



ADAPTATION FUND

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART 1: PROJECT/PROGRAMME INFORMATION

Project/Programme Category	Regular
Country/ies:	Cambodia
Title of Project/Programme:	Increasing climate resilience through small-scale infrastructure investments and enhancing adaptive capacity of vulnerable communities in Kampot and Koh Kong Provinces in Cambodia
Type of Implementing Entity:	Multilateral (International Organisation)
Implementing Entity:	United Nations Human Settlements Programme (UN-Habitat)
Executing Entity/ies:	<p>National level Ministry of Environment National Council for Sustainable Development</p> <p>Local level Provincial Department of Environment, Kampot and Koh Kong Kampot and Koh Kong Provincial Administrations</p> <p>Community level Selected NGO(s) Community Based Organisations and citizen/women groups in target communities</p>
Amount of Financing Requested:	USD 10,000,000

Project Summary:

- To implement concrete adaptation actions that support climate resilient infrastructure in Kampot and Koh Kong Provinces to adapt to current impacts of climate change, in particular, extreme hydro-meteorological events.
- To reduce of the impacts of coastal climate hazards through recovery of coastal ecosystems (Ecosystem-Based Adaptation) and minimise related socioeconomic impacts on communities.
- To enhance institutional capacity, at provincial and local level relevant Government entities, and communities, for decision making and management of the implementation of adaptation measures/actions to address climate change and variability in Kampot and Koh Kong Provinces.

This project is organised under three (3) strategic components:

1. Increasing coping capacity by promoting climate resilient small-scale infrastructure.
2. Adapting to current impacts of climate change through recovery of coastal ecosystems, and livelihood improvement and diversification.
3. Building capacity and knowledge sharing to reduce vulnerability to climate change.

Components		Budget (USD)
Component 1	Increasing coping capacity by promoting climate resilient small-scale infrastructure.	5,976,054
Component 2	Adapting to current impacts of climate change through recovery of coastal ecosystems and livelihood improvement and diversification.	1,599,226
Component 3	Building capacity and knowledge sharing to reduce vulnerability to climate change.	841,698

Project/Programme Background and Context:

Geography of Cambodia and Kampot and Koh Kong Provinces

Cambodia is in Southeast Asia between latitudes 10° and 15° North and longitude 102° and 108° East, with a total land area of 181,035 km² extending approximately 580 km from east to west and 450 km from north to south. Cambodia shares its 2,438 km border with Thailand in the west and north, Laos in the north and Vietnam in the east and southeast. In the southwest Cambodia is bordered by the Gulf of Thailand with a 435 km coastline and an exclusive economic zone of 55,600 km².¹ Cambodia is divided into 24 provinces (including districts, communes, and villages) and 1 municipality at the sub-national level. The topography of the country broadly consists of the central plains surrounded by mountainous highland regions, which include the Tonle Sap Lake system and the uppermost part of the Mekong River Delta and a coastline to the south.² All rivers drain into the Mekong River or Tonle Sap Lake system except for rivers in the south-west draining towards the coast.³

In March 2019, the population of Cambodia was 15.28 million, which is a 14.1 percent increase from year 2008 to 2019, and male population was 7,418,577 (48.5 percent) and the female population stood at 7,869,912 (51.5 percent). The average size of households was stable since 2008 at 4.6 persons.⁴ Approximately 79 percent of Cambodians live in rural areas, while 21 percent live in urban areas, including the capital Phnom Penh.⁵ The population age structure is governed by the same three factors that affect any population's growth rate, namely fertility, mortality, and migration. The population density in Cambodia is still low compared to the larger neighbours Vietnam and Thailand but exceeds that of Laos.⁶ The estimated population density of Cambodia in 2019 was now 86 persons per km².⁷ The poverty of the country differs in urban areas and rural areas. Whereas the poverty in rural areas is higher than the poverty in urban areas. The health of the population is achieved through the strategies, which focus on impacts of climate change to human health. When it comes to the Human Development Index (HDI) Cambodia was ranked 129th out of 177 countries.⁸

Kampot Province

Kampot is a province in southwestern Cambodia bordering provinces of Koh Kong and Kampong Speu to the north, Takéo to the east, Kep and Vietnam (Kiên Giang) to the south, and Sihanoukville to the west. It is at 148 km from the national capital of Phnom Penh. A coastline of around 73km on the Gulf of Thailand which stretches from the borders of the Hatieng District of Vietnam to Sihanoukville Province, which is to the south of Kampot province. The city center is around 5 km from the Gulf of Thailand. Kampot City is surrounded by the District Tuek Chhu at the west-north-eastern side and by the sea at the southern side and comprises of 5 Sangkats, and a total of 15 villages.^{9 10}

Kampot province consists of seven (7) districts and one (1) Municipality, namely, Angkor Chey, Banteay Meas, Chhuk, Chum Kiri, Dang Tong, Kampong Trach, Tuek Chhou districts and Kampot municipality (Krong Kampot) and is divided into 92 communes with a total of 477 villages.¹¹ Kampot province had a population of 593,829 in 2019.¹² It is rich in low arable lands and has abundant natural resources. Its capital is the city of Kampot. Hydro-electric power plants in function in Kampot, Koh Kong, Pursat and Battambang provinces, with the highest capacity being 190 MW in Kampot province.¹³

Many people in Kampot province depend on agriculture, especially, paddy cultivation followed by short-term produce, namely, corn, green bean, soybean, peanuts, cassava, potato, and sesame, fishing, and animal husbandry. Paddy is cultivated in both rainy and dry seasons. In 2021, 119,528 hectares (89.96 percent) of land was cultivated during rainy season and around 8,430 hectares (2.83 percent) was cultivated during the dry season. The Kingdom of Cambodia has promoted the agro-industry through its Agricultural Sector Strategic Plan 2014 - 2018, of which Kampot pepper is one of the main industrial crops for Kampot Province. The pepper production exported overseas was 102 tons in 2018.¹⁴

Kampot is one province among other coastal provinces with great potential for eco-tourism provided its natural resources, coastline that is ideal for ports, and unique landscape. Marine fishery resources contribute to the local livelihood, where fishery resources are mainly distributed to domestic markets throughout Cambodia. Recently, the economy of Kampot is fuelled by tourism and special economic zone development along the coastline, and the number of hotels and restaurants/other businesses.

¹ Ministry of Environment & United Nations Environment Programme (2009). *Cambodia Environment Outlook*. Kingdom of Cambodia.

² Ministry of Environment (2022). *Third National Communication to the United Nations Framework Convention on Climate Change*. Kingdom of Cambodia.

³ Ministry of Environment (2002). *Initial National Communication under the United Nations Framework Convention on Climate Change*. Kingdom of Cambodia.

⁴ Ministry of Planning (2019). *General Population Census of the Kingdom of Cambodia 2019*. National Institute of Statistics, Ministry of Planning, the Kingdom of Cambodia.

⁵ Ibid.

⁶ Ministry of Planning (2019). *Migration in Cambodia: Report of the Cambodian Rural Urban Migration Project (CRUMP)*. Kingdom of Cambodia.

⁷ Ministry of Planning (2019). *General Population Census of the Kingdom of Cambodia 2019*. National Institute of Statistics, Ministry of Planning, Kingdom of Cambodia.

⁸ Ministry of Environment (2022). *Third National Communication to the United Nations Framework Convention on Climate Change*. Kingdom of Cambodia.

⁹ Ministry of Planning (2019). *General Population Census of the Kingdom of Cambodia 2019 (Final Results)*. National Institute of Statistics, Ministry of Planning, the Kingdom of Cambodia.

¹⁰ National Committee for Sub-National Democratic Development (2009). *Kampot Data Book 2009*. NCDD, Kingdom of Cambodia.

¹¹ National Institute of Statistics (2019). *Cambodia Population: Census: Kampot 1998 – 2019*. NIS, Kingdom of Cambodia.

<https://www.ceicdata.com/en/cambodia/population-census/population-census-kampot>

¹² National Institute of Statistics (2000). *General Population Census of Cambodia, 1998: Village Gazetteer*. NIS, Kingdom of Cambodia.

¹³ East Asia Summit/Energy Cooperation Task Force. *Biofuel Database in East Asia*.

<http://www.asiabiomass.jp/biofuelDB/cambodia/contents003.htm>

¹⁴ Nagoya University (2019). *Kampot Province, Cambodia: Overseas Fieldwork Report*. Graduate School of International Development. Nagoya University, Nagoya, Japan. https://www2.qsid.nagoya-u.ac.jp/blog/fieldwork/files/2020/03/20200330_OFW2019-Report.pdf

The poverty rate in Kampot province is 16.21 percent in 2021 and with people having main occupation in agriculture being 71.9 percent, in handcraft being 0.5 percent and main occupation in service being 27.7 percent.¹⁵

Under the proposed Project Krong Kampot (municipality) and Kampong Trach district have been selected.

Krong Kampot

Kampot is a city on the Preaek Tuek Chhu River in southern Cambodia. According to the 2012 census, the population of the municipality of Kampot is 49,597.¹⁶ A significant part of the population is Cham (Champa people are an Austronesian ethnic group). According to Strangio and Rith (2020), the Sa'och tribe, an ancient population group in the province, is on the brink of extinction.¹⁷

The municipality of Kampot is located in Kampot province and is divided into 15 villages and 5 Sangkats which are: Kampong Kandal Sangkat, Krang Ampil, Kampong Bay, Andong Khmer and Traeuy Kaoh. Kampot is known for its high-quality pepper, fish sauce, durian¹⁸ and salt fields.

