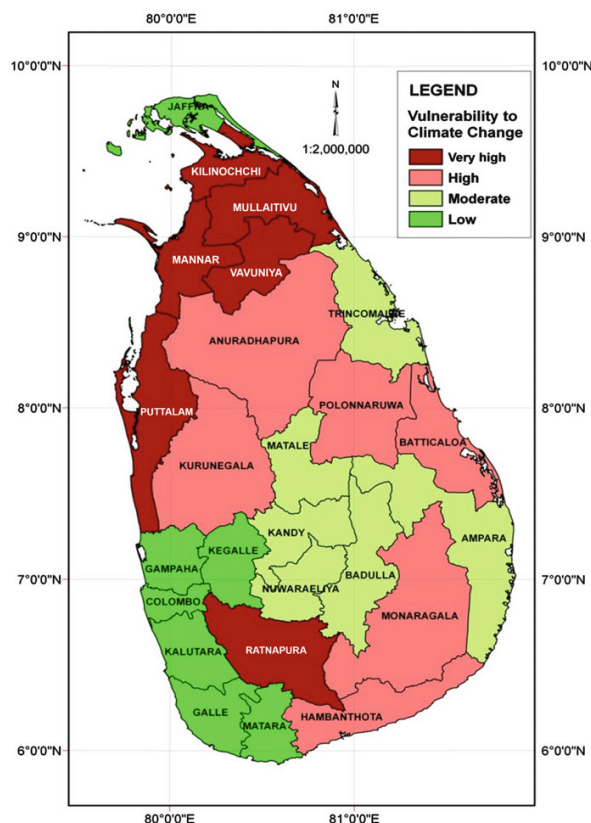


Figure 4: Vulnerability to climate change<sup>12</sup>

### Socioeconomic context of Mullaitivu District

In 2012 the Mullaitivu District had a population of 92,238<sup>13</sup> with 46,036 male and 46,202 female population. This accounts for 0.454% of the total population in the country. Population density in the District is 36.65 per km<sup>2</sup> and land human ratio is 2.73ha per person (2012).<sup>14</sup> Mullaitivu District has the lowest population density and the highest land human ratio compared to the other Districts of the country. The highest population density (above 45km<sup>2</sup>) reported in Puthukkudiyiruppu DS Division and the lowest population density (Below 14km<sup>2</sup>) reported in Manthai East DS Division.<sup>15</sup>

In the Mullaitivu District (based on statistics of 2014) economically active group (labour force) age 15 - 59 about 67% (83,852) and economically inactive person is age below 15 and above 60 is about 33% (41,328). Among this group 25.5% (31,927) are children under 15 years.<sup>16</sup> The poverty headcount in Mullaitivu District in 2016 was 28.8% and poor households were 24.7% the highest in the Northern Province.<sup>17</sup>

Due to the internal conflict, there has been an increase in widows and women-headed households. There is some qualitative and anecdotal research that suggests that there is an increased incidence of complex mental health and psychosocial problems amongst women who are the head of their house. There is a dearth of information on the number of on the prevalence of disability despite a presumed dramatic rise post-war as a result of injury. The examination of 26,847 households in Mullaitivu District revealed that 3,827 (14%) had at least a single person with disability.<sup>18</sup>

Majority of the population is engaged in agriculture sector which includes livestock and fisheries, other occupations are in the industrial activities, employment in the government sector and private establishments. Therefore, the economy of the District mainly depends on agriculture and fishing. Livestock and forestry play a supplementary role in the economic activities. Nearly 23,680 and 4,850 families are engaged in agriculture and fisheries sector respectively. The District has total ha 16,499.3 of suitable land to

<sup>11</sup> Disaster Management Centre, 2019.

<sup>12</sup> Punyawardena, R., Dissanaike, T. and Mallawatantri, A. (2018). Spatial variation of climate change induced vulnerability in Sri Lanka An analysis of the components of vulnerability at district level.

<sup>13</sup> DCS (2012). Statistical Handbook. Census of Population & Housing, 2011. Department of Census & Statistics, Sri Lanka.

<sup>14</sup> Ibid

<sup>15</sup> Ministry of Lands (2016). LAND USE PLAN MULLAITIVU DISTRICT. Implementations of the Recommendations given by the Lessons Learnt and Reconciliation Commission (LLRC). Land Use Policy Planning Department, Ministry of Land, Sri Lanka.

<sup>16</sup> Ibid

<sup>17</sup> World Bank (2018). Shadows of Conflict in Northern and Eastern Sri Lanka Socioeconomic Challenges and a Way Forward. World Bank Group, Washington DC.

<sup>18</sup> Ministry of Health, Indigenous Medicine and Probation & Childcare Services, Northern Province, Sri Lanka (2016). Preliminary Identification Survey for Disabilities & Women Vulnerabilities in Northern Province. Department of Foreign Affairs and Trade (Government of Australia) and the Asia Foundation.

undertake the paddy cultivation (Irrigation by major tanks – 7,993.9 ha; minor tanks – 4,337 ha; and rainfed – 4,167.9 ha). Three (3) major tanks and 17 medium tanks feed the paddy lands. In addition, there are 228 small tanks used for irrigation.<sup>19</sup>

The coastal belt and the 4 (four) lagoons in the Mullaitivu District are extremely suitable for further developing the fisheries sector. These lagoons are famous for crab and prawn cultivation. There is potential to develop inland fishing in the major tanks. Fishing sector takes an important place in generating employment opportunities and income facilities to a considerable number of families in the Mullaitivu District. According to the District Secretariat, currently, deep-sea fishing is not allowed by concerned authorities.<sup>20</sup>

#### **Land use pattern in Mullaitivu District**

This District consists of forest land, lands with shrubs, coconut plantation, other agriculture land and water bodies etc. Total land area (including forest area and excluding large inland water bodies) is 251,690 hectares. Approximately 167,850 hectares which is 64.1% of the total land area consists of forest, agriculture covers nearly 44,040 hectares (16.9%), range land accounts for 13,650 hectares (5.2%) another 26,150 hectares constitutes of water and homestead and build up land accounts for 5.1%.<sup>21</sup>

Six (6) major land issues in Mullaitivu District have been identified by the Ministry of Land, (a) Presence of “additional areas that need to be protected”; (b) Presence of low productivity agricultural lands; (c) Presence of low productivity home gardens; (d) Presence of abandoned settlements; (e) Presence of abandoned settlements; and (f) Presence of unutilised land.<sup>22</sup>

#### **Climate Change impacts in Mullaitivu District**

These impacts include rising temperatures, which are expected to hit Sri Lanka’s most important sectors, like tourism, commercial agriculture, and manufacturing, the hardest. On top of this, increased incidence of disease transmission and natural disasters will make the country vulnerable to unexpected catastrophes. The National Adaptation Plan for Climate Change Impacts in Sri Lanka (2015 – 2025) has identified nine (9) key vulnerability sectors, namely, food security, water, coastal sector, health, human settlements, biodiversity, tourism and recreation, export development and industry- energy-transportation.<sup>23</sup>

#### **Food security (Agriculture and fisheries)**

As temperatures rise, and extreme weather events become more frequent and more severe, vulnerable communities in Mullaitivu District are struggling to cope. Communities have adapted to natural ‘climate variability’ over centuries, however, the rapid changes in climate and extreme events are beyond their coping capacity. Agriculture sector, including fisheries and aquaculture is one of the sectors most vulnerable to climate change, a thorough understanding of its impact is critical in formulating informed and effective adaptation strategies. Empirical studies have shown that the rise in extreme weather conditions have found to increase prolonged droughts and flash floods and these changes have directly and indirectly have affected the agriculture sector in Sri Lanka, thus imposing barriers to economic growth and national food security.<sup>24</sup> The impacts of climate change on the agriculture sector in Mullaitivu District are diverse and severe. Climate change impacts and vulnerabilities vary by regions as the country is very diverse in its agro-ecology.<sup>25</sup> However, it has been alarmed that, already dry regions such as Northern (where Mullaitivu District belongs to), and Eastern Provinces are expected to lose large portions of their agriculture with predicted future warming trends.<sup>26</sup>

Increasing rainfall variability and increasing heavy intense rains (>25 mm h<sup>-1</sup>) will wash away the fertile topsoil in the arable lands.<sup>27</sup> Meanwhile, increasing temperatures could deplete soil organic matter, thus lead to soil fertility degradation and loss of production potential of soils especially in districts like Mullaitivu which are in the Dry Zone of Sri Lanka. Tropical smallholdings are already suffered by low soil fertility, top-soil erosion, sub-optimal crop management and subsistence farming conditions<sup>28</sup> where farmers indiscriminately use synthetic agro-chemicals as a strategy to maintain productivity.<sup>29</sup>

As observed, temperature and water availability affected by climate change remain key factors in determining crop growth and productivity leading to reduced crop yields. Climate-induced changes in insect pest, pathogen and weed population dynamics and invasive have compound such effects, affecting food supply, altering social and economic stability of the communities. Adaptation is considered a key factor that will shape the future severity of climate change impacts on food production.

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<sup>19</sup> Annual Performance Report (2019). District Secretariat, Mullaitivu District.

<sup>20</sup> Ibid

<sup>21</sup> Ibid

<sup>22</sup> Ministry of Lands (2016). LAND USE PLAN MULLAITIVU DISTRICT. Implementations of the Recommendations given by the Lessons Learnt and Reconciliation Commission (LLRC). Land Use Policy Planning Department, Ministry of Land, Sri Lanka.

<sup>23</sup> Ministry of Mahaweli Development and Environment (2015). National Adaptation Plan for Climate Change Impacts in Sri Lanka. Climate Change Secretariat/Ministry of Mahaweli Development and Environment, Sri Lanka.

<sup>24</sup> Easwaran, R. Climate Change Impacts and Adaptation in the Agriculture Sector of Sri Lanka: What We Learnt and Way Forward. Handbook of Climate Change Communication: Vol. 2 pp 97-110.

<sup>25</sup> Punyawardena B.V.R., Dissanayaka T., Mallawatantri A. (2013) Vulnerability of Sri Lanka to climate change—monograph. Department of Agriculture, Peradeniya.

<sup>26</sup> Seo SN, Mendelsohn R, Minasinghe M (2005) Climate change and agriculture in Sri Lanka. A Ricardian Valuation. Environ Dev Econ 10:581–596 Cambridge University Press UK.

<sup>27</sup> Marambe B, Punyawardena R, Silva P, Premalal S, Rathnabharathie V, Kekulandala B, Nidumolu U, Howden M (2015). Climate, climate risk, and food security in Sri Lanka: the need Climate Change Impacts and Adaptation in the Agriculture Sector.

<sup>28</sup> De Costa WAJM, Sangakkara UR (2006) Agronomic regeneration of soil fertility in tropical Asian smallholder uplands for sustainable food production. J Agric Sci 144:111–133.

<sup>29</sup> Easwaran, R. Climate Change Impacts and Adaptation in the Agriculture Sector of Sri Lanka: What We Learnt and Way Forward. Handbook of Climate Change Communication: Vol. 2 pp 97-110.

In addition, farm animal production, fisheries and forestry also seem to be negatively affected by climate change. Sea level rise as a result of global warming, poses another threat to coastal agricultural areas such as Mullaitivu District due to inundation and salinity development.<sup>30</sup>

### **Water resources**

The surface water potential is the lowest in the Northern and Eastern Provinces (dry zone). The dry zone is highly vulnerable to water shortages. According to Disaster Management Centre, over 337,000 people across 8 (including Mullaitivu District) out of 25 districts in Sri Lanka are facing a water crisis due to dry spells and sea water intrusion into surface water. Lack of water scarcity, further exacerbated by climate change have contributed to the under utilisation of available land in the Mullaitivu District.<sup>31</sup> The decline in rainfall, particularly in the Dry Zone, combined with an increase in temperature and evapotranspiration and soil moisture deficit will have serious impacts on the water resources<sup>32</sup> of the Mullaitivu District.

Physical vulnerabilities of decrease in water resources in Mullaitivu District include—regular fluctuation of water availability in major and medium reservoirs; rapid dry out of minor irrigation facilities; poor and disturbed flow in streams; decreased quality of water due to high salinity; and depletion of ground water sources.<sup>33</sup> Contributing factors include—increased day and night air temperature; increased evaporation and evapotranspiration; regular and extended dry spells; increased frequency and severity of droughts; irregular/erratic changes in established rainfall patterns<sup>34</sup> that is observed in the Mullaitivu District. In addition, saltwater intrusion and inundation of low-lying areas observed in Mullaitivu District have led to decline in water quality due to increased salinity; increased coastal erosion; damage to coastal habitats (estuaries and lagoons, mangroves, salt marshes, beaches, sand dunes, coral reefs etc.) and effects on river mouths.

In addition, Mullaitivu is one of the Districts with socioeconomic resilience to disasters is less than or equal to 30% (other Districts include Trincomalee and Batticaloa), indicating that the average resident of Mullaitivu District struggles to cope with and recover from shocks when they occur. This struggle results in a lower likelihood of recovery in the long-term, and is due to a complex of factors, such as, poverty incidence, diversity of income sources, financial inclusion, and social protection enrollment, the net effects of which, wellbeing losses are designed to measure.<sup>35</sup>

### **Recommended adaptation interventions**

- Usually, climate change adaptation measures are constrained by financial barriers, socio-cultural barriers, institutional barriers, technological barriers and a lack of information on climate change characteristics. Therefore, support is required through provision of funding, technical inputs, assistance in planning and coordination, community empowerment, extension initiatives aimed at enhancing social networks within communities, awareness creation etc. in order to overcome the barriers.
- Climate change continue to affect agricultural productivity in Mullaitivu District (crops, farm animals, forestry and fisheries) through increasing temperatures, rainfall variability and increasing extreme weather events, while agricultural productivity has to be increased to cater ever increasing demands and living standards of people. However, it is observed that the implementation of field level adaptations is far below the rate of increasing trends of climate change aspects. Therefore, the need to strengthen farm level adaptations which can empower the coping capacity of farmers to the negative impacts of climate change. Experiences from the climate-smart agriculture and conservation agriculture programmes could be taken into consideration.
- Development of sustainable groundwater, promotion and adoption of micro-irrigation technologies, watershed management, restoration of the ancient/large/medium/small tanks, wastewater reuse, increasing water use efficiency and change of allocation practices are other adaptation options under consideration in the water resources sector.
- The current trends in climate change and disaster risks call for enhanced and coherent adaptive action in both areas by generating more efficient and effective preparedness, response and recovery processes while making more efficient use of financial and human resources.
- Mangroves in Nandikadal, Nayaru and Kokkilai estuaries (1,040 ha) in the Mullaitivu District<sup>36</sup> have been vital for the protection of the coast and the people who live around them. Mangroves form a green barrier that can hold off coastal erosion, storm surges, and even tsunamis, and create a unique environment for fish, birds, reptiles, amphibians and crustaceans and are sources of wood, fiber, charcoal, and ingredients for cosmetics, perfumes, pharmaceuticals, and tanneries. Despite their unique ecological contributions, mangroves are being destroyed and degraded due to prawn farming, unplanned hotel development (tourism), settlements, logging, agriculture, and pollution.
- Heavy rains experienced leading to flooding/inundation and waterlogging has had a toll on sanitation infrastructure, affecting the health and hygiene of communities.
- Climate change communication will support appropriate decision making, planning and implementation of adaptation practices.

<sup>30</sup> Easwaran, R. Climate Change Impacts and Adaptation in the Agriculture Sector of Sri Lanka: What We Learnt and Way Forward. Handbook of Climate Change Communication: Vol. 2 pp 97-110.

<sup>31</sup> Ministry of Lands (2016). LAND USE PLAN MULLAITIVU DISTRICT. Implementations of the Recommendations given by the Lessons Learnt and Reconciliation Commission (LLRC). Land Use Policy Planning Department, Ministry of Land, Sri Lanka.

<sup>32</sup> De Silva, C. (2019). "Impacts of Climate Change on Water Resources in Sri Lanka". Loughborough University.

<sup>33</sup> Ministry of Mahaweli Development and Environment (2015). National Adaptation Plan for Climate Change Impacts in Sri Lanka. Climate Change Secretariat/Ministry of Mahaweli Development and Environment, Sri Lanka.

<sup>34</sup> Ibid

<sup>35</sup> World Bank (2019). Socioeconomic Resilience in Sri Lanka: Natural Disaster Poverty and Wellbeing Impact Assessment. Climate Change Group.

<sup>36</sup> Department of Forest.

Attempts have been made and simple tools have been developed to assist communities to cope with and adapt to extreme climate change. However, poorly planned participatory processes and the lack of context-specific approaches in these tools are obstacles when aiming at strengthening the resilience of vulnerable sectors of Mullaitivu District. Given the vulnerability to climate change induced natural disasters, poor socioeconomic and demographic statistics, and the lack of socioeconomic resilience to disasters, Mullaitivu District has been selected under the proposed project.

### Selected locations

In the current context, the project focuses on selected GN Divisions in three (3) DS Divisions of Mullaitivu District, namely, Maritimpeattu, Puthukkudiyiruppu and Welioya (the 3 DS Divisions cover almost 68% of the population), Annex 3: Maps of Location, in discussion with the relevant stakeholders (Annex 4).

**Table 1: Population of the DS Divisions in Mullaitivu District (2017)**

DS Division	Number of GN Division	Number of Villages	Population	Area km <sup>2</sup>
Maritimpeattu	46	219	42,904	728
Puthukkudiyiruppu	19	179	41,052	350
Oddusuddan	27	114	20,604	618
Thunkkai	20	35	12,613	326
Manthai East	15	68	9,756	494
Welioya	09	17	11,189	Not estimated
Total	136	632	138,188	2,516

**Poverty:** Puthukkudiyiruppu DS Division has the highest estimated poverty headcount index in the District, which is 35.66% (8,466 poor people), Maritimpeattu being the second highest, 28.61% (8,096 poor people) and Welioya having estimated poverty headcount index of 18.25% (1,249 poor people).<sup>37</sup>

**Food security:** In the three (3) DS Divisions, agriculture sector, including agriculture, livestock and fisheries, still constitute the largest employer, a sector that is expected to suffer the highest costs due to climate change, especially in Mullaitivu District.<sup>38</sup> Changes in rainfall patterns, more frequent and intense storms, flooding and drought are already impacting these communities, making it difficult for them to secure decent livelihoods in the agriculture sector. However, not only agriculture but auxiliary economic activities are also subsistence driven and employment is largely informal and vulnerable in the selected DS Divisions. Although there is a willingness to diversify the production pattern, crop losses are amongst the most frequent impacts of natural hazards. The current socioeconomic condition of these marginalised communities makes them especially vulnerable to the impacts of climate change.

**Health, hygiene and water resources:** Extreme heat threatens human health and living standards, particularly for outdoor farming communities; this will particularly impact communities in Northern Province. Increased incidence of flooding also brings the potential for enhanced disease transmission<sup>39</sup> which these communities are vulnerable to. There are 6 Medical Officer of Health (MOH) Divisions functioning in the District, Chronic Kidney Disease of unknown etiology (CKDu) is on the rise in Mullaitivu District due to poor quality of water.<sup>40</sup> The quality of drinking water sources may be further compromised by increased sediment or nutrient inputs due to floods in Mullaitivu District. In addition, changes in precipitation and runoff timing, coupled with higher temperatures due to climate change and saltwater intrusion, may lead to diminished reservoir water quality.

As a result of a lack of access to safe sanitation mainly due to flooding/inundation and waterlogging, the communities of in disaster-affected DS Divisions endure both hardship and physical discomfort. Women and young girls are particularly affected as they are left with little options to maintain privacy and personal hygiene in these conditions exposing them to increased health as well as safety risks. This necessitates an urgent need to develop and design a disaster-resilient toilet with features that will enable toilets to resist flooding/inundation and waterlogging.