The poverty rate in Krong Kampot is 13.86 percent in 2021 and people having main occupation in agriculture being 21.4 percent, in handcraft being 1.8 percent and main occupation in service being 76.8 percent.¹⁹

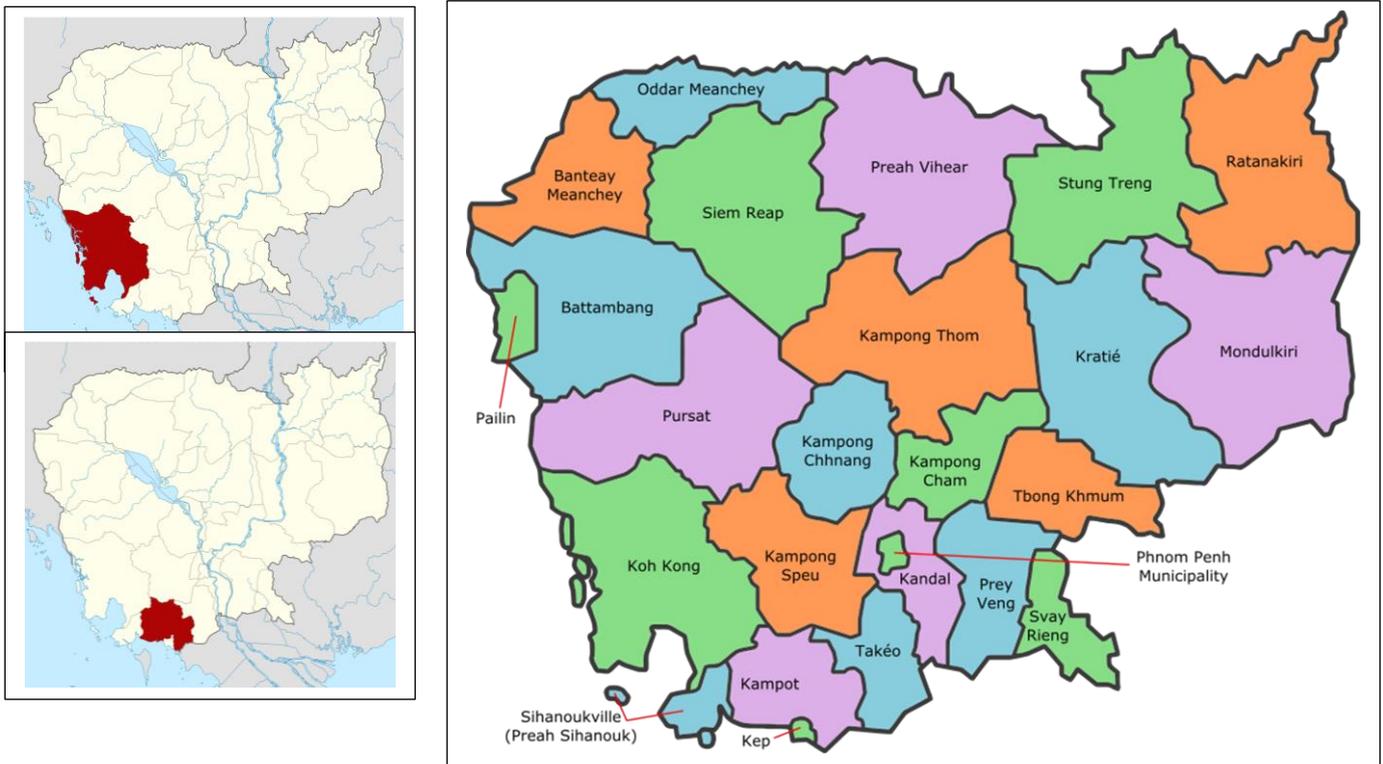


Figure 1: Map of Kampot and Koh Kong Provinces

Kampong Trach District

Kampong Trach district is located at the eastern part bordering Vietnam to the east, Banteay Meas district to the north, Kep Province to the west and the Gulf of Thailand to the south.

Poverty rate of Kampong Trach district is 19.33 percent.²⁰

Koh Kong Province

Koh Kong province is the most southwestern province of Cambodia, and the capital is Khemarak Phoumin (Koh Kong).²¹ Koh Kong has a long undeveloped coastline and a mountainous, forested, and largely inaccessible interior which includes part of the Cardamom Mountains, Cambodia's largest national park (Botum Sakor National Park), and a section of Kirirom National Park.^{22 23}

¹⁵ *Provincial Socioeconomic Report 2019*, Kampot Province.

¹⁶ National Institute of Statistics (2013). *Economic Census of Cambodia 2011, Provincial Report: 07 Kampot Province*. Ministry of Planning, Kingdom of Cambodia.

¹⁷ Strangio, S. & Rith, S. (2020). "Ancient tongue sits on the brink of extinction". www.phnompenhpost.com

¹⁸ Trade Promotion Department (2013). *Cambodia Fish Sauce (Kampot): Cambodian Top Ten Products*. Kingdom of Cambodia.

¹⁹ *Provincial Socioeconomic Report 2019*, Kampot Province.

²⁰ Ibid

²¹ Mekloy, P. (2019). "Not What It Seems". Bangkok Post. <https://www.bangkokpost.com/travel/1722527/not-what-it-seems>

²² Koh Kong, Cambodia. <https://www.koh-kong-cambodia.com/>

²³ Koh Kong Province. https://en.wikipedia.org/wiki/Koh_Kong_province

The province is divided into six (6) districts and one (1) municipality, namely, Botum Sakor, Kiri Sakor, Koh Kong, Khemarak Phoumin Municipality (formerly Smach Mean Chey), Mondol Seima, Srae Ambel and Thma Bang.²⁴

The poverty rate in Koh Kong province is 9.62 percent in 2021 and people having main occupation in agriculture being 57.5 percent, in handcraft being 0.2 percent and main occupation in service being 42.3 percent.²⁵

Under the proposed Project Khemarak Phoumin city (municipality) has been selected. There are 3 Sangkat in Khemarak Phoumin city: Sangkat Smach Meanchey, Sangkat Dang Tong, and Sangkat Steung Veng. Poverty rate of Khemarak Phoumin city is 0.92 percent and people having main occupation in agriculture being 25.8 percent, in handcraft being 0.3 percent and main occupation in service being 73.9 percent.²⁶

National climate change scenarios

Cambodia is ranked as one of the most climate-vulnerable countries in Southeast Asia.²⁷ The Climate Risk Index (CRI) ranks countries most affected by climate change during the period 1996 – 2015 based on extreme weather events and Cambodia ranked 13th out of 181 countries in 2016²⁸ and in 2019 CRI 84th with losses in million US\$ (Purchasing Power Parity) ranking at 97 and losses per unit GDP in percentage ranking at 86.²⁹ According to the Climate Risk Country Profile of Cambodia, the country is projected to experience warming of 3.1°C by the 2090s, against the baseline conditions over 1986 – 2005 under the highest emissions pathway, RCP8.5.³⁰ In addition, the report highlights that increases in annual maximum and minimum temperatures are expected to be larger than the rise in average temperature, directly increasing pressures on human health, livelihoods, and ecosystems. Increased incidences of extreme heat represent a major threat to human health in Cambodia, especially for outdoor labourers and urban populations for whom heat rises are compounded by the urban heat island effect.³¹ In an April 2018 the report 'Modelling of Climate Change Impacts on Growth' by the Ministry of Economy and Finance and the National Council for Sustainable Development estimated that climate change could reduce GDP of Cambodia by 2.5 percent by 2030 and by almost 10 percent by 2050.³² According to the report, the fall is largely the result of extreme events impacting on infrastructure and loss of crops, and reduced worker productivity following temperature increases. Climate change may reduce the country's annual average GDP growth by 6.6 percent.³³ Cambodia is especially vulnerable to floods, droughts, windstorms, and seawater intrusion.³⁴

The vulnerability of Cambodia to climate change is exacerbated as the economy relies heavily on climate-related sectors. The economy of Cambodia is narrowly based and driven by four main sectors, namely, garment, tourism, construction, and agriculture. Agriculture continues to be the dominant employment sector for the rural population, accounting for 57.6 percent of the country's 8.8 million labour force and contributing to about 32.1 percent of GDP in 2011. The tourism sector in Cambodia has an annual growth rate of 20 percent, with a GDP share of 4.3 percent.³⁵ Retaining growth and development performance under a changing climate will be a real challenge to Cambodia in years to come. Cambodia still portrays a severe lack of coping capacity. Cambodia's vulnerability is characterised by recurrent floods and irregular rainfall, coupled with an agrarian based economy, inadequate human and financial resources, insufficient physical infrastructure, and limited access to technologies. Socio-economic status, location, access to resources and technologies all influence Cambodian's ability to manage climate impacts or lack of it.^{36 37 38}

Coastal zones are amongst the most affected in the country.³⁹ In addition to agriculture sector, this also affects the rapidly growing tourism sector, especially in coastal areas, on which the economy heavily relies. Rising sea levels can potentially impact coastal systems in multiple ways, including flood and storm damage, inundation, loss of wetlands, erosion, saltwater intrusion, and rising water tables.⁴⁰

²⁴ National Institute of Statistics (2013). *Economic Census of Cambodia 2011, Provincial Report: Koh Kong Province*. Ministry of Planning, Kingdom of Cambodia.

²⁵ *Provincial Socioeconomic Report 2019*, Koh Kong Province.

²⁶ Ibid

²⁷ Yusuf, A. & Francisco, H. (2009). Mapping Analysis. Climate Change Vulnerability Mapping for Southeast Asia. EEPSEA: 2009.

http://www.eepsea.org/pub/tr/12324196651Mapping_Report.pdf

²⁸ Germanwatch (2016). Global Climate Risk Index 2016: Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2016.

<https://germanwatch.org/sites/germanwatch.org/files/publication/13503.pdf>

²⁹ Germanwatch (2021). Global Climate Risk Index 2021: Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2019

and 2000-2019. https://germanwatch.org/sites/default/files/Global%20Climate%20Risk%20Index%202021_1.pdf

³⁰ CP 8.5 refers to the concentration of carbon that delivers global warming at an average of 8.5 watts per square meter across the planet.

<https://climatenexus.org/climate-change-news/rcp-8-5-business-as-usual-or-a-worst-case-scenario/>

³¹ The World Bank Group and Asia Development Bank (2019). *Climate Risk Country Profile: Cambodia*. Washington DC, USA and Metro Manila, Philippines.

³² Department of Climate Change (2018). *Modelling of Climate Change Impacts on Growth*. Ministry of Environment, Kingdom of Cambodia.

<http://www.camclimate.org.kh/en/policies/ncsd-news/445-445.html>

³³ Ministry of Environment (2020). *Cambodia's Updated Nationally Determined Contribution*. Ministry of Environment, Kingdom of Cambodia.

³⁴ Ibid

³⁵ Ministry of Environment (2013). *Cambodia Climate Change Strategic Plan 2014 – 2023*. National Climate Change Committee. Royal Government of Cambodia.

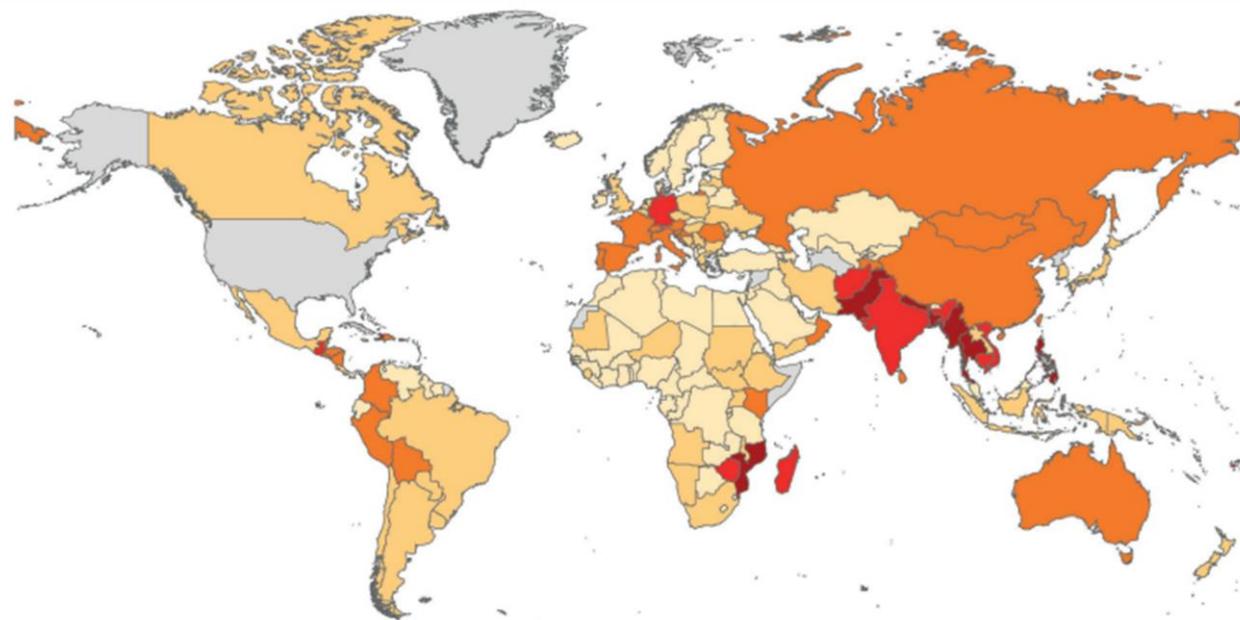
³⁶ Ministry of Environment (2020). *Cambodia's Updated Nationally Determined Contribution*. Ministry of Environment, Kingdom of Cambodia.

³⁷ The World Bank Group and Asia Development Bank (2019). *Climate Risk Country Profile: Cambodia*. Washington DC, USA and Metro Manila, Philippines.

³⁸ INFORM (2017). Country Risk profile for Cambodia 2017. <http://www.inform-index.org/Countries/Country-profiles/iso3/KHM>

³⁹ Ministry of Environment (2020). *Cambodia's Updated Nationally Determined Contribution*. Ministry of Environment, Kingdom of Cambodia.

⁴⁰ Ministry of Environment (2022). *Third National Communication to the United Nations Framework Convention on Climate Change*. Kingdom of Cambodia.



Climate Risk Index: Ranking 2000 - 2019



Figure 2: World Map of the Global Climate Risk Index 2000 – 2019

The 2014 Forest Cover Report, released by the Organisation for the Development of Data (ODC), highlights emerging trends in the loss of forest cover, especially loss of dense forests throughout Cambodia since 1973. The percentage of non-forest cover, i.e., 48.4 percent, is larger than forest cover.⁴¹ Being a developing nation with limited infrastructure, recovery from climate related disasters is still challenging. Between 1991 and 2014 Cambodia has experienced extreme hazards, mainly floods and storms that led to the deaths of over 1,500 people^{42 43 44}, and the vulnerability to extreme weather events such as floods, and cyclones cause most losses in terms of both mortality and economic losses. The economic losses between 1991 and 2014 amounted to more than US\$235 million.⁴⁵ Two-thirds of the loss could be avoided with improved policies, investment to adapt to climate change and measures to climate-proof infrastructure where possible.

In addition, there is growing risk that severe weather events will continue to impact Cambodia affecting the achievement of its main national development priority, i.e., to build institutional capacity, improve socioeconomic infrastructure, and create favourable environment to attract both domestic and foreign investments, with the aim of ensuring high rate of economic growth and poverty reduction, as outlined in its National Strategic Development Plan (NSDP) 2019 – 2023.⁴⁶ The uncertainty and intricacy of ever-increasing climate change risks and threats significantly hampers economic growth and development potential in the future.⁴⁷

Changes in climate in Kampot and Koh Kong Provinces

Temperature

The climate in Cambodia is tropical with high temperatures, and two distinct seasons, namely, a monsoon-driven rainy season and a dry season. The wet season between May to October is with south-westerly winds ushering in clouds and moisture that accounts for anywhere between 80 – 90 percent of the country’s annual precipitation. The dry season from November to April is with cooler temperatures, mostly between November and January with an average minimum temperature of 17°C in January. Average temperatures across the country are relatively uniform. Nonetheless, temperatures are the highest in the early summer months before the rainy season begins with maximum temperatures often exceed 32°C (with an average maximum temperature of 38°C in April).^{48 49} As mentioned elsewhere in the concept note, over the last decades the mean temperatures in Cambodia have increased significantly, a trend that is predicted to continue with projected increases in monthly averages between 0.013°C and 0.036°C per year by 2099 with higher predictions for locations at low latitudes.⁵⁰ The number of ‘hot days’ in the country has increased over the

⁴¹ Development Data Organisation (2015). Forest Cover. <http://www.opendatacambodia.net/briefing/forest-cover/>

⁴² Global Climate Risk Index (2016). <https://germanwatch.org/fr/download/13503.pdf>

⁴³ UNISDR (2017). Global Risk Assessment 2017. <http://www.preventionweb.net/countries/khm/data/>

⁴⁴ International Disaster Database (2017). EM-DAT http://www.emdat.be/country_profile/index.html

⁴⁵ Index for Risk Management (INFORM) Country Risk profile for Cambodia, 2017. <http://www.inform-index.org/Countries/Country-profiles/iso3/KHM>

⁴⁶ Ministry of Planning (2019). *National Strategic Development Plan 2019 – 2023*. Ministry of Planning, Kingdom of Cambodia.

⁴⁷ Ministry of Environment (2013). *Cambodia Climate Change Strategic Plan 2014 – 2023*. National Climate Change Committee. Royal Government of Cambodia.

⁴⁸ Ibid

⁴⁹ The World Bank Group (2022). Climate Change Knowledge Portal for Development Practitioners and Policy Makers.