**Gender, dependency and disability:** As mentioned elsewhere, one of the significant impacts that the internal conflict has had is the increased number of female-headed households (FHH) in the Northern Province including Mullaitivu District. Out of the 5.2 million households in Sri Lanka, an estimated 1.1 million households or 23% of the households are FHH.<sup>41</sup> Of that it is estimated that women head 58,121 households in the Northern Province.<sup>42</sup> According to statistics of 2021, in Puthukkudiyiruppu DS Division 51% are female with a dependent population of 41%. In Maritimpeattu and Welioya DS Divisions the statistics are 44% and 50% (female), and 37% and 40% (dependent population) respectively.<sup>43</sup> Apart from the lack of attitudinal changes regarding the role of women within households and society, the hardships on female have risen due to the loss of male heads of households necessitating socioeconomic support. The Government supports in the form of social security schemes, such as the *Samurdhi* Programme, the Public Assistance Monthly Allowance (PAMA), and disability allowance, provide an important form of assistance to women, especially FHH, but this is not sufficient for communities that are dependent on highly climate change vulnerable sector such as agriculture.

<sup>37</sup> DSC (2018). The Spatial Distribution of Poverty in Sri Lanka. Department of Census and Statistics, Sri Lanka.

<sup>38</sup> UNDRR (2019). Disaster Risk Reduction in Sri Lanka: Status Report 2019. Thailand.

<sup>39</sup> World Bank Group and Asian Development Bank (2020). Climate Risk Country Profile: Sri Lanka.

<sup>40</sup> Gobalarajah, K., Subramaniam, P., Jayawardena, U. A., Rasiyah, G., Rajendra, S., & Prabagar, J. (2020). Impact of water quality on Chronic Kidney Disease of unknown etiology (CKDu) in Thunukkai Division in Mullaitivu District, Sri Lanka. BMC Nephrology..

<sup>41</sup> Sri Lanka Department of Census and Statistics - Ministry of Finance and Planning. (2013). Household Income and Expenditure Survey 2012/2013. Colombo, Sri Lanka.

<sup>42</sup> United Nations (2018). Sri Lanka, Mapping of Socio-Economic Support Services to Female Headed Households in the Northern Province of Sri Lanka. United Nations, Sri Lanka.

<sup>43</sup> District Secretariat, Mullaitivu District (2021).

In the current context, the most durable benefits will result from adopting agro-ecological measures that will strengthen the resilience of rural communities. Therefore, the proposed activities will focus on 'Recommended adaptation interventions', which includes, introduction of climate resilient crops, water conservation and harvesting, improving mobility (evacuation routes), sanitation and introducing measures to minimise saltwater intrusion to fresh waterbodies. Moreover, the proposed project intends to work with fisher communities in mangrove restoration as community participation is viewed as a key to success in ecosystem restoration. Mangroves will serve as an alternative source of income for the whole community. Moreover, in order to prevent losses and also to increase the margin of income of fisher families, value addition of fish will be introduced. This will not only increase the income of the fisher families, including women and youth, but it will also increase the consumption of fish in one way or the other.

Through the previous work of UN-Habitat, it was recognised that increasing the resilience of the most vulnerable communities is through a participatory, community-led process, based on local priorities, needs, knowledge and capacities, which can then empower people to cope with and plan for the impacts of climate change. The proposed project mainly intends to factor in the potential impact of climate change on livelihoods and vulnerability to disasters by using local and scientific knowledge of climate change and its likely effects. Emphasis will be given to local knowledge includes information about trends and changes experienced by communities themselves and strategies these communities have used in the past to cope with similar shocks or gradual climatic change. Approaches and methods developed in both disaster risk reduction and community adaptation initiatives have demonstrated that for any climate change adaptation interventions to be effective and sustainable, empowering communities is imperative.

Suggestions for addressing multiple threats are, *soft* options, such as awareness raising, planning, political articulation professional skills enhancement, to be encouraged immediately at relatively low cost and are reversible. For specific threats, options emphasise change in management practices as pre-emptive measures. Key audiences for this work are communities and Government stakeholders starting to consider priority actions to respond to climate change impacts. The options include, from "defend to co-exist and retreat as impacts become less manageable, and capacity to protect local properties and infrastructure, natural systems, food production, availability of fresh and drinking water and well-being of the local population"<sup>44</sup>. In addition, the proposed project will work with underprivileged e.g., women, the aged, disabled, who are much more vulnerable in terms of obtaining access to safe drinking water (women carry the main responsibility in provision of water needs of the family), housing, loss of livelihoods due to variations of weather induced by climate change.

### Project/Programme Objectives:

- To improve climate related socio-economic outcomes in the targeted fishing and agricultural communities through the implementation of community-based adaptation solutions.
- To support climate resilient development and increase institutional and community capacity to adapt to the changing and variable climate.

The overall objective of the proposed project:

- To support climate resilient development and increase capacity for climate change adaptation of target communities living in the Mullaitivu District.

### Project/Programme Components and Financing:

This project is organised under two strategic components:

1. Developing resilient, adaptive livelihoods in the three (3) selected Divisional Secretariat (DS) Divisions in Mullaitivu District, and
2. Addressing capacity needs and gaps in adaptation measures that can reduce vulnerability to climate change and increase coping capacity.

**Table 2: Project components and financing (Please refer Section A. of 'PART II: PROJECT/PROGRAMME JUSTIFICATION' for details)**

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
1. Developing resilient and adaptive small-scale infrastructure and ecosystems for improvement of livelihoods in the three (3) selected Divisional Secretariat (DS) Divisions in Mullaitivu District	1.1 Reduce vulnerability of coastal communities to face risks of climate change by collaborating on (a) measures to minimise saltwater intrusion into freshwater bodies through 1km earth bund, (b) rehabilitate 15 minor tanks for water storage, drinking and irrigation, (c) 18 disaster-resilient toilets and (d) 3km existing evacuation routes.	Strengthened livelihoods with increased incomes for vulnerable communities dependent on fishery and agriculture	1,200,000
	1.2 Promote climate resilient sustainable agriculture and increase productivity with climate resilient crops (e.g., groundnut, coconut) in 6 acres of coastal lands.		65,000
	1.3 Increase income of vulnerable fishing households, in particular women and youth through value-added fish processing and rehabilitating 1.5km mangroves for improved lagoon fishery.		203,205

<sup>44</sup> USAID Adapting to Coastal Climate Change - A Guidebook for Development Planners, May 2009



2. Address capacity needs and gaps in adaptation measures that can reduce vulnerability to climate change and increase coping capacity.	2.1 Participatory vulnerability/risk assessments to mainstream community-based climate change adaptation in local development plans and promote climate change/disaster resilient local development plans.	Improved effectiveness and climate adaptation planning and implementation to increase coping capacity in addressing climate variability	125,000
	2.2 Share knowledge and lessons through documentation of climate resilient actions for increased adaptive capacities.		75,000
3. Project/Programme Execution cost (9.5%)			175,104
4. Total Project/Programme Cost			1,843,309
5. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable), i.e., Overhead cost (8.5%)			156,691
<b>Amount of Financing Requested</b>			<b>2,000,000</b>

## Projected Calendar:

Table 3: Milestones

Milestones	Expected Dates
Start of Project/Programme Implementation	January 2023
Mid-term Review (if planned)	January 2024
Project/Programme Closing	January 2025
Terminal Evaluation	January 2025

## PART II: PROJECT/PROGRAMME JUSTIFICATION

### A. Project components, focusing on the concrete adaptation activities of the project, and contribution to climate resilience

In Mullaitivu District in 2019, 53% of the families were engaged in agriculture and 14% in fishing, therefore, 67% of the population is solely dependent on a sector that is highly vulnerable to climate change. The impact of climate change on agriculture is generally predicted negative for the entire sector with significant impacts on paddy sub-sector resulting in significant losses in both quantity and quality. Mullaitivu District has 16,499.3ha of suitable paddy land which are reliant on irrigation from tanks and rainwater and saltwater intrusion has worsened the situation of farmers.

Paddy	Tea	Coconut
<b>Yield:</b> • 0.1-0.5 °C temp increase: 1.2 to 5.9% reduction (Vidanage & Abeygunawardena 1994) • Temp increase + CO <sub>2</sub> increase: 24-39% increase (De Costa et al. 2006)	<b>Yield:</b> • 100 mm monthly R/F reduction: 30-80 kg reduction in 'made' tea/ha • Increase in ambient CO <sub>2</sub> concentration to 600 ppm: 33-37% increase (Wijeratne et al. 2007)	<b>Yield:</b> • Production after 2040: not sufficient for local consumption • Increased pest and disease problems - reduce yield (Peiris et al. 2004)
<b>Irrigation Requirement:</b> 13-23% increase in Maha by 2050 (De Silva 2006)	<b>Spatial Impact:</b> • Cultivations at low and mid elevations more vulnerable (Wijeratne et al. 2007)	<b>Economy:</b> Losses in the range \$32 - \$73 million (Fernando et al. 2007)
<b>Economy: Rs. -11 billion to Rs. +39 billion by 2100 (Seo et. Al. 2005)</b>		

Figure 5: Impact on agriculture<sup>45</sup>

In 2016, the estimated cost of the damage to the other crops and export crops is Sri Lankan Rupees 331 million and the estimated cost of the loss of the production was Sri Lankan Rupees 1,104 million. Mullaitivu was one of districts with the highest impacts on agriculture.

Coastal zone of Mullaitivu District (70km) is highly vulnerable to the effects of natural disasters and climate change, and impact is strongly felt by the people in the coastal areas who rely heavily on direct natural resource use. Growing development pressure and user conflicts are exacerbated by natural disasters and climate change. As is seen, the majority inhabitants of the coastal zone live in comparative poverty and have poor living standards. Estimates show that the coastal fishery accounts for around 64% of the

<sup>45</sup> Eriyagama, N., Smakhtin, V., Chandrapala, L., Fernando, K. (2010). Impacts of Climate Change on Water Resources and Agriculture in Sri Lanka: A Review and Preliminary Vulnerability Mapping. IWMI Research Report 135. Colombo.

marine fishery. This in turn provides 91% of the total fish production in Sri Lanka and Mullaitivu District alone produces 6,260Mt,<sup>46</sup> which earns foreign exchange over 6 billion Sri Lankan rupees.<sup>47</sup>

Poverty head count ratio in the Northern, Eastern and Uva Provinces are reported to be higher than the rest of the country, this includes Mullaitivu District as well.<sup>48</sup> Moreover, 34% of the population cannot afford the minimum cost of a nutritious diet.<sup>49</sup>

Climate change induced disasters are annually costing Sri Lanka 50 billion rupees, or around 0.4% of Gross Domestic Product (GDP) in damages, which requires preventive measures to reduce climate risks--On average, Sri Lanka experiences LKR 50 billion (US\$313 million) in annual disaster losses related to housing, infrastructure, agriculture, and relief. Around 32 billion Sri Lankan Rupees of damages are from floods. Cyclones and high winds cause 11 billion Sri Lankan Rupees in losses, while droughts and landslides cause 5.2 billion Sri Lankan Rupees and 1.8 billion Sri Lankan Rupees in damages respectively. Disasters are costly on human lives as well, with the 2017 floods leading to 213 passing away and the 2018 floods leaving another 13 persons dead. The Government provides the thousands who become homeless 1.2 million rupees each to build a house and 0.4 million rupees each to procure land or settle on state-owned land.<sup>50</sup> During the May 2016 floods and landslides, 140 pre-schools were affected. Out of these 73 pre-schools were damaged in Colombo, Gampaha, Kegalle, Ratnapura, Kurunegala and Mullaitivu districts affecting 3,500 students. The damage to preschool buildings, furniture, learning materials, stationery and utensils were estimated at Sri Lankan Rupees 18.4 million. The total damages and losses in Mullaitivu District alone costs Sri Lankan Rupees 476 million; housing, land and settlements sector costing Sri Lankan Rupees 95 million; food security, agriculture, livestock, fisheries sector costing Sri Lankan Rupees 365 million; and transport sector Sri Lankan Rupees 15 million.<sup>51</sup>

To achieve the overall objective of the proposed project-- *to support climate resilient development and increase capacity for climate change adaptation of target communities living in the Mullaitivu District*, the actions proposed by the project have been designed to target the poorest and most vulnerable people in three (3) selected DS Divisions in the Mullaitivu District. To attain the above, set of *soft* and *hard* measures has been proposed to ensure that resilience at the household and community level are strengthened sustainably. The *soft* measures focus on addressing capacity needs and gaps in adaptation measures that can reduce vulnerability to climate change and increase coping capacity. All *soft* measures are designed to support, enhance and sustain the *hard* investments that the project will make. The *hard* investments made by the project will all be in small-scale protective infrastructure and ecosystems. These investments have been fully identified.

**Rationale of Component 1:** Component 1 of developing 'resilient, adaptive livelihoods in the three (3) selected Divisional Secretariat (DS) Divisions in Mullaitivu District'. The negative impacts of climate change profoundly affect economies that are primarily driven by climate sensitive sectors, e.g., agriculture sector, including fisheries. In the Mullaitivu District substantial anomalies are seen in rainfall distribution within a season. Late onset of rains, heavy and intense rainfall events, and pronounced dry periods are becoming increasingly common. Such spatial variability is detrimental to crops, especially under rain-fed and minor irrigated conditions. The importance of adaptation measures to support agriculture is well recognised by all stakeholder as communities are already experiencing the effects of climate change on agriculture. In addition, it has been recognised in the National Adaptation Plan for Climate Change Impacts in Sri Lanka (2015 – 2025).

**Identified interventions needs:** The proposed project introduces effective drought, saltwater intrusion, and other preparedness measures to reduce risk levels in Mullaitivu District and increase adaptive capacities and resilience of the most vulnerable sections of the communities. Moreover, it is imperative that local economies are diversified either by expanding climate sensitive sectors or by promoting adaptation measures that increase resilience within the sector. The impacts of climate change on fisheries sector are significant and climate change may have significant impacts on post-harvest activities. Therefore, the proposed interventions under Component 1 mainly focuses on improving resilience (economic resilience included) towards climate change. Agricultural productivity for coastal communities, with women and youth taking a leading role, will be a main activity to increase resilience and reduce vulnerability by ensuring food security. Measures to minimise sea water intrusion into freshwater bodies, rehabilitate minor tanks for water storage, improvement of evacuation routes, construction of sanitation facilities, adjusting existing agricultural practices – such as modified cropping patterns, resilient crops (groundnut and coconut), value addition to minimise post-harvest fish losses and rehabilitating mangroves for improved lagoon fishery and developing framework for are proposed.

**Outcome 1:** Developing resilient and adaptive small-scale infrastructure and ecosystems for improvement of livelihoods in the three (3) selected Divisional Secretariat (DS) Divisions in Mullaitivu District.

**Output 1.1:** Reduce vulnerability of coastal communities to face risks of climate change by collaborating on (a) measures to minimise saltwater intrusion into freshwater bodies through 1km earth bund, (b) rehabilitate 15 minor tanks for water storage, drinking and irrigation, (c) 18 disaster-resilient toilets and (d) 3km existing evacuation routes.

**Activity 1.1.1:** Construction of 1km earth bund with sluice gate in Puthukkudiyiruppu DS Division to prevent saltwater intrusion.

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<sup>46</sup> Ministry of Fisheries (2020). Fisheries Statistics 2020. Ministry of Fisheries, Sri Lanka.

<sup>47</sup> Sri Lanka: Managing Coastal Natural Wealth, World Bank 2017.

<sup>48</sup> DCS (2013). Department of Census and Statistics, Household Income and Expenditure Survey 2012/13.

<sup>49</sup> HARTI (2015). Cost of Diet Analysis, 2014.

<sup>50</sup> World Bank (2020). Contingent Liabilities from Natural Disasters: Sri Lanka. World Bank, Washington DC.

<sup>51</sup> Ministry of National Policies and Economic Affairs and Ministry of Disaster Management (2016). Sri Lanka Post-Disaster Needs Assessment. European Union, World Bank and United Nations, Sri Lanka.

The vulnerability of coastal groundwater resources/coastal aquifers to saltwater intrusion has evolved to become a challenge in Mullaitivu District, an arid and semi-arid climatic region, Overexploitation and mismanagement have increased the potential of saltwater intrusion, which has now negatively affected agricultural yield of coastal crops/plantations through the accumulation of salts causing adverse effects on soils and plants. Soil salinity reduces water infiltration rates, reduces plant growth and yield and decreased quality of crops/plants that reduce the economic attractiveness, thus affecting the income. Therefore, 1km earth bund with sluice gate in Puthukkudiyiruppu DS Division to prevent saltwater intrusion will positively affect the agriculture activities in the area.

**Activity 1.1.2:** Renovation of fifteen (15) minor irrigation tanks, including desilting of irrigation canals, renovation of auxiliary structures and strengthen the tank bund in Maritimpattu and Puthukkudiyiruppu DS Divisions.

Farmers in Mullaitivu District grapple with weakening and erratic monsoons over the recent years, combined with the menace of groundwater depletion, conserving and sustainably managing water resources has become all the more important. Tank water harvesting and irrigation offer a host of benefits such as replenishing groundwater levels, providing drinking water for rural communities and livestock, crop cultivation, conserving top-soil and harbouring fish. All stakeholders, including farmers urge upscaling of tank restoration as a measure to tackle future droughts and increasing climate resilience.

**Activity 1.1.3:** Improvement of existing 3km long evacuation route with culvert and causeway in Raalkulam Grama Niladhari (GN) Division and Nayaru GN Division in Maritimpattu DS Division.

Adapting to climate change requires a particular focus on disaster risk reduction. Disaster preparedness and response already focus on the effects of weather-related disasters and climate change is likely to change the range, severity and frequency of such hazards. Rather than preparing to respond to the impacts of disasters, it is important to reduce the vulnerability of the communities exposed. Provision of better infrastructure, such as improvement of evacuation routes facilitates adaptation to extreme climatic events faced by the communities in Mullaitivu District.

**Activity 1.1.4:** Construction of 18 appropriate sanitation facilities (disaster-resilient toilets) for flood-prone/waterlogged/inundated areas in Welioya DS Division completed and conduct 5 training sessions on sanitation and hygiene.

The effects of climate change have threatened sanitation systems in Mullaitivu District. For instance, floodwater damage toilets and spread human waste into water supplies, food crops and people's homes. These incidents are now becoming more frequent as climate change worsens, cause public health emergencies and degrade the environment. Climate resilient sanitation systems are able to withstand the climate challenges, but also leverage benefits beyond those of a well-functioning toilet connected to a sanitation system that takes away and deals with human waste. Resilient sanitation systems are mostly important to women and girls.

**Output 1.2:** Promote climate resilient sustainable agriculture and increase productivity with climate resilient crops (e.g., groundnut, coconut) in 6 acres of coastal lands.

**Activity 1.2.1:** Twenty-five (25) training and capacity building workshops on sustainable land management, water conservation practices and climate change impacts and adaptation strategies in Welioya (10 workshops), Maritimpattu (8 workshops) and Puthukkudiyiruppu (7 workshops) DS Divisions.

Training and capacity building on aforementioned areas will facilitate both behavioural changes and stakeholder support in climate change adaptation interventions. Not all stakeholders are aware and informed about their vulnerability and the measures they can take to pro-actively adapt to climate change. Training and capacity building are therefore an important component of the adaptation process to manage the impacts of climate change, enhance adaptive capacity, and reduce overall vulnerability.

**Activity 1.2.2:** Training 250 families (125 families in Welioya DS Division, 75 families in Maritimpattu DS Division and 50 families in Puthukkudiyiruppu DS Division) on a variety of methods for home garden development with selection of drought-tolerant crop varieties (groundnut and coconut), multi-cropping, adjusting cropping patterns, soil fertility adjustment and agroforestry in selected lands.

Stakeholders, including the community have emphasised the importance of the agriculture sector adapting to climate change, as agriculture and food security are significantly impacted by climate change. Adaptation strategies include changing cropping practices, improving soil fertility, use of improved crop varieties etc. Training on the above will empower farming communities to take appropriate measures to adaptation measures to eliminate negative consequences and determines the nature, quality and strength of climate change adaptation measures, especially in home gardening.