<https://climateknowledgeportal.worldbank.org/country/cambodia/climate-data-historical>

⁵⁰ Ministry of Environment (2013). *Cambodia Climate Change Strategic Plan 2014 – 2023*. National Climate Change Committee. Royal Government of Cambodia.

last century, by as much as 46 days per year.⁵¹ Temperature is expected to increase by 0.6 °C by 2030, by 1.4 °C by 2050 in Kampot Province⁵² and by 0.7°C (RCP4.5) and 1.0°C (RCP8.5) by 2025 in Koh Kong Province.⁵³ Heat stress has a negative impact on many sectors, including construction, garment, agriculture, education, etc.⁵⁴ Moreover, predicted increase in temperatures coupled with an increase in inter-annual and seasonal temperature variability will result in increased evaporation rates and consequently, likely desiccation and hard setting of soils (depending on soil type) and the drying up of freshwater bodies.⁵⁵

The average annual rainfall in Kampot is 2,215 mm⁵⁶ and Koh Kong Province it is 4,498 mm⁵⁷ and the projected change in rainfall from climate models is much more variable than it is for temperature. The average projection for annual rainfall from the Global Climate Models (GCM) is for an increase by 2030. A report on 'Climate Risk and Vulnerability Assessment' states that typhoons and tropical storms can bring widespread intense rainfall and subsequent flooding and it is also projected that rainfall events from tropical depressions crossing across Cambodia from typhoons landing in Vietnam will decrease in frequency, but each event will bring heavy rains. Additionally, the coastal location of Kampot Province could experience increased wet monsoons resulting in larger rainfall from extreme events. Modelling studies project that extreme rainfall in 1-day events will increase by 3 - 10 mm.⁵⁸ The annual mean projected rainfall changes by -1% (RCP 4.5) and -2.5% (RCP 8.5) for Koh Kong Province and the rainfall is projected to decrease during the wet season and increases in other parts of the year. Moreover, it is project that there is a higher tendency for short-term and medium-term droughts to decrease, but long-term droughts to increase in the future with increases in the projected number of days of extreme temperatures (days above 35°C) and, also an increase the Heat Wave Duration Index (HWDI) in Koh Kong Province.⁵⁹ The increase in the frequency and intensity of flooding events due to more frequent episodes of heavy rainfall will lead to decreased productivity in rain-fed agricultural crops, and a greater frequency of droughts and floods. In addition, greater rates of runoff of water from the soil surface because of increases in rainfall intensity will increase rates of soil erosion and reduce river flow in dry periods.⁶⁰

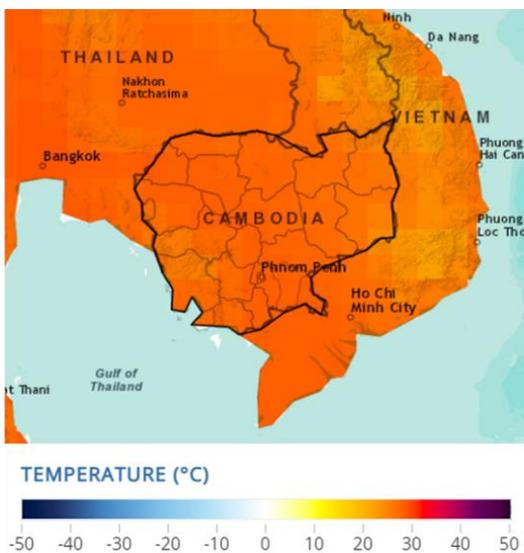


Figure 3: Observed climatology of mean-temperature 1991 – 2020 Cambodia

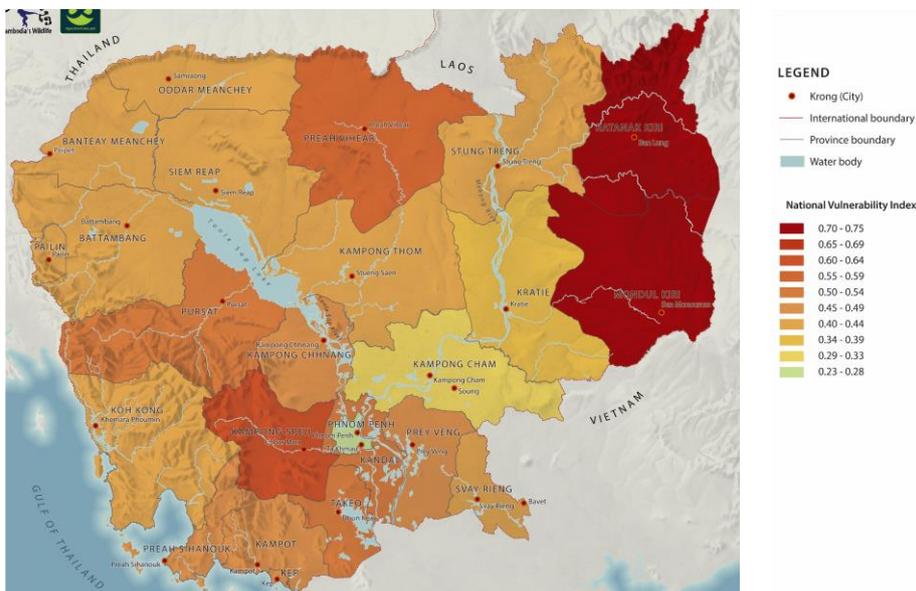


Figure 4: National Vulnerability Index

⁵¹ The World Bank Group (2022). Climate Change Knowledge Portal for Development Practitioners and Policy Makers. <https://climateknowledgeportal.worldbank.org/country/cambodia/climate-data-historical>

⁵² Asian Development Bank (2021). *Climate Risk and Vulnerability Assessment: Cambodia: Livable Cities Investment Project Kampot*. <https://www.adb.org/sites/default/files/linked-documents/53199-001-ld-05.pdf>

⁵³ The World Bank Group (2011). *Vulnerability, Risk Reduction and Adaptation to Climate Change, Cambodia*. https://climateknowledgeportal.worldbank.org/sites/default/files/2018-10/wb_gfdr_climate_change_country_profile_for_KHM.pdf

⁵⁴ National Council for Sustainable Development (2022). 'Study on Impact of Heat Stress to Human Productivity and Economic in Cambodia'. <https://ncsd.moe.gov.kh/dcc/project/study-impact-heat-stress-human-productivity-and>

⁵⁵ Ministry of Environment (2002). *Initial National Communication under the United Nations Framework Convention on Climate Change*. Kingdom of Cambodia.

⁵⁶ Weather & Climate. https://weather-and-climate.com/average-monthly-precipitation-Rainfall-inches_kampot_Cambodia

⁵⁷ Climate conditions in Koh Kong Province. <http://hikersbay.com/climate-conditions/cambodia/kohkong/climate-conditions-in-koh-kong-province.html?lang=en#weather-rain-months>

⁵⁸ Asian Development Bank (2021). *Climate Risk and Vulnerability Assessment: Cambodia: Livable Cities Investment Project Kampot*. <https://www.adb.org/sites/default/files/linked-documents/53199-001-ld-05.pdf>

⁵⁹ Climate Investment Funds (2014). *Climate Change Impact Modeling and Vulnerability Assessments for Koh Kong and Monduliri Provinces in Cambodia*. Supplementary Appendix M - CAM GMS BCC-PPCR. https://www.cif.org/sites/cif_enc/files/meeting-documents/m_climate_change_modelling_and_vulnerability_assessment_0.pdf

⁶⁰ Ministry of Environment (2002). *Initial National Communication under the United Nations Framework Convention on Climate Change*. Kingdom of Cambodia.

⁶¹ Theouen, C. (2015). Observed and projected changes in temperature and rainfall in Cambodia. *Weather and Climate Extremes*, 7, 61 – 71. <https://www.sciencedirect.com/science/article/pii/S2212094715000043?via%3Dihub>

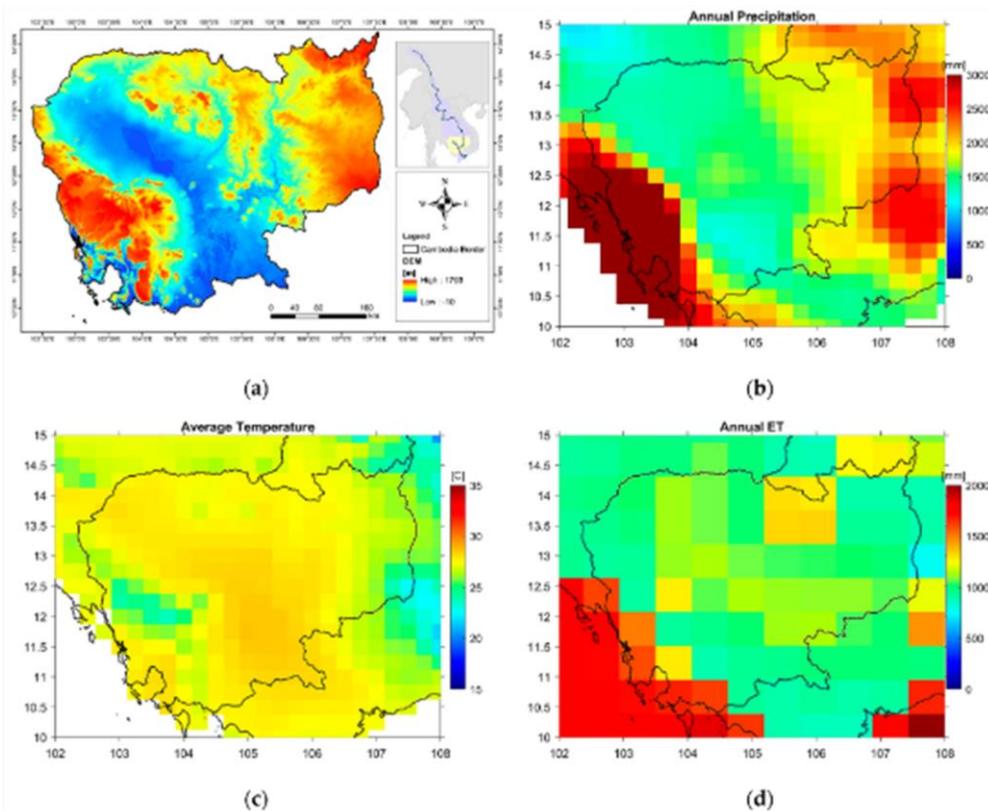


Figure 5: Map of Cambodia showing: (a) Digital Elevation Model; (b) Average annual precipitation over Cambodia from APHRODITE dataset; (c) Average annual temperature over Cambodia from APHRODITE dataset; (d) Average annual evapotranspiration over Cambodia from JRA-55 dataset.