**Activity 1.2.3:** Distribution of equipment (tools) for home gardening and planting material of resilient crops (groundnut and coconut) for 250 families (125 families in Welioya DS Division, 75 families in Maritimpattu DS Division and 50 families in Puthukkudiyiruppu DS Division).

Provision of tools and planting material will facilitate the poor farmer families to start home gardening. This will also enable establishment of home-based nurseries (where necessary) to ensure a continuous supply of planting material. Regarding the adaptation functions, resilient groundnut and coconut varieties (two varieties of crops with high local demand). Climate change can generate a vicious cycle of increasing poverty and vulnerability, worsening inequality and the already precarious situation of many disadvantaged farmer families in Mullaitivu District. Therefore, increase in income through this activity will reduce the economic vulnerability of poor farmer families.

**Output 1.3:** Increase income of vulnerable fishing households, in particular women and youth through value-added fish processing and rehabilitating 1.5km mangroves for improved lagoon fishery.

**Activity 1.3.1:** Training 100 fisher families (50 from Maritimpattu DS Division and 50 from Puthukkudiyiruppu DS Division, including women and youth) on proper handling, preservation and value-adding of fish mainly using locally available resources.

The fisher community in Sri Lanka face numerous challenges during their daily fishing operation, which includes, lack of knowledge and skills on fish handling and processing as well as unavailability of quality fishing gears. Due to absence of cold chain facilities,

processing, storage, transportation and marketing are often done in very unhygienic conditions which contribute to high post-harvest losses along the fishery value chain. Post-harvest loss of fish is nearly 30% (even 50% at times) along the value chain.<sup>52</sup> In the fisheries sector in Sri Lanka, men and women engage in distinct and often complementary activities that are strongly influenced by the social, cultural and economic contexts they live in. Self-employment initiatives of fisherwomen (through training on value addition) have been well appreciated by the stakeholders towards attaining self-sufficiency in their households. Empowering women to participate fully in economic life across all sectors is essential to build a stronger economies and economic resilience towards coping with climate change.

From an economic viewpoint, there is significant scope for increasing the level of contribution from the fisheries sector through increased output and/or exploiting the potential for value addition.

**Activity 1.3.2:** Training 150 women on establishment of home-based industries and business management (50 from Welioya DS Division, 50 from Maritimpattu DS Division and 50 from Puthukkudiyiruppu DS Division).

The clear consequences of women's economic marginalisation in poverty-stricken regions such as Mullaitivu District further emphasise the pressing need for gender equality and the economic empowerment of women. Both women and men face challenges in setting up their own home-based businesses, but for women the barriers are often greater and harder to overcome. Traditional socio-cultural factors and limited infrastructure impede women's participation in education/vocational training. As a result, women are often socially/economically excluded from household decision-making. Training will empower women to start their own home-based industries and contribute to the household income and economic resilience.

**Activity 1.3.3:** Provision of relevant equipment for fish value addition to established fisher societies (one in Maritimpattu DS Division and another in Puthukkudiyiruppu DS Division).

Value addition initiatives in fish farming refers to the use of production methods, innovation and handling processes intended to improve the farmer's processes and products in order to lead to an enhancement in the customer base for the product and a greater proportion of income accruing to the fish farmer. It goes further to involve the enhancement in the processing, packaging and marketing of the product. Value addition improves the natural and conventional form, quality and appeal of a product subsequently increasing the consumer valuation beginning from the farm level to marketing of finished products. Value addition initiatives have a particular importance in that it offers a strategy for transforming an unprofitable enterprise into a profitable one. Thus, processes connected with value addition initiatives appear to be one of the keys available to unlocking and improving the economic situation of fisher communities.

**Activity 1.3.4:** Developing business models for long-term functioning and sustainability are developed.

Business model is important because it will provide the community the knowledge of the products and better insight into working of business. A strong business model leads to cash generation and future expansion. The largest advantage of pragmatic business model is the contribution it makes to sustainability of the society and the ability to weather economic storms which is important for sectors highly vulnerable to climate change.

**Activity 1.3.5:** Establishing 5 community-based mangrove nurseries.

Mangrove restoration requires the cultivation of healthy seedlings and propagules for transplantation. Nurseries established near the restoration sites provide local employment and involvement. The establishment of community-based nursery is the first step to ensure a continuous and localised supply of planting material for mangrove restoration. The activity involves communities from the beginning and allows the co-management of the results. Mangrove nursery practices are designed to assist mangrove seedlings to gradually adapt to the environmental conditions of the restoration sites with minimised mortality rates.

**Activity 1.3.6:** Replant/rehabilitation of 1.5km of mangrove forests to buffer and protect coastal areas from storm surges and sea level rise.

Mangroves offer significant opportunities for climate change adaptation and mitigation, including livelihood support, food security and storm/flood protection. Mangroves may adapt to changes in sea level by growing upward in place, or by expanding landward or seaward. Mangroves, reefs, and fisheries often have a synergistic relationship, based on their connectivity. Areas where mangroves benefit adjacent ecosystems by filtering sediments and pollutants or providing nursery habitats should be granted greater protection. Mangroves also stabilise sediments and trap heavy metals and nutrient rich run-off, thus improving the water quality for seagrasses, corals and fish. In addition to increasing in lagoon fishing due to restored mangroves, alternative livelihood options and diverse income opportunities provided by mangroves allow communities to be flexible to adapt to socioeconomic and climate change.

**Rationale of Component 2:** Component 2 is on 'addressing capacity needs and gaps in adaptation measures that can reduce vulnerability to climate change and increase coping capacity'. The component underscores the necessity to develop appropriate strategies for integrating locally relevant climate change adaptation priorities that impact on the environment, agriculture and natural resources. As a country that is reliant mainly on rain fed agriculture, and marine fisheries in the coastal belt, increasing climate variability and change are impacting on fishery and agricultural livelihoods as farmers and fisherfolk are unable to survive the multiple stressors or adapt to climate-related risks. The attempt made here will be to strengthen coping capacity through inter-institution collaboration (public and private) and partnerships, water conservation, awareness raising on extreme events, climate resilient fisheries development and agriculture techniques i.e., use drought-tolerant crop varieties, rehabilitating minor tanks, rehabilitating mangroves, provision of alternative livelihood options with required training for women/youth and sharing knowledge and develop

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<sup>52</sup> Kruijssen, F., Tedesco, I., Ward, A., Pincus, L., Love, D., & Thorne-Lyman, A. (2020). Loss and waste in fish value chains: A review of the evidence from low and middle-income countries. *Global Food Security*, Volume 26, September 2020, 100434.

framework for implementation of adaptation action. Baseline surveys, maps, preparedness plans, documentation and sharing lessons will address knowledge gaps.

**Identified interventions needs:** The proposed project includes participatory vulnerability/risk assessments to mainstream community-based climate change adaptation in local development plans and promote climate change/disaster resilient local development plans, in addition to sharing knowledge and lessons through documentation of climate resilient actions with increased adaptive capacities. In order to correspond to the complex requirements, the proposed project formulation applied a bottom-up approach, apart from Government stakeholders working at the grassroots level, communities were consulted to understand the most pragmatic adaptation measures, and the recommended activities were built around the identified risks and needs. Emphasis was given on the scalability and the transfer of acquired information and knowledge, and therefore includes information gathering and assessment, capacity-building, awareness-raising activities, and knowledge transfer at each stage (including Component 1). The capacity-building activities and knowledge transfer components associated with each project component enable the absorption and possible replication of project results. The project proposes incorporation of several capacity-building activities, ensuring the timely delivery of knowledge products together with the project implementation. Traditional knowledge acquired by the community over the years is a key asset. Continued community consultations will aid in improving capacities through participatory approaches. The proposed activities, therefore, empower the communities as well as relevant stakeholders.

**Output 2.1.:** Participatory vulnerability/risk assessments to mainstream community-based climate change adaptation in local development plans and promote climate change/disaster resilient local development plans.

**Activity 2.1.1:** Identifying climate change risks and vulnerabilities in the three (3) DS Divisions and documented, including gaps in knowledge and data/information, and identifying and selecting preferred adaptation options with special emphasis on community-based climate change adaptation.

Assessing climate change risks and identifying vulnerabilities facilitate to identify the likelihood of future climate hazards and their potential impacts for communities. It then provides useful/essential recommendations that support future decision-making. This is fundamental for informing the prioritisation of climate action and investment in adaptation.

**Activity 2.1.2:** Three (3) frameworks for implementation of adaptation action (strategy and action plan) in-line with the local and national climate change adaptation strategies and plans developed.

Identification of risks/vulnerabilities and risk prioritisation is paramount in cost-effectiveness of the interventions. Developing a framework will also provide insight into risk interactions for better implementation of adaptation actions. Adaptation strategies can buffer risks and sustain services, but it does require improved cross-sectoral coordination among stakeholders which will also be highlighted in the framework.

**Output 2.2:** Share knowledge and lessons through documentation of climate resilient actions with increased adaptive capacities.

**Activity 2.2.1:** Conducting 10 participatory dialogues, focused group discussions to deliberate concerns of communities (5 in each DS Division).

Communities that are vulnerable to the impacts of climate change need to adapt to increase their resilience. Effective Government policies and plans are a key component of this transition, but they are not sufficient in themselves. Therefore, effective community engagement is key to success in planning for climate change. A changing climate affects us all and is not a problem that Government stakeholders can address independently from the communities affected. Mitigating the causes and adapting to climate change is a shared challenge that can be best addressed through community active community participation and the community being well-informed of the current interventions. In addition, it is important that the community can help each other to better manage and bounce back from such events, that is, to be resilient.

**Activity 2.2.2:** Conduct 6 workshops/seminars to inform the framework for implementation of climate change adaptation actions to relevant stakeholders, with 2 in each DS Division.

Dissemination and communication of the framework should be considered as an integral part to obtain support of all stakeholders, apart from enhancing their comprehension on the work to be done. This will further facilitate coordination among relevant stakeholders, including the engagement of communities where required.

**Activity 2.2.3:** One (1) video documentary consisting of lessons learnt/experiences, case studies and broader policy interventions developed.

The ultimate purpose of documenting lessons learned is to provide stakeholders with information that can increase effectiveness and efficiency and to build on the experience that has been earned by current climate change adaptation interventions. This process if implemented correctly also allows stakeholders, upon completion of the proposed activities, to apply the knowledge in replicating or on new initiatives.

**Activity 2.2.4:** Conduct at least five (5) periodic media campaigns (print and electronic) at provincial and national levels (in all languages) to improve communication/visibility of climate change adaptation action implemented.

Media plays a significant role in helping communities communicate, including spreading knowledge. With the growing number of climate movements and actions being taken on climate change adaptation, the messages could create more awareness and reach the policymakers at district, provincial and national level.

**Table 4: Project alignment with the Adaptation Fund results framework**

Project Outcome	Project Outcome Indicator	Fund Outcome	Fund Outcome Indicator	Grant Amount
Developed resilient and adaptive livelihoods through improving small-scale infrastructure and ecosystems in the three (3) selected Divisional Secretariat (DS) Divisions in Mullaitivu District	Number of people that benefit from climate change resilient infrastructure, access to natural assets and improved livelihood options to withstand conditions resulting from climate variability and change	Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets  Outcome 5: Increased ecosystem resilience in response to climate change and variability induced stress  Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted area	4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 5. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress	1,468,206
Addressed capacity needs and gaps in adaptation measures that can reduce vulnerability to climate change and increase coping capacity.	Level of knowledge capacity at the community increased, measured by the number of households increased and maintained income,	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	200,000

## B. Economic, social and environmental benefits

The vulnerability of population to climate change impact and climate hazards in Mullaitivu District is extremely high and is ranked high in Sri Lanka. The District has experienced flooding and droughts for a long history, however, the intensification of hazards due to climate change entails a higher magnitude of impact, especially for the most vulnerable communities. These communities were directly affected by the internal conflict and as of December 2019, had a resettled population of 138,321, with 31% in Maritimpattu, 30% in Puthukkudiyiruppu and 8% in Welioya. The traditional social settings, the adherence to culture and most importantly the livelihood activities encourage people to remain with the communities and not to give up on their lands--the rate of migration and resettlement in other areas are low. Therefore, this also makes the communities more exposed to the climate change impacts and disasters, increasing their vulnerability as assets are constantly exposed to disasters that have now become frequent.

**Economic:** As mentioned elsewhere, the poverty headcount in Mullaitivu District is the highest in the Northern Province. Destructive impacts of climate change like droughts and floods are the primary culprits behind decreased farming output in Mullaitivu District, effecting food security and nutrition. In addition, flooding and rising sea levels have resulted in saltwater intrusion threatening coastal farmland and fresh water supply. In addition, climate change directly affects the earning capacity of the poorest through its impacts on agriculture, exacerbating uncertainty of the farmers and fisher communities in Mullaitivu District, making it more difficult for them to escape and remain out of poverty. The income from agriculture, including fisheries has primary importance in the three (3) selected DS Divisions in Mullaitivu District, as all communities are engaged in agriculture-dominated rural areas. These vulnerable communities face compounded crises, with climate change compromising the harvest, disruption of market value chains due to COVID-19 pandemic, lack of required fertilizer and the current economic crisis faced by Sri Lanka. Previous work carried out in by UN-Habitat in Mullaitivu District revealed that the decision to adapt to climate change in agriculture depends on the availability of resources (mainly cultivable land and water), experience (knowledge gained over the years) and availability of extension services and cooperative societies. Creating a system that is more climate resilient through improved adaptation actions as proposed in the project will facilitate substantial ancillary effects, therefore, the adaptation actions yield benefits other than direct financial benefits.

Several new and innovative approaches are adopted in this project to help fishers and smallholder farmers in improving their production. Applying a participatory approach to collaborate with state and private sector as well as communities, empower stakeholders in autonomous decision making will be implemented. Building stakeholder capacity in particular in adopting new technology such as heat tolerant crop varieties and seeds, water management, and by planning and application of new techniques (i.e., value addition techniques) by sharing of knowledge from other successful initiatives both locally and other countries in the region such as Bangladesh, Pakistan and India would be new thinking. Transparent technology infusion would also encourage acceptance and understanding among farmers who have been left out of these processes so far. With the close collaboration of relevant public and private sector agencies better climate forecasting and early warning systems can be designed and disseminated at the earliest possible to reduce loss and damages from extreme weather conditions (i.e., stormy weather resulting in increased risk for fisherfolk in Maritimpattu DS Division). Blending in traditional knowledge, promoting women as champions, adopting low-tech solutions in the absence of knowledge of adaptation technologies at present related to agriculture and coastal protection, will be approaches adopted to mitigate climate shocks felt by the poor in the three (3) DS Divisions.

**Social:** Empirical evidence has shown that climate change is deeply intertwined with patterns of inequality in Sri Lanka, especially Mullaitivu District where the most vulnerable famer/fisher communities bearing the brunt of climate change impacts, yet they contribute the least to the crisis. It is critical that communities are brought along in the decision-making process, which requires transparency and access to information. Moreover, stakeholder, including communities bring unique perspectives, skills, and a wealth of knowledge to the challenge of strengthening resilience and addressing climate change. In addition, by implementing the proposed activities which include structural and institutional solutions, the Government stakeholders can assist in addressing impacts of climate

change on the small farmers of the agricultural and fisheries sectors and help to reverse losses of production from climate hazards, improve food security and livelihood opportunities. This denotes a high possibility in scaling of the adaptation practices, tools and technologies adopted by the project.

**Women empowerment, youth and persons with disabilities:** Poor women and men face challenges of climate change, but the brunt is felt greatly by women. Women in the selected DS Divisions are still largely responsible for securing food, water and energy for daily use. With frequent droughts being experienced in the Mullaitivu District, women need to travel great distances to access clean water sources, an added burden to their busy schedule, giving them limited time to earn an income, get an education to empower themselves or for leisure. It is observed that in general women from rural villages in Sri Lanka find it difficult to recover from a natural disaster as they do not own land or other liquid assets that can be sold to secure income in an emergency.

It is estimated that nearly 23% of Sri Lanka's households are female headed and about 8.7% of the total population above the age of 5 live with some form of disability. This is specifically relevant to the Mullaitivu District, which was subject to an internal conflict. As mentioned elsewhere, there has been an increase in widows and women-headed households due to the internal conflict. The project's participatory methodology encourages an inclusive Leaving No One Behind (LNOB) approach which will safeguard involvement of youth disadvantaged groups in project activities. In terms of climate change, these groups, particularly women can play a pivotal role in helping to mitigate the effects of climate change. The project will adopt a gender-sensitive approach with women's (youth and persons with disabilities) full participation in decision-making, implementation and developing skills through training with the intent of empowering and building resilience. The participatory approach adopted will ensure not only active engagement but also empowerment of these groups and thereby accrue benefits.

The gender analysis was conducted based on the available data/information in the public domain, consultations with the community, experience from development activities carried out by UN-Habitat in the Mullaitivu District and data/information shared by the District Secretariat of Mullaitivu. The ability to conduct field verifications on the gender analysis was restricted by continued lockdowns, travel limitations due to the COVID-19 pandemic and related health regulations, therefore, emphasis will be given to field verification of the gender analysis prior to proposal development stage. These will further highlight (and not limited to), ensure that risk assessments are informed by the gender analysis, gender equality and women's empowerment are mainstreamed in activities, assessing different implications of planned activities on women and men, ensuring that women participate equally and actively alongside men and are enabled to take up leadership positions throughout the project cycle etc.

**Beneficiaries:** The project will deliver on economic, social and environmental benefits to vulnerable groups in particular women and marginalised groups in the targeted project locations. The project interventions will directly benefit 3,024 families in the three (3) selected DS Divisions with a multiplier effect of 4 per household will accrue direct benefits to 12,096 individuals in marginalised/poor income groups and indirectly benefit 4,076 families (16,304 individuals). Emphasis will be given to FHH and families with persons with disability in the beneficiary selection, with at least 40% of the beneficiary families being FHH and a maximum of 50% of the households with persons with disability (due to the internal conflict or otherwise). Beneficiary selection criteria will encompass vulnerability aspects such as (and not limited to) head of the household, family size, income level, assets, dependents (including persons with disabilities) etc. A range of other activities among which are water conservation/harvesting and distribution, training in fish value addition/processing techniques to prevent economic loss, will lead to safeguarding and increase in income and food security. The building of resilient livelihoods safeguarding cash crops, protecting assets against hazards are actions of adaptation to climate change which are delivering on social and environmental benefits as well. The process will have a gendered approach of providing equal access to opportunities to women who are marginalised although carrying the majority burden in household upkeep. Women, persons with disabilities, youth will be a special focus in training.

As mentioned elsewhere, *soft* interventions of resilience improvement through the protection of habitats and vulnerable ecosystems and adoption of climate adaptation strategies improve local environment, natural resources with less pollution and better air and water quality. Infrastructure developments - the *hard* interventions, of strengthening rehabilitate minor tanks for water storage, evacuation routes, construction of disaster resilient toilets and replanting of mangroves are actions that address intense climate change events. Value addition of fish and establishment of home gardens with climate resilient crops will enable the communities withstand economics shocks due to climate change.

**Non-climatic barriers:** Since stakeholders at different levels, including beneficiaries are involved in the implementation of adaptation measures, decision-making barriers may reduce the desired level of adaptation. Therefore, an active participatory approach (as done so in the development of the concept note) will be adopted throughout the project to ensure the full benefit of the proposed activities are reaped. Coordination and information sharing among all stakeholders will be ensured. Capacity barriers were identified during stakeholder consultations, and these will be addressed through training and capacity-building initiatives. In addition, a lack of locally relevant and practical information about potential climate impacts may be compounded by a lack of technical expertise to interpret climate change projections. Therefore, the proposed activities provide the required support in planning. Moreover, there is still uncertainty about the scale of the changes, magnitude and timing of climate risks, where precise forecasts are difficult to obtain. Therefore, planning would acknowledge and accommodate uncertainty. As UN-Habitat has done so in the past, continuous dialogue/engagement and sharing of information of the project will enable the support from political leaderships as well the buy-in for the project without which the implementation would be hindered.

The table below provides a summary of economic, social and environmental benefits adopting a gendered approach the project will provide.

**Table 5: Summary of economic, social and environmental benefits adopting a gendered approach**

Benefit Type	Baseline	Benefits of project actions
Economic	<p>Unsustainable agricultural practices, lack of support to diversify livelihoods, extreme events such as floods and droughts lead to economic losses with drastic consequences for women, the disabled, youth, loss of community infrastructure and livelihood options.</p> <p>Longer-term stresses such as sea level rise, and droughts impact on the economic well-being of agriculture/fisheries households, communities and reduce the ability to cope.</p> <p>Rural settlements in the Northern Province still lack basic and resilient infrastructure and residents have limited livelihood options.</p>	<p>Practice of climate smart agriculture, high participation of women in home garden development, training of youth and disabled leading to increase in income; less damages to community infrastructure, training and capacity building for resilient communities who will safeguard physical and natural assets, ecosystems and livelihoods.</p> <p>Training on adaptation methods to face extreme events lessen the social and economic impact and will lead to a reduction in climate induced poverty; active participation of women and marginalised groups will lead to strengthened lives for all.</p> <p>Maintaining a gender balance in activities/measures taken will lead to improved food security with promotion of agriculture, provision of water, other livelihood means leading to better resource management, more involved participation of residents in actions of climate change adaptation.</p> <p>Capacity development of poor/youth/women/persons with disability gain new skills and employment opportunities.</p> <p>New climate resilient infrastructure (evacuation routes, toilets, minor irrigation tanks) and services contributes to economic benefits.</p>
Social	<p>Extreme events such as floods/inundation, saltwater intrusion, droughts are definite contributors to poverty and compound social problems such as, disease, sanitation, food security, safety and adds to further degrading lives for women, marginalised groups.</p> <p>Longer-term stresses such as sea level rise, floods and droughts impact on the social well-being and cohesion of local communities and reduce the ability to cope.</p> <p>The lack of (resilient) infrastructure, high poverty incidences in informal settlements lead to social conflicts, diseases and safety issues, especially for women, elderly, the disabled and youth.</p>	<p>Further strengthening strong social networks with women, youth in leadership roles to protect against disasters, fatality rates, diseases and food security and safety issues due to increased resilience of settlement, communities and physical and natural assets, ecosystems and livelihoods.</p> <p>Improved adaptive capacity through a greater awareness of climate risks and adaptation options at the community level.</p> <p>Capacity development and involvement in adaptation actions increases the resilience of disadvantaged women and other marginalised groups.</p> <p>New climate resilient infrastructure and services contribute to social wellbeing.</p>
Environmental	<p>Extreme events such as floods and droughts increasingly lead to environmental losses, in particular important ecosystem services and loss of livelihood options, flood protection etc.</p> <p>Longer-term stresses such as sea level rise, floods and droughts impact on local environmental conditions.</p> <p>Ecosystem degradation and increased waste production lead to reduction of livelihood options, health issues and flood risks because of waste.</p>	<p>Reduction in climate-induced environmental degradation and losses and improved planning and preparation for disasters.</p> <p>Improved resource management practices with trained men and women ensure a protected and conserved environment with sustainable livelihoods</p> <p>Promotion of ecosystem-based adaptation, leading to environmental benefits.</p> <p>Environmental benefits due to resilience actions in the informal settlements, clean-up campaigns and awareness raising.</p> <p>Improvement of community resilience.</p>

### C. Cost-effectiveness of the proposed project

In ensuring cost-effectiveness of the project, several approaches are highlighted and will entail a combined approach of the quantification of beneficiaries/stakeholder and benefits. The project will provide both increased cash income of communities through improvement of livelihood and improved resilience through small-scale infrastructure and the project will contribute to the generation of evidence-based practices.

The project proposes highly replicable and development-oriented solutions ensuring cost effectiveness, in particular financial, human and material resources will be used cost effectively. It will make use of existing Government extension services and administrative platforms<sup>53</sup> by complementing and supporting their activities/objectives and will avoid duplication of funds. The three key concepts of Economy, Efficiency and Effectiveness will be used to measure value for money throughout the project cycle. UN-Habitat already has worked in the project target sites and excellent relationships with Government stakeholders/Local Authorities and communities,

<sup>53</sup>Sri Lanka has a well-established district and sub-district level extension services under a number of Government departments such as Department of Agriculture, Department of Agrarian Services, Department of Fisheries and Aquatic Resources etc.



enabling implementation through existing structures at minimum logistic cost. Safeguard analyses and observed data will give feedback on how strategically money has been spent at the local scale. In analysing effectiveness, scientific rigor and “on-the-ground” approach ensure investments are targeted appropriately and ensure quality necessary for cost-effectiveness.

The proposed project has the two principal foci of resilient, adaptive livelihoods and addressing capacity needs and gaps on adaptation measures for reducing vulnerability of selected marginalised rural settlements. Adopting a participatory process, the project will work with local communities in the provision of the above targets. It will advocate access to resources and finances for communities who have had limited access to climate finance. So far, the local level responses to extreme events and its associated impacts on settlements and livelihoods have been largely reactive. The project approach will enable climate finance to flow to activities that will be implemented by vulnerable groups and will provide an important complementary adaptation response to higher level systemic responses.

The participatory process adopted in working with local communities in achieving targets, will advocate access to resources and investments for communities. 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.

The design of the project is founded on the premise of reducing livelihood vulnerability to rainfall variability by introducing alternate sources of resilient crop cultivations, income, food and basic facilities; and building capacities to face challenges of climate change and climate variability in rural scenarios of Mullaitivu District. So far, the local level responses to extreme events and its associated impacts on livelihoods have been largely reactive. The projects’ approach will enable pre-emptive actions flowing into activities that will be implemented by vulnerable groups and will provide an important complementary adaptation response to higher level responses. The proposed activities (both *hard* and *soft* components) under cost-effectiveness could be replicated to the majority of farming areas and fisher communities of the country with long-lasting positive impacts. The livelihood actions were derived through consultation with the relevant technical agencies, local government authorities and farmer families through dialogues and discussions as stated in the project consultation process.

The main actions in the project highlight that livelihood development, food security and improved income are necessary conditions for resilience building. For farmers battling with climate variability and water scarcity at crucial times of cultivation, provision of water is a survival measure. Activities for surface water storage therefore are essential actions. The project recommends rehabilitation of minor irrigation tanks as a priority intervention measure. At the initial stages water retention capacity of a small/medium irrigation tank might be a few months, experience shows that the period increases with time and sustain for longer period. The minor tanks -- water storing modality has been tried and tested with tremendous success by the GEF Small Grants Programme<sup>54</sup> in Sri Lanka for over 15 years for farming in areas of water scarcity. Long term benefits show results of increasing greening of gardens with moisture accumulation and water recharge which in turn helps in retaining water in ponds for longer periods<sup>55</sup>. The costs of minor irrigation tanks are minimal with direct access to water to the farming household as opposed to mega irrigation projects at extremely high cost. It demonstrates that surface water storage and delivery is the most cost-effective way of improving irrigation for rural farm families.

Provision of climate resilient sanitation facilities are able to withstand the climate challenges of the future. These leverage benefits that would facilitate the use of a well-functioning toilet even during seasons of flooding. A resilient sanitation system is not only able to keep all communities (not just the households) healthy and functioning throughout unanticipated shocks and stresses and minimises environmental and social negative impacts.

The cost incurred in restoring mangroves have to be compared with costs incurred in alternative actions such as building seawalls which is costlier. Furthermore, restoring mangroves is a cost-effective solution to address productivity loss due to saltwater intrusion into coastal farming lands or costs incurred through damages to infrastructure, roads in a storm/cyclone, biodiversity loss, where mangroves have been destroyed and denuded. Mangrove forests are highly productive. According to IUCN, “mangroves support rich biodiversity and high levels of productivity, supplying seafood at capacities large enough to feed millions”.<sup>56</sup> Mangrove and other land cover types (e.g., sand dunes) have the potential to act as protective buffers for coastal zone.

Saltwater intrusion processes lead to poor quality groundwater, which can lead to soil salinisation problems and soil degradation thus contributing to loss of productivity of coastal agriculture. Coastal overexploitation also leads to saltwater intrusion. Loss of agriculture productivity is associated with economic implications, further burdening the vulnerable communities. In addition, coastal aquifers are subjected to more pronounced climate change effects, including sea level rise and growing populations, further negatively affecting the quantity and quality of groundwater resources. Therefore, interventions to minimise/eradicate saltwater intrusion will have profound economic benefits.

The maintenance of small-scale infrastructure facilities (a) 1km earth bund, (b) 15 minor tanks, (c) 3km existing evacuation route, constructed, and (d) rehabilitation of 1.5km of mangroves will be under the purview of (a) Coast Conservation Department and Central Environment Authority, (b) Department of Irrigation and Department of Agrarian Development, (c) Road Development Authority at the Provincial level respectively, and (d) Coast Conservation Department and Central Environment Authority. The ownership of the disaster-resilient toilets will be with the beneficiaries; however, this activity will be supported by the Medical officer of Health (MOH) and Public Health Inspector (PHI).

<sup>54</sup> Community Based Adaptation (CBA) Programme of GEF/SGP Sri Lanka 2011 – 2015 funded by AusAid

<sup>55</sup> ‘Coping with Climate Change and Variability: Lessons from Sri Lankan Communities’, 2016 CBA Programme of GEF/SGP Sri Lanka

<sup>56</sup> IUCN (2017). <https://www.iucn.org/news/forests/201708/mangroves-nurseries-world%E2%80%99s-seafood-supply>

**Table 6: Cost Effectiveness Criteria**

Proposed Action	Cost Effectiveness Criteria		Alternative Action	Cost Effectiveness Criteria	
Construction of 1km earth bund with sluice gate	Future cost of climate change	✓	Building concrete /cement seawalls 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
Rehabilitation of exiting 15 minor irrigation tanks for water storage	Future cost of climate change	✓	Rehabilitation of medium or large/medium tanks	Future cost of climate change	✓
	Project efficiency	✓		Project efficiency	✗
	Community involvement	✓		Community involvement	less
	Cost/Feasibility	✓		Cost/Feasibility	✗
	Environmental and social safeguarding risks	Less Risk		Environmental and social safeguarding risks	More Risk
Improvement of 3km long evacuation route	Future cost of climate change	✓	Building elevated bridge with walking path	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
Construct 18 disaster-resilient toilets	Future cost of climate change	✓	Constructing large-scale sanitation facilities with septic tank, sewerage and offsite treatment of faecal sludge and effluent	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
Climate resilient agriculture crops (groundnuts and coconut)	Future cost of climate change	✓	Improve soil conditions with fertilizer for alternative crops	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
Replant/rehabilitation of 1.5km of mangrove	Future cost of climate change	✓	Building seawall	Future cost of climate change	✗
	Project efficiency	✓		Project efficiency	✗
	Community involvement	✓		Community involvement	✗
	Cost/Feasibility	✓		Cost/Feasibility	✗
	Environmental and social safeguarding risks	Less Risk		Environmental and social safeguarding risks	More Risk

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

In terms of consistency with national sustainable development and poverty reduction strategies laid down in the current government’s policy of “Vistas of Prosperity & Splendour”, national communications along with SDG goals, the project components are designed to align with (adaptation) priorities of key government plans. This includes the National Adaptation Plan for Climate Change, National Environment Action Plan, and Second National Communications to UNFCCC, which consider climate change impacts under four sectors i.e., agriculture, water resources, human health and coastal zone. The adaptation options proposed for crops are to promote varieties that are tolerant to increased temperatures and water deficits and in the case of rice, to high salinity as well. The National Climate Change Adaptation Plan underscores the country’s vulnerability to the impacts of climate change, increases in the frequency and intensity of disasters such as droughts and floods; variability and unpredictability of rainfall patterns, increase in temperature and sea level rise. The strategy lays out a framework for action and investment to systematically move towards a climate change resilient future. The holistic approach adopted by Sri Lanka’s poverty reduction strategy paper (PRSP) in March 2003 was considered to be successful by the World Bank in mainstreaming key environmental and climate change considerations. The project considers all requirements stipulated in the above documents to act to achieve stated targets.

Sri Lanka ratified the United Nations Framework Convention on Climate Change (UNFCCC) on 16 March 1993 and submitted its Initial National Communication (INC) to the UNFCCC October 2000. The country ratified the Kyoto Protocol on 3 September 2002. The Second National Communication on Climate Change for Sri Lanka was submitted in February 2012. Many environmental and natural resources related policies have been prepared and adopted by the Government to guide implementation of initiatives that address climate change. In 1992 the Government launched its National Environment Action Plan (NEAP), which identified 12 components aimed at responding to pressing environmental problems of the time which might have an impact on the local environment in the future. The holistic approach adopted by Sri Lanka’s poverty reduction strategy paper (PRSP) in March 2003 was

considered to be successful by the World Bank Environment Department in mainstreaming key environmental and climate change considerations. The policy changes required to guide the implementation of initiatives that address climate change includes the National Environment Action Plan (NEAP) first launched in 1992, which identified 12 targets, directly aimed at responding to pressing problems that impact on the local environment. Sri Lanka's PRSP in March 2003 was considered to be successful by the World Bank in mainstreaming key environmental and climate change considerations.

In the proposed project, both poverty and environment components are designed to align with (adaptation) priorities in several key government plans (see below and Table 4). This includes the National Plan for Sustainable Development, the National Adaptation Plan for Climate Change Impacts 2016 – 2025, Coastal Zone Management Plan 2018 – 2023, and the Second National Communication to UNFCCC.

The proposed project is consistent with the priorities laid out in the Second National Communication which considers climate change impacts under four sectors i.e., agriculture, water resources, human health and coastal zone. The adaptation options proposed for crops are to develop varieties that are tolerant to increased temperatures and water deficits and in the case of rice, to high salinity as well. Other options are changes in cropping calendars and farmer education, adoption of soil and water conservation measures. The importance of providing financial assistance to small-scale farmers to adopt recommended measures is highlighted. The increase in temperature and shortage of water that will affect people's health has been emphasised, the direct impacts of which are increased vector population, deaths and injuries caused by increasing extreme events and resulting spread of disease and illnesses brought about due to non-availability of clean water. Policy measures on improving the public health system and educating the people are among the adaptation measures suggested. Sea level rise is one of the direct impacts that is felt in the coastal zone. Intrusion of salinity into low lying agriculture land and water ways are expected to limit agricultural activities and usage of water. Relocation of coastal communities, i.e., those in close proximity to water intakes, developing infrastructure and strengthening the sea defense structures are some of the adaptation measures recommended.

The National Climate Change Adaptation Strategy (NCCAS) of Sri Lanka 2016 -2025, underscores the country's vulnerability to the impacts of climate change, mainly increases in the frequency and intensity of disasters such as droughts, floods and landslides; variability and unpredictability of rainfall patterns; increase in temperature; and sea level rise. The strategy lays out a prioritised framework for action and investment to systematically move towards a climate change resilient future. The NCCAS mirrors and supports Sri Lanka's national development strategy as articulated in the government policy Vistas of Prosperity and Splendour and is aimed at ensuring its success and sustainability. Table 4 presents the key Government policies on which the project is based on.

**Table 7: Key Government policies/strategies/plans adopted in the project**

Key National Policy and Responsible Agency	Project elements consistent with policy
1. National Climate Change Policy, Ministry of Environment	Community awareness on vulnerability to climate change. Adaptive measures to avoid/minimise adverse impacts of climate change to livelihoods and ecosystems. Enhance knowledge on issues related to climate change and build capacity to make prudent choices in decision making. Mainstream and integrate climate change issues in development.
2. National Adaptation Plan for Climate Change Impacts in Sri Lanka: 2016 – 2025, Ministry of Environment	Enable climate resilient and healthy human settlements. Minimise climate change Impacts on food security, improve climate resilience of economic drivers, safeguard natural resources and biodiversity from climate change Impacts. Key relevant sectors in the plan are food security; water resources; coastal and marine sector; health; human settlements and infrastructure; ecosystems and biodiversity; tourism and recreation; export agriculture; and industry, energy and transportation.
3. National Policy Framework Vistas of Prosperity and Splendour, Ministry of Finance	One of the key policies include 'Sustainable Environmental Management' that emphasises on environmental regulation for conservation and protection, updating the existing environmental policies, rules and regulations, integrating the SDGs into development framework, incorporating the indigenous knowledge and technologies into sustainable development and coordinating at all administrative levels to ensure upgrading living standards.
4. Nationally Determined Contributions (NDCs) under the Paris Agreement for Climate Change Sri Lanka	NDCs of adaptation to adverse effects of climate change-- Minimising climate change impacts on food security in agriculture and fisheries. Promote heat/drought/flood/salt tolerant varieties, land and water management under the agriculture sector and (although not highlighted in the NDCs) promotion of brackish water fisheries and fish value addition.
5. The National Framework for Women-headed Households (2017–2019), State Ministry of Women and Child Development (discussions were held to update the framework)	Improve the socio-economic situation of women affected by conflict. Programmes supporting the economic empowerment of rural women, encouraging women to enter technological fields to improve employment opportunities.
6. National Agricultural Policy, Department of Agriculture	Irrigation water management, soil moisture conservation, soil conservation, land conservation in watersheds, organic agriculture, home gardening, integrated pest management and integrated plan nutrition systems, conserving agro-biodiversity and promoting tolerant species.
7. National Disaster Management Policy, Ministry of Disaster management	Early warning systems linked to community preparedness and risk assessment.
8. National Forest Policy, Department of Forest	Increasing tree cover in non-forest areas, reducing pressure on natural forests by supporting community woodlots, management of multiple-use forests.
9. National Environmental Policy, Ministry of Environment	Restoration and conservation of eco systems, conservation of native species and agro-biodiversity, water resources conservation and management, soil conservation.

10. National Fisheries and Aquatic Resources Policy, Department of Fisheries and Aquatic Resources	Improvement of sustainability of fish and other aquatic resources; post-harvest marketing and development aspects; protection of fish breeding ecosystems.
11. National Action Programme (NAP) for Combating Land Degradation in Sri Lanka 2015-2024, Ministry of Environment	Reduce land degradation and mitigate the effect of drought with the participation of affected communities, addressing causes, identifying measures to combat land degradation and drought, land related socio-economic issues and poverty alleviation and to ensure environmental stability. Promoting active stakeholder participation in planning, implementation, monitoring and evaluation

**Table 8: Project alignment with national plans and strategies**

Project Components	National Policy Framework Vistas of Prosperity and Splendour - Strategies and Indicators	National Adaptation Plan for Climate Change Impacts in Sri Lanka - Strategy Priorities	Second National Communication - Adaptation Priorities	Nationally Determined Contributions under the Paris Agreement for Climate Change Sri Lanka
<p>1. Developing resilient and adaptive small-scale infrastructure and ecosystems for improvement of livelihoods in the three (3) selected Divisional Secretariat (DS) Divisions in Mullaitivu District</p>	<ul style="list-style-type: none"> <li>*Create healthy environment by preventing pollution of air, water soil through sustainable environment policy</li> <li>*Introduction of environmentally friendly farming</li> <li>*Improve the environmental conditions in lagoons</li> <li>*Identify appropriate lands for development activities to minimise the environmental impacts</li> <li>* Improve the environmental conditions in lagoons</li> <li>*Ensure coastal erosion mitigation</li> <li>* Introduction of environmentally friendly farming</li> </ul>	<ul style="list-style-type: none"> <li>*Stimulate greening of settlements and preservation of natural ecosystems</li> <li>*Increase awareness on climate impacts on food security &amp; potential adaptive measures</li> <li>*Pilot test and scale up community level agriculture/livestock/fisheries adaptation models</li> <li>*Livestock development</li> <li>*Promoting organic agriculture and integrated pest management</li> </ul>	<ul style="list-style-type: none"> <li>*Drought resistant crop varieties</li> <li>*Efficient agronomic practices such as, soil moisture conservation: mulches, ground cover crops.</li> <li>*Improve soil organic matter</li> <li>*Sustainable fishing practices</li> <li>*Coastal habitat conservation</li> <li>*Rainwater harvesting.</li> </ul>	<ul style="list-style-type: none"> <li>*Minimising climate change impacts on food security in agriculture and fisheries.</li> <li>*Promote heat/drought/flood/salt tolerant varieties, land and water management under the agriculture sector</li> <li>*Promotion of brackish water fisheries and fish value addition.</li> </ul>
<p>2. Address capacity needs and gaps on adaptation measures for rural settlements that can reduce vulnerability to climate change and increase coping capacity.</p>	<ul style="list-style-type: none"> <li>* Promote awareness and positive attitude change</li> <li>*Develop targeted programmes for school children, youth and community to promote awareness and positive attitude change</li> </ul>	<ul style="list-style-type: none"> <li>*Increasing available water, improving ground water recharge, and enhancing micro climate</li> <li>*Safeguarding available irrigation</li> <li>*Improve utilisation of field level coordination mechanisms and civil society organisations</li> </ul>	<ul style="list-style-type: none"> <li>*Rehabilitation of small ponds to improve irrigation water availability and ground water recharge</li> </ul>	<ul style="list-style-type: none"> <li>*Enhancement of education, awareness and capacity building under relevant sectors.</li> </ul>

## E. National technical standards and compliance with the Environmental and Social Policy of the Adaptation Fund.

The proposed project has an obligatory requirement to follow and comply with national technical standards and relevant legislation. The project is selected for submission to the Adaptation Fund through a national consultation process and going forward, will be implemented and monitored in line with national legislation and standards outlined below.