<https://www.mdpi.com/2225-1154/10/11/162/htm>

Episodes of droughts and floods are identified as the two main climate hazards experienced in both Kampot and Koh Kong Provinces.^{62 63} A significant factor in exacerbating the damage is that drought periods have been increasing followed by destructive flooding in the same province in the same year. The agricultural sector is most heavily affected by droughts and floods in the two (2) provinces.

Sea level rise

Local sea level at Koh Kong province is projected to increase by approximately 10 cm above the 1986 - 2005 baseline by 2025⁶⁴ As sea level rises, the base-level of the Teuk Chhou River will also rise, increasing the likelihood of flooding during high tide events in the Kampot Province. When there are heavy rains along the coastline, runoff floods coastal areas along the base of the mountain ranges. Kampot province becomes flooded due to the river overtopping the riverbanks.⁶⁵ In 2015, persistent heavy rain and opened gates at the Kamchay Hydropower Dam have caused flooding in Kampot Province, resulting in large damages to homes and businesses and thousands of affected families.⁶⁶

Rising sea levels could pose a significant threat to marine coastal areas Kampot and Koh Kong Provinces, which already suffer from storm surges, high tides, and beach erosion. Low-lying areas, including settlements, beach resorts, seaports, coastal fisheries, and mangrove forests could all be directly affected.⁶⁷ Increases in sea levels are especially alarming for Kampot and Koh Kong provinces that are already experiencing severe seawater intrusion, beach erosion, high tides, and frequent storm surges. Additional impacts such as land subsidence in the region may even further intensify its effects. Especially coastal settlements, seaports, coastal fisheries, mangrove forests, and tourism facilities in low-lying areas would equally be affected. As an example, research by the Danish International Development Assistance found that around 56 percent the low-lying city of Koh Kong would be submerged by a one (1) metre rise in sea levels.⁶⁸

Socioeconomic context of Kampot and Koh Kong Provinces

The GDP of Cambodia in 2021 was 29.8 billion US dollars. Although growing rapidly, the per capita income is low compared to most neighbouring countries (1,730 US dollars). The two leading sectors of Cambodian economy are textiles and tourism. In addition, agriculture remains the main source of income for many Cambodians. The service sector is highly concentrated on trading and catering services.⁶⁹ The economy of the Kampot and Koh Kong Provinces reflect the national economy and is, due to its geographic

⁶² Save the Children, People in Need & CARE Cambodia (2016). Final Report of Rapid Assessment of the Drought in Koh Kong Province. https://resourcecentre.savethechildren.net/pdf/csp_report_on_rapid_assessment_on_drought_in_koh_kong_ab_revised_version_3.pdf/

⁶³ Cambodianness (2021). 'Drought Hits Farmers in Kampot and Pailin'. <https://cambodianness.com/article/drought-hits-farmers-kampot-and-pailin/>

⁶⁴ Climate Investment Funds (2014). *Climate Change Impact Modeling and Vulnerability Assessments for Koh Kong and Monduliri Provinces in Cambodia*. Supplementary Appendix M - CAM GMS BCC-PPCR. https://www.cif.org/sites/cif_enc/files/meeting-documents/m_climate_change_modelling_and_vulnerability_assessment_0.pdf

⁶⁵ Asian Development Bank (2021). *Climate Risk and Vulnerability Assessment: Cambodia: Livable Cities Investment Project Kampot*. <https://www.adb.org/sites/default/files/linked-documents/53199-001-ld-05.pdf>

⁶⁶ National (2015). *Thousands Affected by Kampot Floods*. <https://www.khmertimeskh.com/59506/thousands-affected-by-kampot-floods/>

⁶⁷ The World Bank Group (2011). *Vulnerability, Risk Reduction and Adaptation to Climate Change, Cambodia*. https://climateknowledgeportal.worldbank.org/sites/default/files/2018-10/wb_qfdr climate_change_country_profile_for_KHM.pdf

⁶⁸ Danish International Development Assistance (2008). <https://www.weadapt.org/sites/weadapt.org/files/legacy-new/placemarks/files/Cambodia.pdf>

⁶⁹ Embassy of the Republic of Belarus in Socialist Republic of Vietnam (2022). Cambodian economy. <https://vietnam.mfa.gov.by/en/exportby/camobz/comeco/>

location are especially dependent on the tourism, agriculture, and construction sectors. Rice is the major agricultural output within the provinces, with other products being vegetables and fruits. Fishing and seaweed cultivation are also important to the economy of the provinces. Kampot and Koh Kong Provinces recognise tourism as an important sector and have a great potential for ecotourism, with nature, livelihood promotion, and community-based tourism activities.

Climate variability and change are already having severe impacts on key sectors, especially agriculture and tourism in the two (2) Provinces. These impacts are reversing economic growth, exacerbating poverty, and undermining the future prosperity. Cambodia remains highly vulnerable to economic shocks, and this is intensified due to climate variability and change. Despite the considerable decline in poverty incidence (poverty rates fell from 60 percent in 2000 to 13.5 percent in 2015) and depth (decline in poverty gap from 21.8 percent in 2004 to 2.2 percent in 2014), a large share of the population still live just above the national poverty line and are at a high risk of falling back into poverty.⁷⁰ The unemployment rate in Cambodia is projected to trend around 2 percent and 0.90 percent in 2024, according to the projections of the econometric models.⁷¹ According to the International Labour Organisation (ILO), as climate change affects temperature and rain patterns, may render entire regions unproductive and make workplaces too hot for work, thereby leading to climate-induced migration, the proliferation of precarious and informal work, and an increase in unemployment⁷² which is pertinent to the two (2) Provinces as well. As mentioned elsewhere in the concept note, it is estimated that climate change could reduce the GDP of Cambodia by 2.5 percent by 2030 and by almost 10 percent by 2050.⁷³

Utilising the most recent Cambodia Socio-Economic Survey for 2019/20 Cambodia has recently redefined the poverty line. The national poverty line is now 10,951 riels per person per day which is an equivalent of US\$2.70 at October 2022 exchange rates. Under the new poverty line, about 18 percent of the population is identified as poor with poverty rates varying considerably by area. The poverty rate is the lowest in Phnom Penh (4.2 percent) and other urban areas (12.6 percent), and the highest in rural areas (22.8 percent)⁷⁴ which includes a majority of the areas in Kampot and Koh Kong Provinces. Climate change threaten to reduce the productivity of, especially agriculture and fisheries sector posing a significant threat to the livelihoods and nourishment of many poor, rural communities in Cambodia.⁷⁵

Gender context of Kampot and Koh Kong Provinces

Studies have shown that women (including children and older persons) disproportionately suffer the impacts of severe weather events, disasters, and climate change and variability because of cultural norms and the inequitable distribution of roles, resources, and power, especially in developing countries⁷⁶ like Cambodia. Therefore, women have greater sensitivity and less adaptive capacity. Women make up the majority of the poor in the world and are more dependent on natural resources for their livelihoods and survival than men. Women tend to have lower incomes and are more likely to be economically dependent than men.⁷⁷ For an example, when drought or intense rain, threatens agricultural production, men are able to adapt by using the savings and economic independence to invest in alternative income sources, and in times of food scarcity and drought, women will often give priority to their husbands and family members—his and the family members nutritional needs will be met before hers.⁷⁸ Many women around the world must adapt their lives to a changing and varying climates. Increases in extreme weather conditions such as droughts, storms, and floods, which are also experienced by Kampot and Koh Kong provinces—are already altering economies, economic development, and patterns of human migration, and are likely to be among the biggest global health threats this century. Everyone will be affected by these changes, but not equally. Vulnerability to climate change will be determined by a community or the ability of the individual to adapt.⁷⁹

Heavy rains starting in September 2013 resulted in floods in 20 provinces throughout the north-west and along the Mekong River in central and southern Cambodia, killing 188 people and affecting more than 1.7 million.⁸⁰ Evidence suggests that women were more severely affected during the floods. Women were more likely to be in the home when floods hit, or unable to leave the home because of domestic care responsibilities. The resulting disruption to health care infrastructure and service left pregnant women to deliver in very critical conditions.⁸¹ The coastal area of Cambodia, including coastal areas of Kampot and Koh Kong provinces, such as flooded delivery rooms or worse, at home where immediate medical care was not available, are especially at risk from flooding from inland waterways, heavy rain and coastal flooding from storm surges and sea level rise.

⁷⁰ Asian Development Bank (2021). Employment and Poverty Impact Assessment. <https://www.adb.org/sites/default/files/linked-documents/54195-001-sd-03.pdf>

⁷¹ Business (2022). Joblessness in Cambodia to stay around 2% in 2023. <https://www.khmertimeskh.com/501169894/joblessness-in-cambodia-to-stay-around-2-in-2023/>

⁷² International Labour Organisation (2018). *The employment impact of climate change adaptation*. Input Document for the G20 Climate, Sustainability Working Group. ILO, Geneva.

⁷³ Department of Climate Change (2018). *Modelling of Climate Change Impacts on Growth*. Ministry of Environment, Kingdom of Cambodia. <http://www.camclimate.org.kh/en/policies/ncsd-news/445-445.html>

⁷⁴ The World Bank Group (2022). *The World Bank in Cambodia*.

<https://www.worldbank.org/en/country/cambodia/overview#:~:text=Cambodia%20has%20recently%20redefined%20the,at%20October%202022%20exchange%20rates>.

⁷⁵ The World Bank Group and Asia Development Bank (2019). *Climate Risk Country Profile: Cambodia*. Washington DC, USA and Metro Manila, Philippines.