They have relevance to principals of Adaption Fund such as compliance with the law, marginalised and vulnerable groups, gender equity, women's' empowerment, land and soil conservation among others. The implementation and monitoring of the project will ensure that the principles of the AF, as well as the relevant national technical standards, are adhered to during the lifetime of the project.

Project components and outputs will meet technical standards prescribed in agriculture, agrarian services, fisheries, disaster management and water resources management technical guidelines and norms. Technical safeguards for minimisation of saltwater intrusion through bunds, restoration of minor irrigation tanks and evacuation routes etc. will be followed and incorporated during activity design and implementation by the relevant focal agencies engaged in implementing and monitoring the project at national and divisional level. The project will also identify needs and gaps in appropriate sector technologies aligned with adaptation needs and develop/field test suitable solutions with community participation.

**Table 9: Compliance with national technical standards, rules, regulations and procedures, and ESP principles**

Output	AF ESP <sup>57</sup>	Relevant Rules, Regulations, Standards and Procedures	Compliance procedure and authorising offices
Output 1.1: Reduce vulnerability of coastal communities to face risks of climate change by collaborating on (a) measures to minimise saltwater intrusion into freshwater bodies through 1km earth bund, (b) rehabilitate 15 minor tanks for water storage, drinking and irrigation, (c) 18 disaster-resilient toilets and (d) 3km existing evacuation routes.	2, 3, 4, 5, 9, 11, 15 and 16	<ul style="list-style-type: none"> <li>*Technical Guidelines for Irrigation Works, Irrigation Department Sri Lanka, Colombo. Ponrajah, AJP 1988.</li> <li>*Standard Specifications for Construction and Maintenance of Roads and Bridges [2<sup>nd</sup> Edition – June 2009].</li> <li>*Specification for Site investigation for Building and Civil Engineering Works [3<sup>rd</sup> Edition – May 2013].</li> <li>*Rehabilitation Guideline for Minor Irrigation headworks, Irrigation Department, Ministry of Irrigation, November 2020.</li> <li>*Technical Guidelines for Irrigation Works, Irrigation Department Sri Lanka, Colombo. Ponrajah, AJP 1988.</li> <li>*Designs of Irrigation Headworks for Small Catchments, Irrigation Department Sri Lanka, Colombo Ponrajah, AJP 1984.</li> <li>*Specifications for Irrigation &amp; Land Drainage – [1st Edition – January 2017].</li> <li>The National Environmental (Ambient Water Quality) Regulations, No. 01 of 2019- <a href="http://www.cea.lk/web/images/pdf/epc/2148-20_E-1.pdf">http://www.cea.lk/web/images/pdf/epc/2148-20_E-1.pdf</a></li> <li>*Standard Specifications for Construction and Maintenance of Roads and Bridges [2<sup>nd</sup> Edition – June 2009].</li> <li>*Specification for Site investigation for Building and Civil Engineering Works [3<sup>rd</sup> Edition – May 2013]</li> <li>*Specifications and Guidelines for Domestic Septic Tanks and Soakage Pits from National water Supply &amp; Drainage Board</li> <li>*Design Considerations on Accessibility for Person with Disabilities by Ministry of Health</li> </ul>	<ul style="list-style-type: none"> <li>*District Secretariat of Mullaitivu</li> <li>*Central Environment Authority</li> <li>*Department of Coast Conservation and Coastal Resource Management</li> <li>*Department of Irrigation</li> <li>*Department of Agriculture</li> <li>*Department of Agrarian Development</li> <li>*Disaster Management Centre</li> <li>*Climate Change Secretariat</li> <li>*Ministry of Environment</li> <li>*Ministry of Health</li> <li>*Department of Health Services</li> </ul>

<sup>57</sup> AF ESP - 1. Compliance with Law; 2. Access and Equity; 3. Marginalised and Vulnerable Groups; 4. Human Rights; 5. Gender Equality and Women's Empowerment; 6. Core Labour Rights; 7. Indigenous Peoples; 8. Involuntary Resettlement; 9. Protection of Natural Habitats; 10. Conservation of Biological Diversity; 11. Climate Change; 12. Pollution Prevention and Resource Efficiency; 13. Public Health; 15. Physical and Cultural Heritage; and 16. Lands and Soil Conservation

		*General Regulation by Urban Development Authority *All relevant acts will be taken into consideration.	
Output 1.2: Promote climate resilient sustainable agriculture and increase productivity with climate resilient crops (e.g., groundnut, coconut) in 6 acres of coastal lands.	2, 3, 5, 11 and 16	*Agrarian Development Act, No. 46 of 2000 *Soil Conservation Act, No. 24 of 1996 *Control of Pesticides (Amendment) Act No. 6 of 1994 *Seed Act No. 22 of 2003 & Draft of New Seed & Planting Material Act *Plant Protection Act, No.35 of 1999 *Coconut Development Act No. 46 of 1971 *National Climate Change Policy	*District Secretariat of Mullaitivu *Central Environment Authority *Department of Agriculture *Department of Agrarian Development *Coconut Cultivation Board
Output 1.3: Increase income of vulnerable fishing households, in particular women and youth through value-added fish processing and rehabilitating 1.5km mangroves for improved lagoon fishery.	5, 10, 11 and 16	*Fisheries and Aquatic Resources Act 1996, No. 2 of 1996. *National Policy Framework for Small and Medium Enterprises (SMEs) Development. *Coast Conservation Acts 57/1981 and 49/2011. *National Policy on Conservation and Sustainable Utilisation of Mangrove Ecosystems in Sri Lanka.	*District Secretariat of Mullaitivu *Department of Coast Conservation and Coastal Resource Management *Department of Agrarian Development *Department of Fisheries and Aquatic Resources
Output 2.1.: Participatory vulnerability/risk assessments to mainstream community-based climate change adaptation in local development plans and promote climate change/disaster resilient local development plans.	2, 3, 4, 5, 9, 11, 15 and 16	*Agrarian Development Act, No. 46 of 2000 *Soil Conservation Act, No. 24 of 1996 *Control of Pesticides (Amendment) Act No. 6 of 1994 *Seed Act No. 22 of 2003 & Draft of New Seed & Planting Material Act *Plant Protection Act, No.35 of 1999 *Coconut Development Act No. 46 of 1971 *National Climate Change Policy.	*District Secretariat of Mullaitivu *Central Environment Authority *Department of Coast Conservation and Coastal Resource Management *Department of Irrigation *Department of Agriculture *Department of Agrarian Development *Disaster Management Centre *Climate Change Secretariat *Ministry of Environment
Output 2.2: Share knowledge and lessons through documentation of climate resilient actions with increased adaptive capacities.	2, 3, 4, 5, 9, 11, 15 and 16	*Fisheries and Aquatic Resources Act 1996, No. 2 of 1996. *National Policy Framework for Small and Medium Enterprises (SMEs) Development. *Coast Conservation Acts 57/1981 and 49/2011. *National Policy on Conservation and Sustainable Utilisation of Mangrove Ecosystems in Sri Lanka.	*District Secretariat of Mullaitivu *Central Environment Authority *Department of Coast Conservation and Coastal Resource Management *Department of Irrigation *Department of Agriculture *Department of Agrarian Development *Disaster Management Centre *Climate Change Secretariat *Ministry of Environment

## F. Describe if there is duplication of project/programme with other funding sources.

The project is being proposed for three (3) DS Divisions with minimal initiatives on climate adaptation being implemented. No activities are included that are already being supported from other funding sources. The project will complement, build on and learn from a number of on-going projects as detailed below for additional knowledge in activity implementation. This will add to the understanding gained from the stakeholder mapping and consultation that took place at the design stage of the project, with interactions of provincial and local government members and communities. As a government-led effort to implement an adaptation project based on policy and identified priorities on the ground, the project will be responsive and responsible for above-board execution. It will complement on-going government programs that are being implemented to manage sea level rise, drought and landslides, improve rural agricultural productivity, water management and conservation of biodiversity.

The focus of the project is community resilience of rural and coastal settlements and preservation of ecosystems as an adaptation strategy, to this end, the experience of lessons and practices from many donor-implemented micro projects, especially the successful Community Based Adaptation pilot projects of UNDP GEF/SGP Sri Lanka, have influenced the design of activities and delivery/monitoring and assessment modality of the project.

Table 7 presents a summary of recently concluded, on-going, and pipeline projects that deal with rural livelihoods, water management, climate change, habitat conservation, biodiversity and peace building and empowerment.

**Table 10: Summary of ongoing/pipeline projects**

Project Name/Funding Institution	Objectives/Description	Potential Synergies	Agency/Geographical coverage
1. Model Villages Programme, Api Wawamu-Rata Nagamu Programme of the Ministry of Agriculture  National Budget	Demonstrate new technologies from crop production to consumption for farmers in cultivating of higher-yielding crop varieties, minimisation of pre/post-harvest losses, increasing food and nutrition security. Educate farmers in conservation of natural resources	The project proposes a number of similar capacity development and local livelihood development activities including home gardens. The project could complement this national initiative in target DSDs delivery for a more effective package of DSD level developmental benefits.	GoSL - Ministry of Agriculture  All Districts
2. Addressing Climate Change Impacts on Marginalised Agricultural Communities Living in the Mahaweli River Basin of Sri Lanka. World Food Programme (WFP), 2012  Adaptation Fund	Secure community livelihoods and food security against climate change-induced rainfall variability, through - developing household food security and resilient livelihoods and, building institutional capacity in service delivery to reduce risks associated with rainfall variability	Addressing specific vulnerabilities faced by rural and coastal settlements, strategies to overcome food and income security; diversified income sources to broad-base risk, improved water storage, improved soil quality and fertility for increased production of small farmers	Then Ministry of Mahaweli Development and Environment (MMDE)  Two locations in Nuwara Eliya and Polonnaruwa Districts  WFP
3. Integrated Water Management  Green Climate Fund	Strengthen the resilience of vulnerable smallholder farmers in the country's Dry Zone, particularly women, who are facing increasing risks of rising temperatures, erratic rainfall, and extreme events attributable to climate change	Learn lessons from the experience of women farmers who are facing extreme events, similar to experience of women in the two proposed settlements.	Then MMDE/ UNDP  North Central Province
4. Purchase for Progress (P4P) World Food Programme (WFP) WFP's 2014-2017 Strategic Plan commits continuation of buying increased food amounts from smallholder farmers, and support governments, other buyers to assist smallholder farmers to access lucrative markets	To improve production of soya and maize, and develop marketing chain for its eventual processing in to a nutritional dietary supplement for children	Lessons from farmer Organisation-based women-focused production, storage and marketing of agricultural produce	North Central and Northern Provinces  WFP
5. Community Based Adaptation to Climate Change  (AusAid/GEF SGP)	To pilot science and technology-backed interventions to counter risk of climate-related hazards on livelihoods of rain fed farmers	Replicable actions and risk reduction strategies for project output implementation	Five Districts of Sri Lanka.
6. Mainstreaming agro-biodiversity conservation and use in Sri Lankan agro-ecosystems for livelihoods and adaptation to climate change (GEF 1V/ UNEP)	Adaptive management, post production support and policy/institutional framework that protects agro-biological diversity in Sri Lanka	Directly supports research and development aspects of the proposed project. Also envisioned that the corresponding implementation period may benefit both projects through lessons learnt. Since project is implemented through MMMDE, duplication will be minimal.	National Project activities more concentrated in three ecologically diverse agriculture landscapes village tanks, suburban paddies and forest home gardens of the mid-country
7. Mainstreaming biodiversity conservation and sustainable use for improved human wellbeing and nutrition (GEF 1V/ UNEP/FAO)	Develop a long-term development framework including guidelines, strategies and systematic approaches for conservation and utilisation of agro-biodiversity (for improved nutrition) in Sri Lanka using an ecosystem approach.	The project will contribute substantial knowledge on traditional crops, especially edible yams and wild rice varieties with high nutrition value to improve home garden design.	National. Part of a global project including countries Kenya, Brazil and Turkey in addition to Sri Lanka
8. EMPOWER: Building peace through the economic empowerment of women in Northern Sri Lanka	Increase access to economic empowerment, social integration, resilience and peacebuilding	Women Empowerment, reconciliation, social integration are important components of the proposed project	Northern Province Implemented by the ILO, WFP and Puthukkudiyiruppu Women



UN Peace Building Fund	participation for conflict affected women in Mullaitivu		Entrepreneurs' Cooperative Society
9. Operationalising Hazard Maps and Development controls in landslide hazard areas (UNDP BCPR)	To initiate hazard-map based awareness and rational development planning in landslide and drought prone districts and divisions	Elements of complementarity with the early warning and community-based natural resource management outputs	All Districts identified as being prone to drought and floods
10. Enabling activities for the preparation of Sri Lanka's second national communication to the UNFCCC (UNDP completed)	To strengthen the technical and institutional capacity of Sri Lanka in mainstreaming climate change concerns into the country's sectoral and national development planning processes.	Mainstreaming climate change concerns into the country's sectoral and national development planning processes will complement the proposed Adaptation Project in terms of collaboration with relevant agencies and seeking continuation of project activities beyond the project period.	National/Ministry of Environment
11. Promoting Reconciliation in Sri Lanka through strengthening processes and mechanisms  UN Peace Building Fund	Processes and mechanisms promoting social cohesion and conflict prevention, including through dialogue and early warning, institutionalized at national and sub-national levels	Promoting social cohesion and conflict prevention, including through dialogue and early warning, institutionalised at national and sub-national levels	UNDP
12. UNDP GEF Small Grants Programme  GEF	Sixth operational phase - Enable community organisations to take collective actions for adaptive landscape management for socio ecological resilience via Design monitoring and evaluation	Socio-ecological resilience and adaptation models that can be replicated in this project	Three landscapes in Colombo, Matale/Kandy and Mannar districts  UNDP  UNOPS

## G. Learning and knowledge management component to capture and disseminate lessons learned.

Learning and knowledge management to capture and disseminate lessons learned is a key area of the proposed project. Initiatives on adaptation are being practiced increasingly and providing empirical evidence with factual data is a prerequisite for projects that work with communities on adaptation, to disseminate information and share lessons with those in similar circumstances facing rapid and intense changes of climate challenged by coping capacities, as well as for policy makers and academics in discussion of the topic. Sri Lanka has limited experience in working with communities on adaptation practices. Thus, it is obligatory to document the practices as part of the learning curve of all stakeholders. Diligent monitoring and assessment of results and impacts is crucial in order to test effectiveness of government-prescribed adaptation measures, especially in agriculture and water management. The proposed project will serve as part of that learning curve that will allow national technical agencies to test out their own assumptions for community-based adaptation. It will provide the government with the opportunity to review context specific approaches and scale up successful activities to achieve resilience of communities and ecosystems to climate impacts on a wider landscape. The project has included the output 'Share knowledge and lessons through documentation of climate resilient actions for increased adaptive capacities' especially targeting the up-scaling of lessons and best practices; and generating opportunities for autonomous adaptation in communities with similar ecological and socio-economic conditions.

Around the globe, communities are coping with changing environmental conditions as a result of climate change, with decreasing natural resources and ecosystem services, lack or intensified rains, severe storms, sea level rise among others. Initiatives on adaptation are being practiced increasingly and a central claim of community-based adaptation (CBA) is that it increases resilience. Providing empirical evidence with factual data is a prerequisite for projects that work with communities on adaptation, to disseminate information and share lessons with those in similar circumstances facing rapid and intense changes of climate challenged by coping capacities as well as for policy makers and academics in discussion of the topic.

Sri Lanka has limited experience in working with communities on adaptation practices and it obliges to document the practices as part of the learning curve of all stakeholders. Diligent monitoring and assessment of results and impacts is crucial in order to test effectiveness of government-prescribed adaptation measures, especially in agriculture and water management. The proposed project will serve as part of that learning curve that will allow national technical agencies to test out their own assumptions for community-based adaptation. This is especially true of the strategy (in the National Sustainable Development Plan and National Environment Action Plan) to protect food security and agricultural livelihoods from climate related impacts. This will provide the government with the opportunity to review context specific approaches establish best practices and scale up successful activities to achieve resilience of communities and ecosystems to climate impacts on a wider landscape. To meet this requirement the project has included output 2.4. – 'Share knowledge and lessons through documentation of climate resilient actions for increased adaptive capacities. This output especially targets the up

scaling of lessons and best practices; and generating opportunities for autonomous adaptation in communities with similar ecological and socio-economic conditions.

In addition, the proposed workshops and seminars will be an opportunity for exchange of ideas on challenges and successes and to form a supporting network in particular with government authorities. A social media platform to promote regular interaction can also be an opportunity to forge partnerships with a broader adaptation network partner. In both districts provincial and national media persons will have access to knowledge products such as photos, testimonials, interviews, case studies for publication. Stories of success and challenges will be developed and shared in relevant national or international climate change fora. Policy briefs with recommendations will help inform local and national policy development. UN-Habitat will work with university networks to encourage student study/internship opportunities for learning as well as to encourage support and mentorship.

## **H. Consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.**

Initiated by the Ministry of Environment (Climate Change Secretariat), the concept note formulation started upon a wide range of consultation process at different levels: governmental stakeholders, decision-makers, technical professionals, community representatives. The Ministry of Environment was involved from the beginning of the formulation and supported the process to define the activities corresponding to the national adaptation priorities. During discussions held with the Ministry of Environment the request to formulate the project was received in September 2019, based on previous discussion on climate change adaptation potential in Mullaitivu District (earlier Nuwara Eliya District was also included). Throughout the formulation, several bilateral discussions were held with the Ministry for feedback and validation—This ensured that the project was designed in alignment to the priorities of the Government, namely the National Adaptation Plan for Climate Change Impacts in Sri Lanka (2015 – 2025).

UN-Habitat has built a good rapport with the District level entities through the previous development work (sustainable human settlements development under the post-conflict resettlement, reconstruction and rehabilitation), this facilitated the consultation process. Once the project idea was initiated and discussions with the District and Divisional Secretaries were held over an 18-months' period. As mentioned elsewhere, Sri Lanka was under sporadic lockdowns/curfews due to the COVID-19 pandemic with travel restrictions imposed, with strict health guidelines which limited the travel to the field. In all discussions, the initiative had an overwhelmingly welcome as the communities in the Mullaitivu District have been facing increasing climate hazards with minimum infrastructure, economic and social facilities. The stakeholder mapping and consultation process for Mullaitivu District were initially done through dialogues with GN Officials of the Divisional Secretary Division of Maritiméattu and discussions with community representatives. With extensive travel restrictions being imposed for a major part of the 18-months' period later discussions were held using digital media with the District Secretary for Mullaitivu, planning officers, District officials of Disaster Management Centre and Central Environment Authority, key Fishery Department and Coconut Development Board officials. The consultative process at the district and divisional levels with local stakeholders is an on-going process to ensure optimum participation in project actions. The data/information will be further verified prior to the development of the full proposal.