⁷⁶ PRB (2012). *Women more vulnerable than men to climate change*. <https://www.prb.org/resources/women-more-vulnerable-than-men-to-climate-change/>

⁷⁷ Oxfam International (2022). *Why the majority of the world's poor are women*. <https://www.oxfam.org/en/why-majority-worlds-poor-are-women>

⁷⁸ PRB (2012). *Women more vulnerable than men to climate change*. <https://www.prb.org/resources/women-more-vulnerable-than-men-to-climate-change/>

⁷⁹ Care International (2010). *Adaptation, Gender and Women's Empowerment*. Care International Climate Change Brief. www.careclimatechange.org/files/adaptation/CARE_Gender_Brief_Oct2010.pdf

⁸⁰ Care International (2010). *Adaptation, Gender and Women's Empowerment*. Care International Climate Change Brief. www.careclimatechange.org/files/adaptation/CARE_Gender_Brief_Oct2010.pdf

⁸¹ International Bank for Reconstruction and Development (2019). *STRIKING A BALANCE MANAGING EL NIÑO AND LA NIÑA IN CAMBODIA'S AGRICULTURE*. <https://documents1.worldbank.org/curated/en/433961554200320844/text/Striking-a-Balance-Managing-El-Ni%C3%B1o-and-La-Ni%C3%B1a-in-Cambodia-s-Agriculture.txt>

Women are also more vulnerable as they have less access to education and information that would allow them to manage climate-related risks to agriculture and livestock. Many women have considerably less access than men to critical information on weather alerts and cropping patterns, affecting their capacity to respond effectively to climate variability.⁸² According to CARE in Cambodia, poor women and girls of Koh Kong province are tempted to migrate to Thailand in search of work – and many fall victim to human trafficking.⁸³ In Koh Kong province, the two key underlying causes of poverty affecting young women, i.e., gender inequality and limited income generation opportunities – result in low household incomes, are limited knowledge of and access to markets, lack of capital and few opportunities to improve individual capacities and skills.⁸⁴ Female population in Kampot province is 51 percent with 16.24 percent being Female Headed Households (FHH)⁸⁵ and in Koh Kong province the female population is 50 percent with FHH being 16.08 percent.⁸⁶

As in other parts of the country, in Kampot and Koh Kong provinces women's livelihoods, access to resources and capacity to adapt are different from men, and in many cases, women face challenges due to social reasons and roles in the household. Women often have role of contributing to the household income as well as domestic responsibilities, for instance, care giving for the sick and older persons and raising and educating children. Women in Kampot and Koh Kong provinces are usually responsible for domestic chores including, water collection, small scale gardening, cropping rice, trade, and rearing livestock – which is a greater range of responsibilities than men. Therefore, supporting women to adapt is crucial.

Environment context of Kampot and Koh Kong Provinces

Cambodia Environment Outlook by the Ministry of Environment has identified four (4) key environmental issues, namely, (1) Land degradation, (2) Depletion of biodiversity, (3) Degradation of inland aquatic resources, and (4) Management of coastal and marine resources and waste. These issues have been prioritised and analysed by various experts, including government officials, scientists, academics, and civil society representatives, to determine their policy making implications.⁸⁷

Land degradation: In Cambodia, policies on land had been focused on land administration than on converting more land to agriculture or urban land expansion. Attention has also been given on improved tenure security with the hope that secure titles would leave to improved management of natural resources, improved land husbandry, and poverty alleviation. However, improvement is required in overall coordination of land use planning and land allocation, which includes land use planning (for forests, agricultural development areas, key urban areas, and road corridors),⁸⁸ land allocation and establishment of land inventory system.⁸⁹ Land encroachment and clearing for agriculture, logging, infrastructure, and other development initiatives is increasingly exposing sandy soils to erosional forces, leading to significant problems. Due to severe soil quality problems, there appears to be low potential for yield increases across approximately 50 percent of Cambodia's cultivated areas.⁹⁰ Corroborating the aforementioned, rural change in Cambodia manifests itself in rapidly declining land availability for the smallholder sector, posing the question of how farmers may be able to deal with limited access to land. An issue prominent in Kampot⁹¹ and Koh Kong Provinces. Forests are at risk due to increasing demand for agricultural lands. The direct causes of degradation and deforestation in Kampot and Koh Kong Provinces (similar to other areas in Cambodia) are agricultural expansion, land encroachment, etc. driven by economic and social forces. Demand for agricultural land is continuously increasing due to rural population growth. Approximately 13 percent of rural households in Cambodia are still landless, and as family landholdings are being divided into smaller parcels, average size of agricultural holdings is quite small, only 1 ha per household. Therefore, land becomes a major issue nationally⁹² not merely in Kampot and Koh Kong Provinces. In addition, forests are at risk due to increasing demand for agricultural lands. The direct causes of degradation and deforestation in Kampot and Koh Kong Provinces are agricultural expansion, land encroachment, etc. driven by economic and social forces. Both urban and rural population growth has increased rapidly resulting in pressure on land resource.⁹³

Loss of biodiversity: Both Kampot and Koh Kong provinces are endowed with rich biodiversity. Conversion of forest lands for agriculture, excessive and uncontrolled logging, exploitation of forest resources, and illegal hunting wildlife for trade and local consumption have contributed to the increasing rate of wildlife habitat loss and biodiversity destruction in Cambodia,⁹⁴ which are common to Kampot and Koh Kong Provinces as well. As mentioned elsewhere, the increase in population and the demand for land for agriculture and industrial development have contributed to the reduction and loss of natural ecosystems.

Degradation of inland aquatic resources: Fish is consumed daily in rural Cambodia and heavily rely on other aquatic resources. Although there are considerably a smaller number of major conflicts between communities and fishing lot owners, the conflicts related to encroachment, illegal fishing, and destructive fishing practices are on the increase. In the meantime, there are direct and indirect factors causing depletion of fisheries in Cambodia, including the loss of fisheries due to overfishing, destructive and illegal fishing practices, and clearance of inundated forests. In addition, the pollution from agricultural runoff is becoming more common due to increasing use of chemicals, such as fertilizers, herbicides, and pesticides. Fish stocks are also threatened by other toxic elements from industrial waste and organic pollutants from domestic sewage, which damage the aquatic ecology.^{95 96}

⁸² World Health Organisation (2011). *Gender, Climate Change and Health*. Geneva, World Health Organisation.

⁸³ ReliefWeb (2013). Cambodia: Floods - Sep 2013. <https://reliefweb.int/disaster/fl-2013-000131-khm>

⁸⁴ CARE Cambodia (2022). Young Women in Business (YWIB). <https://www.care-cambodia.org/ywib>

⁸⁵ *Provincial Socioeconomic Report 2019*, Kampot Province.

⁸⁶ *Provincial Socioeconomic Report 2019*, Koh Kong Province.

⁸⁷ Ministry of Environment (2009). *Cambodia Environment Outlook*. Ministry of Environment, Kingdom of Cambodia.

⁸⁸ The World Bank Group (2003). *Cambodia Environment Monitor*. The World Bank Group, Washington DC.

⁸⁹ Ministry of Environment (2009). *Cambodia Environment Outlook*. Ministry of Environment, Kingdom of Cambodia.

⁹⁰ McKenny, B. & Tola, P. (2002). Natural resources and rural livelihoods in Cambodia: A baseline assessment. Working paper 23, CDRI, Phnom Penh, July 2002.

⁹¹ Scheidel, A., Farrell, K., Ramos-Martin, J., Giampietro, M. & Mayumi, K. (2009). Land poverty and emerging ruralities in Cambodia: insights from Kampot province. *Environ Dev Sustain*, 16: 823 – 840.

⁹² Ministry of Land Management Urban Planning and Construction & World Bank (2002). Cambodia Land Management and Administration Project. Ministry of Land Management Urban Planning and Construction & World Bank, Kingdom of Cambodia.

⁹³ Ministry of Environment (2009). *Cambodia Environment Outlook*. Ministry of Environment, Kingdom of Cambodia.

⁹⁴ Ibid

⁹⁵ Ibid

⁹⁶ Asian Development Bank (2003). Asian Development Bank Draft Poverty Analysis. ADB, Philippines.

Coastal and marine resources management: Approximately 70 percent of the households in the four (4) coastal provinces, including Kampot and Koh Kong provinces and municipalities rely on the primary sectors, viz., agriculture, fishing, and forestry, as the main source of their employment and income. Coastal and marine biodiversity have provided and continue to provide substantial benefits to local communities. Mangrove forests are considered vital for providing food, shelter and nursery for both culture and capture fisheries along the coastal zone and are especially important to local communities given that more than 70 percent of coastal population rely on their products and resources, particularly fishing. The conversion of mangroves into shrimp farms, salt farms and charcoals has impacted adversely on the marine fish habitats and its productivity, in protection against storm, and in loss of firewood for use by the local community. The main threats to Cambodia's mangrove forest were intensive shrimp farming and charcoal production in Koh Kong province, and fuel-wood extraction and conversion to salt farming in Kampot province. The conversion of mangrove to shrimp farms is reported to be a recent trend but it has adversely affected both the coastal people and the coastal biodiversity. For instance, approximately 840 ha of 16,000 ha of mangrove forests in Koh Kong Province were used for intensive shrimp farming in early 1994.⁹⁷

Impact of climate change in Kampot and Koh Kong Provinces

Flooding, heat stress, and health

Like other parts of the country, Kampot and Koh Kong Provinces experience flooding due to heavy rainfall. It is projected that by 2030, an additional 69,800 people may be at risk of river floods annually because of climate change and 41,200 due to socioeconomic change above the estimated 89,700 annually affected in 2010.⁹⁸ In addition to deaths from drowning, flooding causes widespread indirect health effects, together with impacts on food production, water provision, ecosystem disruption, infectious disease outbreak and vector distribution. Longer term effects of flooding may include population displacement and post-traumatic stress.⁹⁹

According to the World Health Organisation and World Meteorological Organisation, some of the world's most virulent infections are highly sensitive to changes and variations in climate, namely, temperature, precipitation, and humidity. These have a strong influence on the lifecycles of the vectors and the infectious agents that carry and influence the transmission of water and foodborne diseases.¹⁰⁰ Moreover, according to the World Health Organisation there is growing health risks from climate change in Cambodia include vector-borne diseases, malnutrition, and diarrhoeal diseases, along with other conditions, for instance, rodent-borne diseases, respiratory tract infections, noncommunicable diseases, heat-related illness, and mental health impacts.¹⁰¹ In addition to deaths from drowning, flooding causes extensive indirect health effects, including impacts on food production, water provision, ecosystem disruption, infectious disease outbreak and vector distribution.¹⁰²

⁹⁷ Ministry of Environment (2009). *Cambodia Environment Outlook*. Ministry of Environment, Kingdom of Cambodia.