## **I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.**

The sustainability of the project has been taken into account from project planning stage. The project outcomes are designed to address gaps in adaptation and community needs in facing climate challenges. They align government priorities as detailed in the National strategies, Plans and Policies on adaptation, and outcomes of the Adaptation Fund as stated in the Adaptation Fund results framework. They are designed to complement each other and thereby reinforce actions taken to achieve sustainability. Activities could be seen as traditional adaptation approaches, but they support broader resilience actions that pursue to reduce current day vulnerabilities and build a strong platform for future adaptation pathways. They are therefore efficient climate finance instruments that can support local level adaptation needs of vulnerable members in the two selected targeted areas and sustain, once AF investment concludes. Livelihood options for communities challenged by climate change, with training, learning and capacity building uphold avoiding of future costs related to climate change and can be integrated into national plans and policies. The project approach will also provide robust lessons and insights for future funding opportunities.

By fully engaging communities, in particular women and youth, social integration of the project outputs will be achieved. The awareness raising and capacity enhancement of the households will also lead to long-lasting interest. Most importantly the increased resilience of communities will reduce vulnerabilities in the long run. Once the benefits are shared nationally, it is likely that other district authorities will also welcome adaptation initiatives for their communities. This will facilitate the up-scaling/out-scaling of project activities and open ways for local and national governments to replicate and reach out to other areas needing such initiatives. Trained government officials at different levels with planning and implementing experience, will support in aligning adaptation planning processes at district, provincial and national levels, with a view to influencing an enabling policy environment.

**Table 11: Effect of project outcomes with AF funding compared to no funding (baseline)**

Project Components	Project outcomes	Baseline (without AF)	Results achieved (with AF)
1. Developing resilient, adaptive livelihoods in the selected locations in the three (3) DS Divisions in Mullaitivu District.	Outcome 1 - Resilient and adaptive small-scale infrastructure and ecosystems for improvement of livelihoods in the three (3) selected Divisional Secretariat (DS) Divisions in Mullaitivu District developed.	The vulnerable communities have little support received so far to strengthen livelihoods dependent on natural resources and climate. Resilience capacity is low and capacity to prepare for and respond to climate change and natural hazards are poor.	The identified and targeted vulnerable communities have capacity (with awareness, training and capacity development) to take appropriate resilience measures The communities are enabled to prepare for and respond to climate change and natural hazards.
2. Address capacity needs and gaps on adaptation measures for rural settlements that can reduce vulnerability to climate change and increase coping capacity	Outcome 2 – Capacity needs and gaps in adaptation measures that can reduce vulnerability to climate change and increase coping capacity developed.	The most vulnerable people (women, youth, disabled, agriculture workers, fishers), are not identified or reached by local authorities/agencies through their plans and programs as officers have limited capacity to act on climate change adaptation activities.	Trained and capacities built of officials and the identified vulnerable members of each location in coping methods. The most vulnerable people are the main beneficiaries. Officials have capacity to lead climate change adaptation planning/implementing activities.

## **J. Sustainability of the project/programme outcomes has been taken into account when designing the project.**

The project will deliver on economic, social and environmental benefits to vulnerable groups in particular women and marginalised groups in the two targeted project locations. With access to funding to implement sustained adaptation practices in particular agricultural interventions embracing climate smart agriculture, income poor households will benefit from improvements in income security. In Mullaitivu district having undergone an internal conflict, beneficiaries will be selected from over 40% female headed households and 50% households with disabled members. Income improvements are attempted through land management, water conservation, cultivation of climate resilient crops (groundnut and coconut) and minimising post-harvest losses are important revenue sources for vulnerable members. A range of other activities i.e., training in value addition of fish, storage and processing techniques to prevent economic loss will lead to food security and safeguarding a better quality of life. The building of resilient livelihoods safeguarding cash crops, protecting assets against hazards are actions of adaptation to climate change which are delivering on social benefits such as access to credit, accruing savings leading to personal material wellbeing and environmental benefits as well. Provision of water and sanitation will further facilitate socioeconomic wellbeing. The gendered approach of providing equal access to opportunities to women who are marginalised although carrying the majority burden in household upkeep, including persons with disabilities, youth in horticulture activities will deliver on household food security and dietary diversity and income per se. 'Soft' interventions of resilience improvement through the protection of habitats and vulnerable ecosystems improves local environment and natural resources with less pollution and better air and water quality.

The project outcomes are designed to address gaps in adaptation and community needs in facing climate challenges. They align government priorities<sup>58</sup> as detailed in the National strategies, Plans and Policies on adaptation, and outcomes of the Adaptation Fund as stated in the Adaptation Fund results framework. They are designed to complement each other and thereby reinforce actions taken to achieve sustainability. Activities could be seen as traditional adaptation approaches, but they support broader resilience actions that pursue to reduce current day vulnerabilities and build a strong platform for future adaptation pathways. They are therefore well-planned climate finance instruments that can support local level adaptation needs of vulnerable members in the two selected targeted areas and sustain, once AF investment concludes.

### **Economic Sustainability**

The project activities promote investing in the resilience of vulnerable physical, natural and social assets and ecosystems as a sustainable economic approach. This approach enhances livelihood options for communities challenged by climate change and promotes training, learning and capacity building to avoid future costs related to climate change and impacts of extreme climate events or disasters. The approach plans for future savings in high costs, for example of infrastructure such as damaged housing, roads due to flooding. For communities it will include economic and resilience building opportunities. These economic benefits of resilience can be integrated into national plans and policies. The project approach will also provide robust lessons and insights for future funding opportunities.

<sup>58</sup> Five thrust areas of the National Climate Change Adaptation Strategy for Sri Lanka 2011 to 2016, 2010

### **Social Sustainability**

By fully engaging communities in the targeted settlements with the involvement of most members of the households in particular, women and youth and maintaining a gender balance in project activities to ensure participation of both men and women, social integration of the project outputs will be achieved. The participants are involved in development of plans/strategies, assessments, and monitoring of the project to ensure their interest in adaptation in the long term. The awareness raising and capacity enhancement of the households will also lead to long-lasting interest. Most importantly the increased resilience of communities and their infrastructure will reduce community vulnerabilities in the long run. Once the benefits to local, vulnerable communities are shared nationally, it is likely that other district authorities will also welcome adaptation initiatives for their communities. This will facilitate the up-scaling/out-scaling of project activities to other areas for vulnerable communities.

### **Environmental Sustainability**

Ensuring environmental sustainability is central in planning of the project and is considered an integral and necessary condition. An ecosystem-based adaptation approach based on natural resource management is essential in fragile coastal habitat. Agriculture, including rain-fed farming needs measures for soil, and water conservation, especially in lands with high salinity. Home garden development practices will take into account the necessity to manage lands well to conserve soil and biodiversity. Agro-forestry techniques will be practiced for both economic gain and eco-system conservation. Likewise, in the coastal settlement, habitat protection with mangrove rehabilitation and possible near shore habitat conservation will yield a better fish catch and an increased income encouraging the communities to continue the practices in the long term.

### **Institutional sustainability**

The project will open ways for local and national governments to carry forward the adaptation work implemented in two selected locations, to replicate and reach out to other areas needing such initiatives. Trained government officials at different levels with planning and implementing experience, will support in aligning adaptation planning processes at district, provincial and national levels, with a view to influencing an enabling policy environment.

The stakeholder interactions and consultations of the project, promoting a participatory approach will lead to establishing a strong relationship with District, Divisional and the Local authorities. Interactions with local and district government at the design phase created a sense of local ownership and this relationship will be fostered further. Where relevant, lessons learned will explore the potential to implement and/or amend local by-laws and influence national policy/legislation.

The project has the potential not only to be well aligned with climate change adaptation priorities of the government but also to obtain the buy-in and support of district/divisional/local authorities for programmes and initiatives on adaptation that go beyond the time frame of this project.

### **Financial sustainability**

Financial sustainability of project outputs and outcomes are foremost in designing of the project as assurances for long term consistency is needed for community livelihoods and income generation. The government investment and interest in the project can be maintained when financial assurances are in place. The project promotes joint management of project components especially in delivering public utilities (e.g., provision of water) where additional resources are necessary going forward. Better service provision will avoid future high costs such as relocation of households due to saltwater intrusion in to drinking water. At the community level, improved skills, livelihoods, income (or avoided losses) are expected to enhance the financial strength of households.

Infrastructure elements if necessary, will be designed using resilience and building back better principles, to ascertain durability/sustainability. Community participation in maintenance of public utilities ensure that after the project, infrastructure systems are maintained. Empowered communities able to utilise skills developed through the training and implementation processes of the project, are able to manage resources effectively and are better equipped to access additional climate finance resources. They have improved ability to identify risks and priorities, formulate and implement further responses to climate change that can be sustained in the long-term.

## **K. An overview of the environmental and social impacts and risks identified as being relevant to the project.**

The proposed project has an obligatory requirement to follow and comply with national technical standards and relevant legislation. The project is selected for submission to the Adaptation Fund through a national consultation process and going forward, will be implemented and monitored in line with national legislation and standards. The relevance to principals of Adaptation Fund such as compliance with the law, marginalised and vulnerable groups, gender equity, women's' empowerment and land and soil conservation, are ensured. The implementation and monitoring of the project will guarantee that the principles of the Adaptation Fund, as well as the relevant national technical standards, are adhered to during the lifetime of the project. Project components and outputs will meet technical standards, guidelines and norms prescribed in agriculture, agrarian services, forestry, disaster management and water resources management. Technical standards and safeguards for proposed small scale infrastructure will be followed and incorporated during the full proposal development where activity design with the relevant focal agencies engaged in implementing and monitoring the project at national and divisional level.

The proposed project has been designed in compliance with the set of environmental and social principals as detailed in the Environment and Social Policy of the Adaptation Fund. Environmental and social safeguards are essential tools to prevent and mitigate the potential

for undue and unintended harm that could arise from project activities. In line with the Adaptation Fund's ESP and Gender Policy and UN-Habitat's Environmental and Social Safeguard Policy (ESSS Version 3)<sup>59 60</sup>, UN-Habitat and its partners are required to conduct risk screenings and impact assessments of all activities that have even a negligible risk of causing unintended harm. The checklist of UN-Habitat's Environmental and Social Safeguards ESSS version 3 will be used at technical design stage of all identified sub-projects and activities during full proposal development. The project outputs and activities have been crafted ensuing a participatory, consultative process with communities and local authorities articulating their concerns. This process has further ensured that no project component will impact adversely on any priority biodiversity or ecosystem support areas, and that there are no negative impacts on local communities, or vulnerable groups.

During implementation, particular attention will be given to the monitoring and mitigation of any identified minor risks, and of any unanticipated environmental and social risks through visits to project sites, annual ESP screening and risk assessment by the project team based on the reports received from the Facilitating Agencies and the field offices. Through this process, environmental and/ or social risks will be identified, remedial actions will be executed immediately and a set of recommendations for how these should be addressed in future implementation activities will be developed.

It should be noted at this point that only activities under Component 1 involve physical works (construction, installation of facilities, maintenance and so on). All other activities in the balance outputs proposed by the project are *soft* activities that involve training, reports and publications. As such, the investments under Component 1 are considered category B risk and require further screening. The remaining activities under Components 2 are considered Category C and, as no risks arise, impact assessments are not required yet follow UN-Habitat ESSS for factors such as where training need to be emphasised gender equality and women's empowerment

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<sup>59</sup> See Annex 1 - UN-Habitat – Environment and Social Safeguards System

<sup>60</sup> [https://unhabitat.org/sites/default/files/2021/09/un-habitat\\_esss3.0.pdf](https://unhabitat.org/sites/default/files/2021/09/un-habitat_esss3.0.pdf)

**Table 12: Risk screening of the project at design stage using the 15 principles of the AF's ESP**

<b>Checklist of environmental and social safeguards</b>	<b>Potential impacts and risks</b>	<b>Preventive and mitigation measures</b>
<i>Compliance with the Law</i>	Alignment with laws and technical standards, can be considered insufficient by some agencies especially in instances of water provision and management	Continuous consultation with relevant national and local authorities. First round of consultations was at project planning stage to ensure compliance with relevant laws and technical standards. More specifically under Component 1 concrete activities namely construction of earth bund, rehabilitation of minor tanks, disaster-resilient toilets and evacuation routes, consultations held and further to be continued at detail design stage (full proposal stage) with respective mandatory law enforcement and regulatory bodies such as Coast Conservation & Coastal Resource Management Department. <sup>61</sup> In terms of introduction of climate resilient agriculture crops, Department of Agriculture, Department Agrarian Services, Coconut Cultivation Board and local government bodies are consulted. All persons associated with the project will be made aware of relevant laws and compliance needs to technical standards, social and environment safeguards during implementation of project and will be continuously assessed throughout the project.
<i>Access and Equity</i>	Unequal distribution among target population/communities and households of project benefits.	During baseline data collection and mapping exercises will further capture needs of the target population/communities/households and acted upon. Under Component 1, specifically on access to evacuation routes and minor water tanks will be ensured through community organizations and district administration system that access to those infrastructure is to all including vulnerable groups. Under Component 2, all trainings and capacity building activities should be inclusive, leaving no one behind and particularly ensure adequate gender and youth representation throughout. Special focus will be in place during design stage to ensure that access for disabled people is adequately addressed in infrastructure components and training locations. Management and monitoring of activity implementation will highlight irregularities to avoid discrimination and favoritism.
<i>Marginalised and Vulnerable Groups</i>	Risks of adverse effects impacting disproportionately on marginalised and vulnerable groups i.e., women and girls, youth, the elderly, the displaced, people with disabilities and others.	All project Components (1 and 2) are targeted to address needs of the vulnerable groups. Target geographic coverage of project interventions represents predominantly poor communities and more importantly significant number of disabled households. Consultations have and will continue to capture all issues and needs of marginalised and vulnerable groups, assessed through vulnerability assessments, mapping of needs.
<i>Human Rights</i>	Inability to proactively protect the rights of stakeholders affected by the project	Human rights risks relate primarily to land rights related to Component 1 identified projects have been considered, and are discussed in involuntary resettlement, below. Consultations have and will continue to capture concerns related to human rights. UN UDHR standards will be included in all further assessments during project proposal design stage, a During project implementation awareness raising of international human rights standards to all stakeholders of project will be conducted. Inclusion of human rights markers in MoUs/AoC/Community Contracts. The UN-Habitat Human Rights and Social Inclusion Unit will monitor compliance.
<i>Gender Equity and Women's Empowerment</i>	Women and men do not have equal opportunities to participate in the project and do not benefit equally from interventions. This can be caused by	The project has included and will actively pursue equal participation genders in project activities under Component 1 and 2. Capacity development activities under component 2 will specifically promote gender equality and empowerment. The concrete adaptation actions will also support the principle actively. Activities will be screened for this risk during the project

<sup>61</sup> Coast Conservation & Coastal Resource Management Department is the mandated government institution to execute the Coast Conservation Act No. 57 of 1981 which was amended in amended by the Act No. 49 of 2011.

	males taking over decision making positions and unequal inclusion of women in top positions	
<i>Core Labour Rights</i>	Executing entities for the project may not adhere to the ILO labour Standards and national labour laws.	The project will use unskilled and semi-skilled labour sourced from the communities for the planting and construction works that will take place under component one. Without management and mitigation measures, there is a risk that these labourers could be mistreated. This includes low salaries below minimum wage or market rate, hiring school-age workers, discrimination against women, poor facilities, lack of safety equipment and informality. The project has and will ensure international and national labour laws and codes are respected, for any work that may be carried out in relation to the project. This includes the eight International Labour Organisation (ILO) Convention core labour standards related to fundamental principles and rights of workers. Contracts will be reviewed to ensure compliance with these laws.
<i>Indigenous Peoples</i>	Failure to engage indigenous people in planning and decision making.	Sri Lanka's indigenous peoples have no settlements in the target locations. However, the principle will be applied to all ethnic groups especially those that have been affected by the civil conflict for over 25 years. The project has been and will be consistent with UNDRIP, particularly in regard to Free, Prior, Informed Consent (FPIC) during implementation, and in monitoring outcomes related to impacts affecting different communities.
<i>Involuntary Resettlement</i>	Project actions lead to unintended resettlement consequences. The project has not advocated for resettlements, however if government agencies declare necessity to do so due to exigent reasons e.g., saltwater intrusion the project will advocate that due process is applied in all aspects.	This risk has been identified for all physical components of the project under component one. Small scale Infrastructure investment under component one (earth bund, minor tanks, disaster-resilient toilets and evacuation route) being made entirely on public land, and all site access is possible by public roads. Consultation process indicated that there are no plans of resettlements or evictions by concerned agencies in the target areas. However, when implementing all sub projects, will ensure that MOUs/AoCs/contracts will include standard clauses regarding evictions of people involuntarily due to project activities and monitored throughout project life. Sri Lanka adapted National Involuntary Resettlement Policy which ensures rights of the project affected people.
<i>Protection of Natural Habitats</i>	Activities might have negative impacts on natural habitats and the environment. The initial screening process showed that the risk of negative environmental impacts on natural habitats is low because interventions will focus on enhancing ecosystems and developing infrastructure and services.	At the design stage priority of project regarding safeguarding the environment, eco systems, natural resources were underscored and accepted. Natural habitat 'triggers' will be included the planning, management and monitoring process for all components particularly under component one activities. Investments under component one take place in or near critical habitats and inherently involve mangrove areas. With this there is potential for disruption of habitats through construction activities, transporting materials to and from the sites. Investment on mangrove plantation is intended to benefit the natural habitat, there is a risk, without management or mitigation measures that the investment could be counterproductive and damage the mangrove it is designed to help. For example, without a mangrove planting and management plan, there is a risk that invasive or incompatible species could be introduced to the area, risking both project failure and existing mangroves. The project will ensure compliance with international conventions, national plans, and standards. Activities will be further screened for this risk during the project proposal development phase.
<i>Conservation of Biological Diversity</i>	Activities lead to reduction or loss of biological diversity. The initial screening and vulnerability assessment found that the risk of reduction or loss of biological diversity is low. Further assessments are needed for enhancing ecosystems and biodiversity	See above. In particular, <i>hard</i> investments under Component 1 are in areas that are important for biodiversity (though note that none of the project is implemented in an officially designated biodiversity conservation area). Investments under Component 1 is implemented in or close to mangrove areas, and as such this ecosystem is critical to support marine biology as well as coastal human livelihoods (particularly crab fishing, which is a common form of livelihood). Biological diversity 'triggers' will be included in the vulnerability assessments, the planning, management and monitoring process for implementing all components activities will be screened for this risk during the project.
<i>Climate Change</i>	Project activities cause mal adaptation, increasing greenhouse gas emissions.	The project is an adaptation project and as such is designed to bring adaptation benefits. However, there is a risk that if any of the investments were to be unsuccessful, they could be maladaptive – either by failing to bring benefits or by shifting climate change related risks and vulnerabilities to other areas. Mitigation and management measures are required to minimise this risk. Climate Change policies and guidelines to be explained and understood by executing entities and project personnel prior to implementation and monitoring of activities throughout.