⁹⁸ World Resources Institute. <http://www.wri.org> Aqueduct Global Flood Analyzer. Assumes continued current socioeconomic trends (SSP2) and a 25-year flood protection.

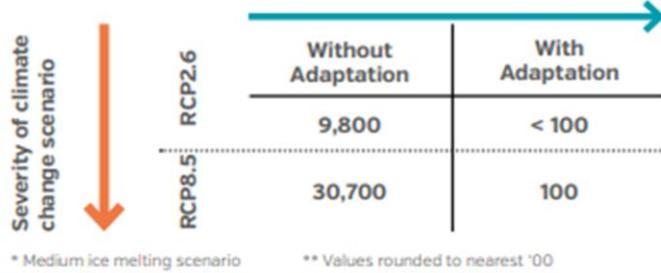
⁹⁹ World Health Organisation and United Nations Framework Convention on Climate Change (2015). Climate Change Health Country Profile – 2015, Cambodia. World Health Organisation <https://apps.who.int/iris/rest/bitstreams/1064308/retrieve>

¹⁰⁰ World Health Organisation and World Meteorological Organisation (2012). Atlas of Health and Climate. World Health Organisation.

¹⁰¹ World Health Organisation and World Meteorological Organisation (2021). Building climate-resilient health systems in Cambodia: Case Study on Climate Change and Health. World Health Organisation <https://www.who.int/news-room/feature-stories/detail/building-climate-resilient-health-systems-in-cambodia#:~:text=Growing%20health%20risks%20from%20climate,illness%20and%20mental%20health%20impacts>.

¹⁰² World Health Organisation and United Nations Framework Convention on Climate Change (2015). Climate Change Health Country Profile – 2015, Cambodia. World Health Organisation <https://apps.who.int/iris/rest/bitstreams/1064308/retrieve>

AVERAGE ANNUAL EXPOSURE TO FLOODING DUE TO SEA LEVEL RISE, CAMBODIA (2070-2100)

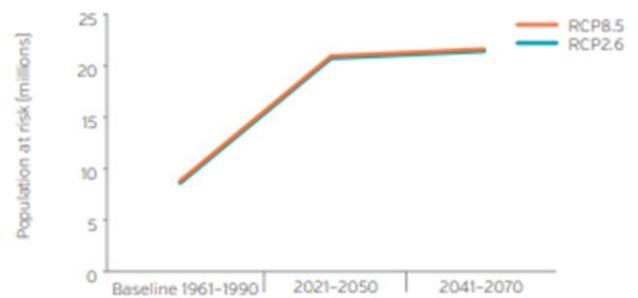


Source: Met Office, HM Government, UK (2014)¹⁰³

According to the Met Office of UK, in Cambodia, under a high emissions scenario, and without large investments in adaptation, an annual average of 30,700 people are projected to be affected by flooding due to sea level rise between 2070 and 2100. If emissions decrease rapidly and there is a major scale-up in protection (i.e., continued construction/raising of dikes) the annual affected population could be limited to under 100 people.

INFECTIOUS AND VECTOR-BORNE DISEASES

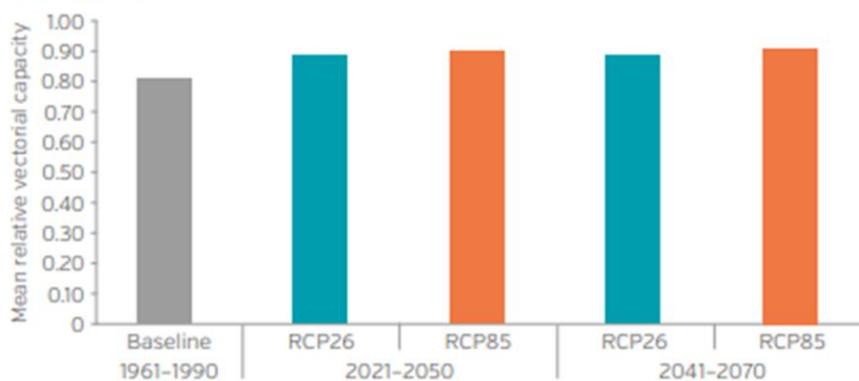
Population at risk of malaria in Cambodia (in millions)



Source: Liu-Helmernesson, J., Quam, M., Wilder-Smith, A., Stenlund, H., Ebi, K., Massad, E., & Rocklöv, J. (2015).¹⁰⁴

In Cambodia, by 2070, under both a high and low emissions scenario about 22 million people are projected to be at risk of malaria. Population growth can also cause increases in the population at-risk in areas where malaria presence is static in the future.

Mean relative vectorial capacity for dengue fever transmission in Cambodia



In Cambodia, the mean relative vectorial capacity for dengue fever transmission is projected to increase from about 0.82 to about 0.91 towards 2070 under both a high and low emissions scenario.

Source: Liu-Helmernesson, J., Quam, M., Wilder-Smith, A., Stenlund, H., Ebi, K., Massad, E., & Rocklöv, J. (2015).¹⁰⁵

As mentioned elsewhere in the concept note, climate change is expected to increase mean annual temperature and the intensity and frequency of heat waves resulting in a greater number of people at risk of heat-related medical conditions in Cambodia. The chronically ill, the older persons, children, the socially isolated and at-risk occupational groups are particularly vulnerable to heat-related conditions.¹⁰⁶

¹⁰³ Met Office (2014). Human dynamics of climate change. Technical Report. Met Office, HM Government, United Kingdom.

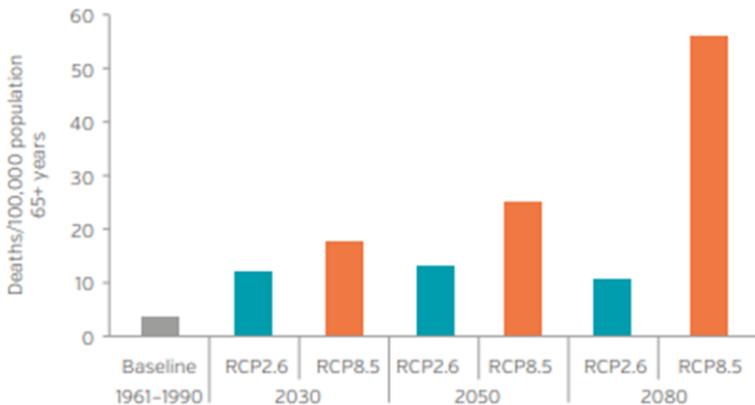
¹⁰⁴ World Health Organisation (2015). Country-level analysis, completed in 2015, was based on health models outlined in the quantitative risk assessment of the effects of climate change on selected causes of death, 2030s and 2050s. Geneva: World Health Organisation. The mean of health impact estimates for three global climate models are presented. Models assume continued socioeconomic trends (SSP2 or comparable). Liu-Helmernesson, J., Quam, M., Wilder-Smith, A., Stenlund, H., Ebi, K., Massad, E., & Rocklöv, J. (2015). Climate Change and Aedes Vectors: 21st Century Projections for Dengue Transmission in Europe. *eBioMedicine*, 7(2016): 267 – 277.

¹⁰⁵ Ibid

¹⁰⁶ World Health Organisation and United Nations Framework Convention on Climate Change (2015). Climate Change Health Country Profile – 2015, Cambodia. World Health Organisation <https://apps.who.int/iris/rest/bitstreams/1064308/retrieve>

HEAT-RELATED MORTALITY

Heat-related mortality in population 65 years or over, Cambodia (deaths / 100,000 population 65+ yrs)



In Cambodia, under a high emissions scenario heat-related deaths in the older persons (65+ years) are projected to increase to about 56 deaths per 100,000 by 2080 compared to the estimated baseline of about 4 deaths per 100,000 annually between 1961 and 1990. A rapid reduction in emissions could limit heat-related deaths in the older persons to about 11 deaths per 100,000 in 2080.