<i>Pollution Prevention and Resource Efficiency</i>	Project activities may cause pollution and may not use resources efficiently. The initial assessment found that there is a low risk of using resources for project activities in an inefficient way.	There are some small risks arising from the construction under component one activities. Except for mangrove cultivation under Component 1, all investments under Component 1 involves construction using common building materials, such as concrete and building sand/fill material. Without management and mitigation measures, there is a risk of small-scale, localised pollution in and around the construction sites. No construction will involve hazardous materials such as chemicals). The project will use local materials for construction where possible. Activities will be screened for this risk during the project and monitored throughout project activity implementation.
<i>Public Health</i>	Project activities will lead to negative impacts on public health The initial screening and vulnerability assessment found that the risk of negative impacts on public health is low.	There are some localised risks to public health arising from the project. In investments under component one except mangrove and Agri-crop cultivation involve creating a temporary construction site during implementation. This carries typical construction site risks (i.e., risks from vehicles entering and leaving the site, risk to children, etc.). At the inception of the project, safety plan for construction sites will be developed in accordance with Government's and ILO safety requirements and health 'triggers' will be included in the vulnerability assessments and in the management and monitoring process for implementing components. Activities will be screened for this risk throughout the project.
<i>Physical and Cultural Heritage</i>	Project activities might affect some unidentified cultural sites which exist in the targeted areas and are impacted by project activities	The initial screening and vulnerability assessment did not identify cultural heritage sites in selected project locations. There are no UNESCO World Heritage sites in any of the target areas. There are also no sites of national heritage interest in the target area
<i>Lands and Soil Conservation</i>	Project activities leading to soil degradation or conversion of productive lands that provide valuable ecosystem services	There is some minimal risk to land and soil conservation. Investments under component one involves mangroves, the planting of agri-crops, earth bunds, evacuation routes which involve disturbing soil. Thus, this risk has been triggered. During full proposal development stage further investigations will be conducted and formulate mitigation plan to conserve soils and lands in all locations and sites of project implementation. However, monitoring of activities will surface any contrary issues which will be corrected immediately. Further assessment will be done.



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

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

### A. Record of endorsement on behalf of the government<sup>62</sup>

Dr. Anil Jasinghe Secretary Ministry of Environment	Date: <i>January 10, 2022</i>
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<sup>6</sup> Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.



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சுற்றுடல் அமைச்சு  
Ministry of Environment

<p>"සොබාදම් පියාස", අංක 416/ඊ/1, රොබට් ගුණවර්ධන මාවත, බත්තරමුල්ල, ශ්‍රී ලංකාව. "Sobadani Piyasa", No. 416/C/1, Robert Gunawardana Mawatha, Battaramulla, Sri Lanka Gen. Tel. +94-11-2034100</p>	<p>ලේකම් Secretary +94-11-2034121</p>	<p>ෆැක්ස් Telefax +94-11-2879944</p>
<p>මගේ අංකය எனது இல My No } 04/04/07/272-II</p>	<p>ඔබේ අංකය உமது இல Your No } }</p>	<p>දිනය திகதி Date } 16.01.2022</p>

The Chairman  
The Adaptation Fund Board  
c/o Adaptation Fund Board Secretariat

Dear Sir,

**Endorsement for the Project Proposal on "Build Resilience to Climate Change and Climate Variability of Vulnerable Communities in Mullaitivu District of Sri Lanka"**

In my capacity as designated authority for the Adaptation Fund in Sri Lanka, I confirm that the project proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Sri Lanka.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by **United Nations Human Settlements Programme (UN-Habitat)** and executed by the Government of Sri Lanka.

Thank you  
Yours sincerely

  
**Dr Anil Jasinghe**  
Secretary

"මේ මහලොවට සහ ආසන්න ජීවීන්ට මනසින් අනෙක් විශාලතම විශාලතම ද ජීවිත සටන වුවදමුත් ද විශාල සතුන් ද මනසින් අයිතිය"  
"This great earth and the flora on it equally belong to the man and the birds flying in the sky, the quackpods and all creatures living on earth"

## 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 which includes (and not limited to), National Climate Change Policy, National Adaptation Plan for Climate Change Impacts in Sri Lanka: 2016 – 2025, National Policy Framework Vistas of Prosperity and Splendour, Coastal Zone Management Plan 2018 – 2023, 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.

*Rafael Tuts, Director, Global Solutions Division at UN-Habitat*



Implementing Entity Coordinator

Date: *January 10, 2022*

Tel. and email: + 254 20 762 3726 [raf.tuts@un.org](mailto:raf.tuts@un.org)

Project Contact Person: Laxman Perera

Tel. And Email: +94 773 65 97 71, [laxman.perera@un.org](mailto:laxman.perera@un.org)

## Annex 1: Environmental and social risks and impacts checklist of UN-Habitat

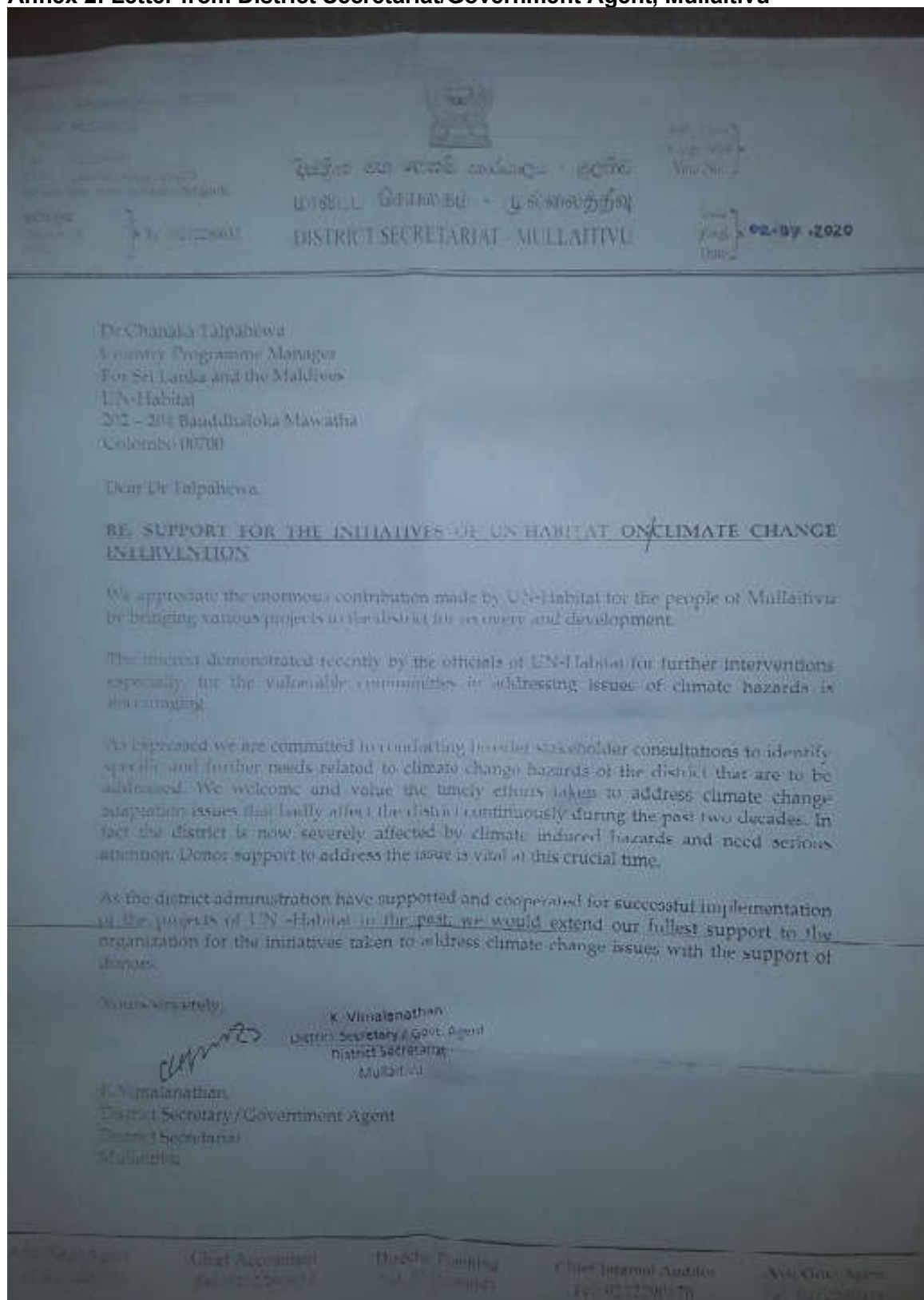


### ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS CHECKLIST

Safeguard Standards	Potential risks and impacts	Is it a risk from the project/programme (yes/no)
<b>P 1: Labour and working conditions</b>	May adversely impact on worker rights, considering the (lack of) regulations in the country	No
	In the country child labour is regulated	No
	In the country forced labour is regulated	No
	In the country freedom of association is guarantee	No
<b>P 2: Zero-carbon development, pollution prevention and resource efficiency</b>	During construction or operation, it generates pollutants or waste, which could affect human health or the environment	No
	During construction or operation, hazardous materials or pesticides, which could affect human health or the environment, may be used	No
	Requires a significant amount of water and/or energy, which implies competition with host communities (for instance, water for human consumption or economic activities)	No
<b>P 3: Climate change resilience, community health, safety and security</b>	Activities, machinery or infrastructure associated to the project/programme could have adverse impact on the community' health and safety	No
	In case of an accident or emergency situation, the effect on the surrounding community or in the ecosystem could be significant.	No
<b>P 4: Displacement and involuntary resettlement</b>	Involves displacement, physical or economic, and/or involuntary resettlement	No
<b>P 5: Biodiversity conservation, and sustainable management of living natural resources</b>	May adversely impact the marine ecosystem	No
	May adversely impact natural habitats	No
	May adversely impact critical habitats	No
	May adversely impact legally protected areas (by national or international regulations)	No
<b>P 6: Indigenous peoples</b>	May adversely impact the rights, lands, resources and territories of the indigenous peoples	No
<b>P 7: Cultural Heritage</b>	May adversely impact cultural heritage properties and sites of archaeological, historical, cultural, artistic, and religious significance. May adversely impact intangible heritage (uses and traditions...)	No
	In case the project/programme uses cultural heritage, access and use by stakeholder is secured.	No
<b>P 8: Compliance with the Law</b>	Application to environmental, building or other sectorial permits is a requirement by the local regulation	No
	Activities, machinery or infrastructure associated to the project/programme do not imply/involve any violation to local regulations	No
<b>P 9: Access and Spatial Justice</b>	The equal distribution of project/programme benefits is not guaranteed	No
	May adversely involve any form of discrimination in the access to the project/programme benefits	No
<b>SII 1: Human Rights</b>	May imply the violation of any human right	No
<b>SII 2: Gender</b>	May especially have negative impacts on girls and women	No
	May adversely involve any form of discrimination against girls and women	No
<b>SII 3: Children, Youth and Older persons</b>	May especially have negative impacts on children, youth and/or older persons	No
	May involve any form of discrimination against children, youth or older persons	No
<b>SII 4: Disability</b>	May especially have negative impacts on persons with disabilities	No
	May involve any form of discrimination against persons with disabilities	No

Safeguard Standards	Potential risks and impacts	Is it a risk from the project/programme (yes/no)
<b>CCTA 1: Resilience</b>	May affect the protective factors and/or the adaptive capacity of environmental and social systems	No
<b>CCTA 2: Safety</b>	May affect the safety to live, work and participate in cities and human settlements.	No
	May particularly affect the safety to live, work and participate in urban life for persons in vulnerable situations.	No

**Annex 2: Letter from District Secretariat/Government Agent, Mullaitivu**

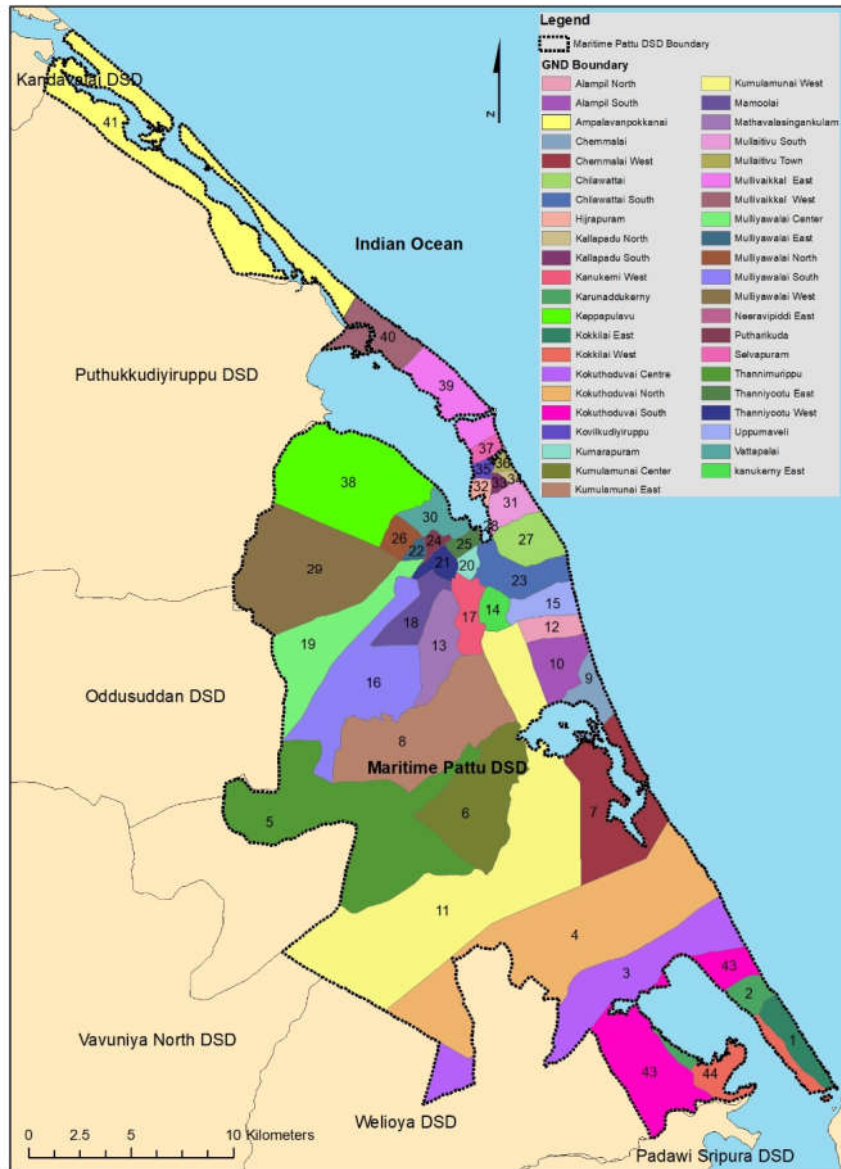


**Annex 3: Maps of the Locations, Existing Saltwater Bund and designs**

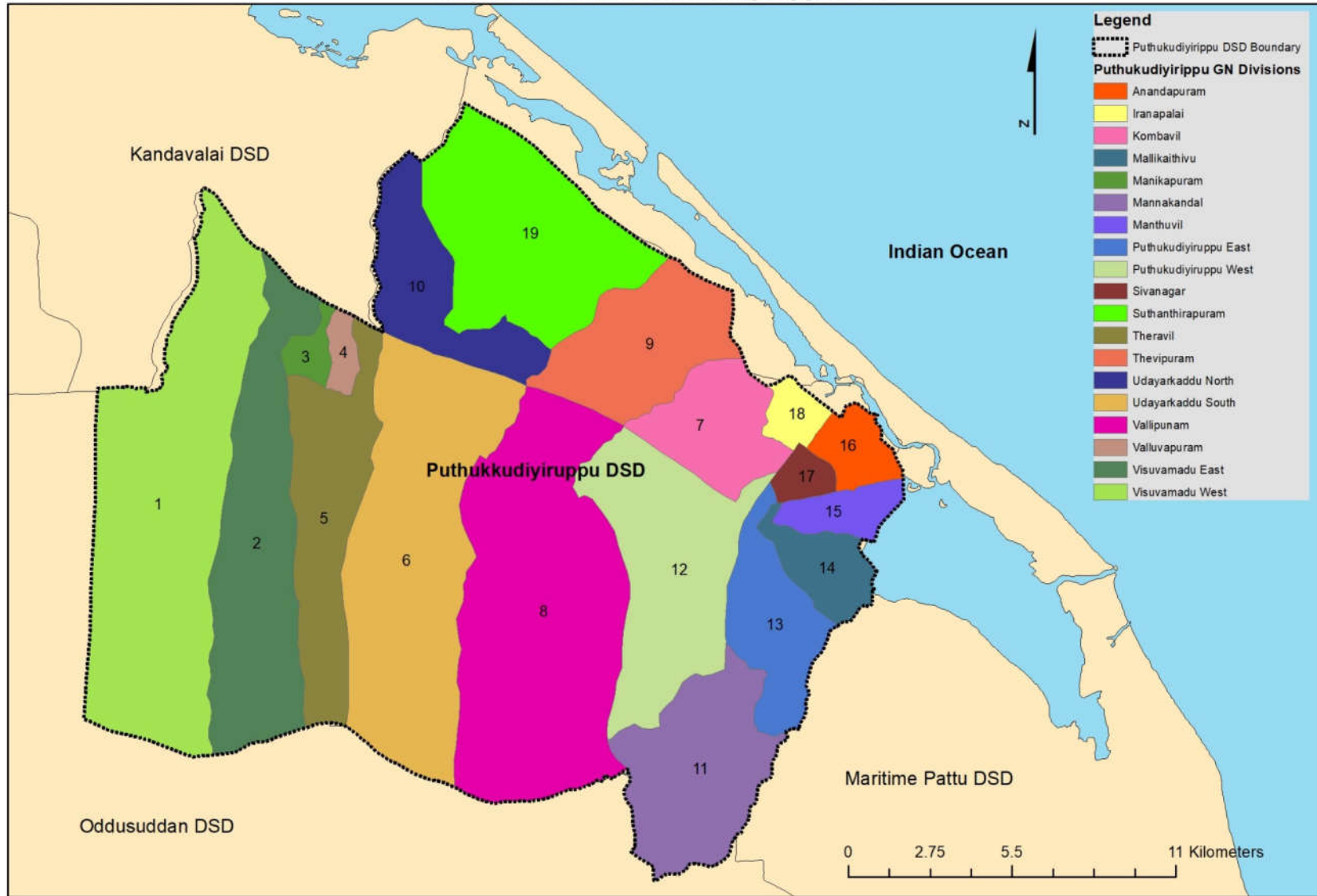




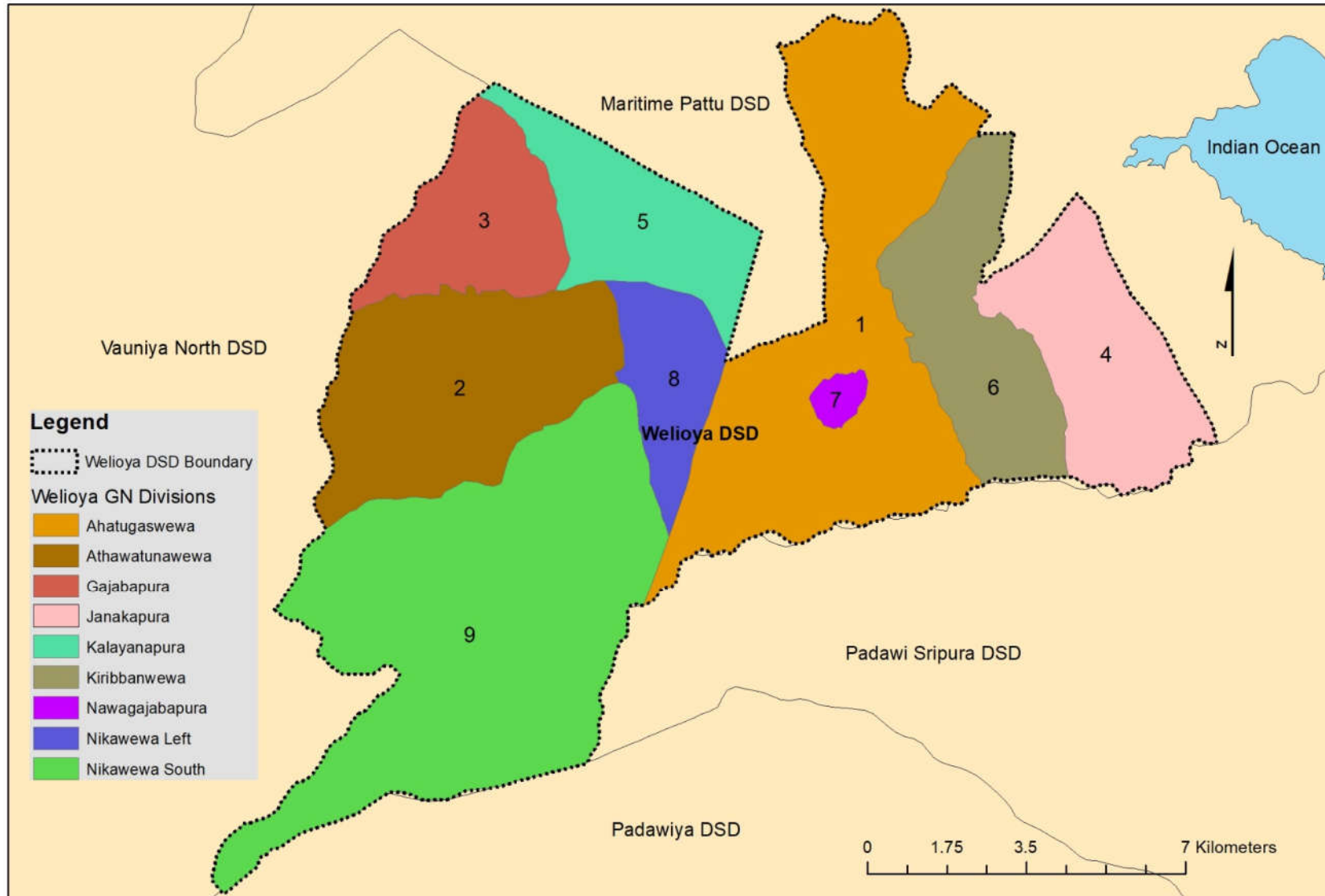
### GN Divisions in Maritime Pattu DSD



### GN Divisions in Puthukudiyirippu DSD



### GN Divisions in Welioya DSD



## Annex 4: Meetings with stakeholders

### STAKEHOLDER MEETING 1

The initial Key Informant Interviews (KIIs) and Focus Group Discussion (FDGs) held in August 2020 (10<sup>th</sup> to 13<sup>th</sup> August 2020).

#### Climate change issues highlighted, and adaptation interventions suggested by stakeholders

##### Maritimepattu and Pudukuduiruppu Divisions in Mullaitivu District

- Provision of clean drinking water to communities who are challenged by saltwater intrusion
- Increase water use efficiency through, for example, drip irrigation for cultivations
- Fishing and coastal habitat conservation.
- Water harvesting, such as water tanks. Water storage facilities.
- Income generation through sale of home-grown products at road fairs.
- Training in food processing techniques.
- Design mobile stalls with facilities to protect products, sellers and customers from the direct sun and the heat. Provision of proper storage facilities for perishable foods.
- Advise growers on crop cultivations and value addition
- Plant pastures for supplementary feeding for livestock. Shift towards an increased use of hybrid breeds, a resilient breed of cattle. Construction of more drinking troughs and houses for livestock.
- Encourage owners to keep livestock at minimal numbers to ensure sufficient grazing.
- Sanitation facilities for those affected by saltwater intrusion.
- Damage to infrastructure: designing of climate resilient roads and bridges. Construction of structures on the side of the road to prevent landslides across the roads.

**Table 1: List of stakeholders interviewed**

District/DS Division	Designation	Administration level
Mullaitivu	Government Agent	District
	Additional Government Agent	
	Assistant Commissioner Department Agrarian Development	
	Assistant Director (Acting) Department of Fisheries and Aquatic Resources	
	Director Planning	
	Disaster Management Officer	
	Senior Environment Officer	
	Environment Officer	
	District Agriculture Director	
	Women Development Officer	
	Social Service Officer	
NGO Coordinator		
Puthukkudiyiruppu	Divisional Secretary	Divisional
	Head of Grama Niladari	
	Assistant Director - Planning	
	Land Use Planning Officer	
	Development Officer	
Ananthapuram	Grama Niladhari	Grama Niladhari
	Community (15 females and 14 males)	
Mannakandal	Grama Niladhari	Grama Niladhari
	Community (13 females and 12 males)	
Maritimepattu	Divisional Secretary	Divisional
	Head of Grama Niladari	
	Assistant Director - Planning	
	Land Use Planning Officer	

	Development Officer	
Chemmalai (Nayaru)	Grama Niladhari	Grama Niladhari
	Community (15 females and 13 males)	

## STAKEHOLDER MEETING 2

KII held on 15<sup>th</sup> June 2021 – District Secretariat, Mullaitivu

### Climate change issues highlighted, and adaptation interventions suggested by stakeholders

- Most vulnerable GN Divisions suggested are Semmalai, Kalapadu South and North, Kokulai West in Maritimpattu DS Division, Manankandali in Puthukkudiyiruppu DS Division and Janakapura in Weli Oya DS Division.
- Agriculture and fisheries sectors are affected due to flood; therefore, adaptation interventions should focus on these aspects.
- Severe scarcity of water is observed; therefore, rainwater harvesting is required, especially renovation of small and medium sized tanks. Rainfed cultivation is there.
- Saltwater intrusion to paddy fields is a major issue and the saltwater intrusion bunds are currently damaged, therefore, during the Maha season there is heavy saltwater intrusion. Post-season cultivation is not practiced after the Maha season.
- Nandikadal DS Division the lands are quite saline, hence supporting the fisheries sector in this area is encouraged.
- Renovating damaged sluice gates would be helpful during the flood seasons, including reducing salinity of water in town areas (high salinity in wells).
- As a temporarily measure, drinking water could be provided through bowsers.
- Lagoon area to be cultivated with mangroves to support the fisheries sector.
- Apart from paddy, groundnut and vegetables are grown in the Maha season. Micro-irrigation (sprinkler system) could be done during the Yala season (suggested for Nayaru and Kokkuthuduai). During dry season the Ralkulam tank dries that affect cultivation.
- An escape route is required for Kepapulavu GN Division in Maritimpattu DS Division, as these communities have no access roads once the roads get inundated during the rainy season.
- Mango, banana, cashew and pomegranate are fruits that could be cultivated in these areas.
- Inundation of toilet pits is an issue, therefore, raised toilets are recommended.

**Table 2: List of stakeholders interviewed**

District/DS Division	Designation	Administration level
Mullaitivu	Government Agent	DS Division/District
	Assistance District Secretary	
	Director Planning	
	District Agriculture Director	
	Assistant Director, Disaster Management Centre	

## STAKEHOLDER MEETING 3

KII held on 2<sup>nd</sup> July 2021 – Department of Fisheries and Aquatic Resources, Mullaitivu

### Climate change issues highlighted, and adaptation interventions suggested by stakeholders

- Small-scale fisher families should be supported as they are the most vulnerable to effects of climate change and economic shocks.
- Climate change has affected the habitats of fish, especially due to changes in salinity, including, brackish/freshwater aquaculture. Both fisheries, especially post-harvest and value addition (fish processing) and aquaculture (brackish water) should be included in for adaptation measures.
- Mangroves play a significant role in aquaculture, apart from preventing saltwater intrusion and storm surges. Planting mangroves will support the fishery sector, mainly shrimp/prawn cultivation which would be a supplementary income for fisher families.
- Post-harvest losses are high in fishery sector, which around 40 – 50%. Some of the fish caught are not even suitable for drying. Therefore, attention should be given to minimising the post-harvest losses and value addition of fish, e.g., drying, smoking, pickling etc. This could be done as a cottage industry with the

involvement of women/youth of fisher families. However, clear market linkages should be established to ensure sustainability.

**Table 3: List of stakeholders interviewed**

District/DS Division	Designation	Administration level
Mullaitivu	Assistant Director	District

#### STAKEHOLDER MEETING 4

KII held on 9<sup>th</sup> July 2021 – Coconut Cultivation Board, Mullaitivu

##### Climate change issues highlighted, and adaptation interventions suggested by stakeholders

- Promote coconut cultivation as an adaptive measure, including support to fisher families to cultivate coconut.
- Climate resilient varieties to be grown, drought and heat tolerant varieties. Farmers might be unaware of adaptation/coping strategies to effects of climate change. Soil moisture retention is important.
- The micro-climate for coconut should be improved especially water scares and climate vulnerable areas.
- Coconut-based mixed cropping systems to be promoted to ensure maximum utilisation of resources, especially land.
- Coconut Cultivation Board can provide seedlings from existing nurseries.
- Emphasis should be given to extension services to ensure productivity and obtaining a high yield.
- Value addition of coconut-based products to be given priority as well to ensure increase in income, i.e., value chain.

**Table 4: List of stakeholders interviewed**

Region/District	Designation	Administration level
Northern Region/Mullaitivu District	Regional Manager, Coconut Cultivation Board, Northern Region	Province

#### STAKEHOLDER MEETING 5

KII held on 16<sup>th</sup> September 2021.

##### Climate change issues highlighted, and adaptation interventions suggested by stakeholders

- The District Secretariat and the other stakeholders will provide the fullest support for the implementation of the proposed project.
- Flooding, drought and saltwater intrusion are major issues observed that is affecting the main livelihood sources of the communities, namely, agriculture and fisheries.
- Welioya faces serious issues in terms of water quality, as well as quantity.
- Emphasis should equally be given to agriculture and fisheries sector, and on vulnerable families of the three DS Divisions.
- Climate change adaptation related infrastructure needs are also there in the District, especially, evaluation paths, irrigation tanks, bridges, toilets etc., some estimations and designs are already done and can be used as reference.
- Further discussions could be held if required.
- Socioeconomic data required are available.

#### STAKEHOLDER MEETING 6

##### Meeting minutes of stakeholder meeting Adaptation fund – Mullaitivu District – 2<sup>nd</sup> December 2021

A meeting organised with the support of Disaster Management Centre, Mullaitivu to gather the information to finalise the proposal for the adaptation fund. The meeting held on 2<sup>nd</sup> of Dec 2021 at the District Secretariat chaired by the District Secretary/Government Agent.

The internal conflict in the North and East of the Country lasted for 30 years has created particularly considerable impact on socio economic, political and environmental aspects. The trends of the hasty development and resettlement of the displaced people in the district have created flooding in most of the places which lead unusual situation and affect the environment very drastically. The bottlenecks are as follows.

- There is not master plan available for the development work such as building roads, building houses, playground, and so on.

- The natural water path or water run off places have been blocked due to the absent of the proper master plan and building approval
- The people paid less interest in getting the approval from the respective government entities such as local authorities.
- The places occupied by military or the establishment of the military camps

The proposed DS Divisions in Mullaitivu District for the adaptation project are as follow which were agreed by the stakeholders on the day of the meeting held in the District Secretariat.

01. Maritempattu DS Division
02. Puthukkudiruppu DS Division
03. Welioya DS Division

### **The flood situation in the District**

The Mullaitivu District is situated in the Northern part of Sri Lanka and climatically it receives Northeast seasonal monsoon rainfall from November to January in every year. Rest of the months are warm climate and receive few rainfalls during 1st and 2nd inter monsoonal periods. Apart from that, the District is closer to the Bay of Bengal and if any depression in the Bay of Bengal, the District gets more rainfall due to the cyclonic movement. There was a worst flood disaster reported on 2018 affected families 12,003.

### **The activities proposed**

#### **Maritempattu DS Division**

**The construction of Raalkulam evacuation path:** The proposed Raalkulam evacuation path deems to be very important activity in the District in general and DS Division in particular. There are five GN Divisions namely Kallapadu North, Kallapadu South, Manatkerni, Vannankulam and Theerthakarai affected due to the absent of the proposed evacuation path. Due to the Tsunami calamity, around 1500 people dead due to unavailability of this evacuation path and more than 300 students are using the unsafe path. Due to the seasonal flooding during the northeast monsoon between December and February, the people stranded in the areas had to be relocated to safer locations each year. If they want to come to the school avoiding this path, they have to travel 10 KM daily. When this path is done, the student would travel within 10 minutes to the school and five GN divisions get benefitted and their cultivation particularly paddy and home gardening could be done easily. Estimated cost -14mn and the design and estimation for the proposed activities has been prepared by the Department of Agrarian and the District Secretary.

**Construction of Nayaru – (Puliyamunai) bund – 1.8 km:** The construction of the Nayaru bund deems essential to ease from the flooding. There are 350 families using the road, during the rainy season, the areas got flooded and the families are their cultivation get affected. The livelihood of the people from Chemmalai, Selavathai, Uduppukulam Kurumalai and Alampil get affected and their cultivation get washed off. The requirement is to construct the 3-box culvert for 1.8 km road. During the period of rainy season, the said areas seem like island. Estimated cost -12mn and the design and estimation for the proposed activities has been prepared by the Department of Agrarian and the District Secretary.

**Udupukkulam School Canal work:** Due to the construction of the playground without the proper approval and without constructing the drainage, the areas surrounded by the school get flooded, because the natural water path was blocked. In the area, there is a natural pond, the water during the rainy season goes to that pond but now the water does not go there because of the construction of the playground. There is a need to send the water to the pond nearby by constructing the proper canal which will save 400 students and the villages around the school. The construction of the playground has created natural disaster (flooding). The people and students find very difficulties due to the flooding.

**Udupukulam Cementry Road:** Due to the construction of the road, the natural water path has been blocked. The water normally goes to Nanthikadal has been blocked by which there is an unexpected flooding which requires 2 box culverts. The flooding goes up to 100 m, due to this flooding the paddy field also gets affected, and the paddy gets withered every year.

**Main access road to Maritempattu DS Office:** The access road to Maritempattu DS office gets flooded during the rainy season by which the people go to the DS office have to travel around 6 KM avoiding this access road. The height of the road is very low. Due to the stagnant of the water, the thread of dengue breeding observed around the places. The government staff using the quarters have affected due to the fear of dengue and the people using the road to get the services from the DS office find difficulties.

**Proper drainage system for Angayatkanni Food Centre:** The construction of the road without the proper plan or master plan, certain areas in the town get flooded, only the roads were constructed by the drainage to send off the water have not been done properly. This is one of the potential cases highlighted.

### **Puthukudiruppu DS Division**

**Mannakandal bund work:** In Mannakandal GN Division, there are 250 families living. There is natural pond, the water during the rainy season goes to that pond. In 2014, DMC constructed bund spending 12 million but not completed fully due to the unavailability of the fund. At the end of the bund, there was a sand bund which was damaged by which the areas experience flooding. The runoff water goes directly to the village due to damage of the sand bund. 75 families directly affected. Have to do the formation work for the natural water path.

**Ananthapuram small bridge work:** In Ananthapuram village, there are 19 families living where the villagers and farmers have to cross the natural water path, during the rainy season, the farmers crossing the water path and villagers find difficulties in using the path. Last year with the help of SL ARMY, the people evacuated from the village. Around 25 acres of paddy field got affected.

**Samurdhi Bank – in front of PTK DS Office:** Around 600 families go to the Samurdhi bank daily which is located in front of the DS Office. The people have to cross the seasonal river to go to the Samurdhi bank, during the rainy season the people cannot cross the drainage. There is an immediate requirement of constructing a bridge over there.

**Saltwater intrusion:** According to the Director, Land use planning, there are 3 GN Divisions Pachchaipulmoddai, Iranapalai, and Puthumathalan and around 750 acres of lands use for the vegetable cultivation affected due to the saltwater intrusion. The bund with slice gate system needs to be constructed to protect the land from saltwater intrusion for about 1 km long. Similar measures have been successfully implemented to protect against saltwater intrusion and best practices can be replicated in the proposed location.

### **Welioya DS Division**

01. There are two bridges damaged due to the flooding which have to be built or repaired which would save the people and save the paddy fields from flooding and washing off the cultivations.
02. The upper lands and lower lands are potential for the vegetable cultivations.

**Sustainable development programme for the youth:** Assistance requires to the youth to promote the youth to engage in the agricultural activities together with making the organic fertilizer. The potential resources are available in the proposed DS Divisions.

**Post harvesting lost – Livelihood:** The paddy cultivation in Mullaitivu in general and the proposed DS Divisions in particular have lack of paddy storage facilities. The paddy harvested from 1500 acres dried on the road due to the unavailable facilities for drying place and those farmers suffer to keep the paddy due to the lack of storage facilities in the areas. Udayakaddu is the best example where the farmers sell their harvest at the cheapest prices due to lack of storage. 2 paddy storage facilities can be provided with mechanical dryers. The existing storage of 3nos should be upgraded with dryer facilities. Paddy husk can be used as fuel for dryer and the facility will be run by the farmer organisation in collaboration with the Department of Agricultural Development.

**Agriculture sector:** The proposed DS Divisions are very potential for the vegetable cultivation and crops like green, beans, ground nuts, maize and black grain. The challenges the farmers face are proper marketing facilities and marketing linkage and value addition, for which capacity building and proper machineries. The exposure visits, study tours would build the capacity of the farmers.

**Engagement of women – Female headed households and others:** The villages named Udayarkaddu North, Kokkuthoduwai and Karunaddukerny are ideal for the modal agriculture village under this project where there are lower land and upper land available. Further, the fishing communities, farming communities live in those villages. The female headed household can engage in the cultivation like ground nuts, beans, green and can do the value addition activities like drying the fishes, fish processing, packing and grading. Cashew nut cutting machine will be useful for women in Kokkuthoduwai GN Division.

**Construction of the agro well:** The construction of the agro well is the other intervention, through which farmers can ensure the water availability throughout the years for their cultivation in proposed DS Divisions.

**Renovation of the minor tanks:** In the proposed DS Divisions, there are numbers of minor tanks which have been abundant need to be revived and there are minor tanks which have been in operation need to be renovated. The list of tanks will be shared. Ten (10) abandoned tanks and 10 operational tanks can be upgraded.

**Planting mangroves:** There are places where require the mangrove plantings along the coastal areas in Nayar.

**Capacity building to the land use planning:** The Land use planning functions with dearth of facilities, which needs to be addressed. The provision of the equipment will ensure the proper functioning which will give fully pledged services to the people.



**Annex 5: Minor irrigation tanks**

**Details Of Minor Irrigation Tanks to be Renovated  
Mullaitivu District**

S.N	Name Of ASC	Name of Tank	DS Division	GN Division	GPS Coordinates		Command Area in Acres
					N	E	
1	Mulliyawalai	Palakkadduvankulam	Maritimepattu	Silawaththai	204560	445340	120
2	Mulliyawalai	Kanchooramottaikulam	Maritimepattu	Mulliyawalai South	195920	437130	90
3	Mulliyawalai	Neeravikulam	Maritimepattu	Mulliyawalai South	195420	437650	100
4	Mulliyawalai	Keechchukulam	Maritimepattu	Mulliyawalai West	193450	442800	106
5	Mulliyawalai	Vaveddikulam	Maritimepattu	Keppapilavu	194480	451020	175
6	Mulliyawalai	Ralkulam	Maritimepattu	Kallappadu South	205102	449481	60
7	Mulliyawalai	Aarachchiyamurippukulam	Maritimepattu	Mulliyawalai Center	195041	439420	194
8	Mulliyawalai	Kunchukulam	Maritimepattu	Mulliyawalai North	199805	446580	20
9	Mulliyawalai	Thalavaykalkulam	Maritimepattu	Mullaitivu south	91507	804902	100
10	Puithukkudiyiruppu	idaikkaddukkulaqm	Puithukkudiyiruppu	Vallipunam	0919556	08037137	150
11	Puithukkudiyiruppu	Achchilakulam	Puithukkudiyiruppu	Puithukkudiyiruppu East	0916390	08042323	85
12	Puithukkudiyiruppu	Sangaththarkulam	Puithukkudiyiruppu	Thevipuram	0923242	08040608	70
13	Udayarkaddu	Siradaiparichankulam	Puithukkudiyiruppu	Suthanthirapuram	182660	463100	120
14	Udayarkaddu	Kuravil Kulam	Puithukkudiyiruppu	Udayarkaddu South	185810	456840	100
15	Udayarkaddu	Vellapallam	Puithukkudiyiruppu	Udayarkaddu North	182030	452120	120