Source: Liu-Helmersson, J., Quam, M., Wilder-Smith, A., Stenlund, H., Ebi, K., Massad, E., & Rocklöv, J. (2015).¹⁰⁷

Food security (Agriculture and fisheries)

Communities have adapted to natural climate variability and change over centuries, however, the rapid changes in climate and extreme events are beyond their coping capacity. As temperatures rise, and extreme weather events become more frequent and more severe, vulnerable communities in Kampot, and Koh Kong Provinces are struggling to survive. As mentioned elsewhere in the concept note, the population of Cambodia and the economy are highly vulnerable to climate change and variability. Food security is already a major concern in Cambodia, where 25 percent of the population suffered from undernourishment in 2004 – 2005. This was higher proportion than in neighbouring Southeast Asian countries.¹⁰⁸ Approximately 80 percent of the population in Cambodia is rural and agriculture accounts for 35 percent of GDP.¹⁰⁹ According to the Food and Agriculture Organisation, 2/3 of the population of Cambodia is economically dependent on agriculture.¹¹⁰ In addition, majority of farmers are poorly equipped to adapt to climate change.¹¹¹

As a result of higher temperatures, drought and displacement, flooding land and water scarcity, adversely impacts agricultural production and triggers breakdown in food systems. As mentioned earlier, these disproportionately affect those most vulnerable people at risk to hunger and can lead to food insecurity. Vulnerable groups risk further deterioration into food and nutrition crises if exposed to extreme climate events. Without substantial efforts made to enhance climate resilience, it has been estimated that the global risk of hunger and malnutrition could rise by up to 20 percent by 2050.¹¹² In Cambodia, in 2014, the incidences of stunting in children under age 5 was 32.4 percent in 2014, the prevalence of underweight children and wasting in children under 5 was 23.9 percent and 9.6 percent, respectively.¹¹³

Agriculture sector, comprising fisheries and aquaculture is a sector most vulnerable to climate change. A comprehensive understanding of its impact is critical in formulating informed and effective adaptation strategies. Empirical studies have demonstrated that the intensification of extreme weather conditions have found to increase prolonged droughts and flash floods, and these changes have directly and indirectly affected the agriculture sector in Cambodia, thus imposing barriers to economic growth and national food security.¹¹⁴ According to a study by Cambodia Development Resource Institute (CDRI) found that prolonged droughts from 2013 to 2020 have caused the most severe impacts as opposed to all other hazards. As per the study, across all four agro-ecological zones in Cambodia, the rural communities dependent on agriculture have high levels of vulnerability and those dependent on water resources have medium levels of vulnerability.¹¹⁵ The study further states that drought frequency is highest in Kampot Province, and drought is the most frequently occurring natural disaster and floods are the second most common extreme event.¹¹⁶

¹⁰⁷ World Health Organisation and United Nations Framework Convention on Climate Change (2015). Climate Change Health Country Profile – 2015, Cambodia. World Health Organisation <https://apps.who.int/iris/rest/bitstreams/1064308/retrieve>

¹⁰⁸ Shicavone, A. (2010). "Trade and climate change implications for food security in mainland Southeast Asia." International Institute for Sustainable Development.

¹⁰⁹ World Bank (2009). World Development Indicators.

¹¹⁰ Shicavone, A. (2010). "Trade and climate change implications for food security in mainland Southeast Asia." International Institute for Sustainable Development.

¹¹¹ Royal Government of Cambodia. 2006. *National Adaptation Programme of Action to Climate Change*. Phnom Penh: Ministry of the Environment.

¹¹² World Food Programme (2015). *World Food Project 2015*. <https://www.wfp.org/content/two-minutes-climate-change-and-hunger>

¹¹³ World Health Organisation (2015). *Global Database on Child Growth and Malnutrition [2015 edition]*. Please see source for definitions of child malnutrition measures. Note that the estimates for underweight children are pending reanalysis.

¹¹⁴ Nelson, G.C., M.W. Rosegrant, A. Palazzo, I. Gray, C. Ingersoll, R. Robertson, T. Zhu, T. Sulser, C. Ringler, and S. Msangi. Forthcoming. "Food Security and Climate Change Challenges to 2050: Key Messages from the Future of Food and Farming Quantitative Scenarios." Washington D.C., International Food Policy Research Institute.

¹¹⁵ Ibid

¹¹⁶ Nelson, G.C., M.W. Rosegrant, A. Palazzo, I. Gray, C. Ingersoll, R. Robertson, T. Zhu, T. Sulser, C. Ringler, and S. Msangi. Forthcoming. "Food Security and Climate Change Challenges to 2050: Key Messages from the Future of Food and Farming Quantitative Scenarios." Washington D.C., International Food Policy Research Institute.

Climate change may directly affect fishery production along many pathways.¹¹⁷ Fish reproduction, growth, and migration patterns are all affected by temperature, rainfall, and hydrology.¹¹⁸ Building fisher communities' capacity to adapt to immediate environmental change through Ecosystem-based Adaptation (EbA), improving access to natural resources and diversifying livelihoods goes together with improving their long-term capacity to adapt to climate change. As fisheries and aquaculture can compensate for other adaptation problems, such as the loss of low-lying farmland, conserving wild fisheries and enhancing aquaculture (cultivating freshwater, brackish water, and saltwater populations under controlled or semi-natural conditions) should be considered twin strategies of adapt to climate change.¹¹⁹ Fisheries are critical to human well-being in Cambodia, where fish provide up to 80 percent of all animal protein in the diet.¹²⁰

Water resources and waste

The economy of Cambodia is highly dependent on water. The significance of water for food production, rural livelihoods and economic development is recognised in the Rectangular Strategy on Growth, Employment, Equity and Efficiency of the Kingdom of Cambodia. It has been acknowledged that climate change will increase water management challenges in Cambodia with less rainfall is anticipated during the dry season and more during the wet season, in addition to frequent extreme weather events and potentially worse seasonal water shortages and floods. It is evident that challenges are more threatening where meteorological systems are not yet able to forecast extreme weather, like flash floods and unpredicted drought, which have often happened in Cambodia,¹²¹ with no exception to Kampot and Koh Kong provinces.

Most Cambodians in rural areas face shortages of fresh water during the dry season, and during small dry spells in the wet season; nonetheless, in the rainy season there is too much water, and flooding. A significant number of irrigation infrastructure is insufficient, old, and run-down, which has a severe impact on water storage, distribution and supply, sanitation due to saltwater intrusion and food production. Moreover, the waters of the Gulf of Thailand are enclosed by land, and there is a growing risk that contaminants and sediment from coastal towns, agricultural areas and forest logging may pollute the sea. The marine waters of Cambodia require careful management, especially along the coastline and in estuaries, to ensure they continue to support healthy ecosystems and fisheries, and provide the basis for sustainable economic activities, particularly fishing and tourism.¹²²

Cambodia has 440km of coastline from the northwest to the southwest areas, covering the provinces of Koh Kong, Sihanouk, Kampot and Kep. With these provinces becoming increasingly populated, due to economic and tourism development, there is growing concern wastewater and solid waste systems.¹²³ Therefore, it is essential that water management is improved, especially regarding wastewater and solid waste systems. With increased scarcity of water resources, wastewater reuse will become essential as climate change accelerates. Simultaneously, increase in severe flooding results in further enhancing the poorly managed solid waste pollution. Although access to on-site sanitation improved access to 73 percent in 2016, a large share of the residents in Cambodia relies heavily on non-sewered sanitation. The discharge of untreated effluent to water bodies has a negative impact not only on human health and water systems but also on the environment. The combined effects of sea-level rise, coastal flooding and onshore development issues, mainly solid waste and wastewater disposal are causing coastal erosion and widespread pollution of livelihood providing ecosystems¹²⁴ in Kampot and Koh Kong provinces. Therefore, together with solid waste management, wastewater needs urgent attention to improve hygienic living conditions and reduce environmental degradation.

In Kampot province families using improved water is 65.6 percent and families having latrines is 81.2 percent¹²⁵ and the same in Koh Kong province is 69.6 percent and 63.2 percent.¹²⁶

Recommended adaptation interventions

1. Climate change adaptation measures are generally constrained by financial, institutional, technological barriers and 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, EWS, awareness creation etc. to overcome the barriers.
2. Due to heavy precipitation events, i.e., increase in frequency and intensity of rainfall Kampot and Koh Kong provinces are seriously impacted. Drainage networks that are designed based on historical climate regimes are now defunct. This could lead to widespread pluvial inundation/flooding and saltwater intrusion, exacerbated by inappropriate land-use planning, increased paving, and loss of water storage space, and had also led to increase in vector-borne and water-borne diseases.
3. Under the backdrop of climate change, comprehensive attention should be given to irrigation, as well as groundwater and canal irrigation considering the varying levels of rainfall forecast in Kampot and Koh Kong provinces. Renovation of small/micro tank for water harvesting and irrigation offer a host of benefits such as providing drinking water for rural communities and livestock, replenishing groundwater levels, conserving topsoil, and promoting livelihood activities such as inland fishing. Renovation of tanks should be done in a climate resilient manner, i.e., to tackle future floods, droughts and prevent saltwater intrusion in coastal areas.

¹¹⁷ World Fish Centre (2021). Climate change and fisheries: vulnerability and adaptation in Cambodia.

¹¹⁸ Ficke A.D., Myrick, C.A., Hansen, L.J. (2007). Potential impacts of global climate change on freshwater fisheries. *Reviews in Fish Biology and Fisheries*, 17(4): 581 – 613.

¹¹⁹ World Fish Centre (2021). Climate change and fisheries: vulnerability and adaptation in Cambodia.

¹²⁰ Horte, K.G. 2007. Consumption and the yield of fish and other aquatic animals from the lower Mekong basin. MRC Technical Paper no. 16, Mekong River Commission, Vientiane, Lao PDR.

¹²¹ Ministry of Water Resources and Meteorology (2013). Climate change strategic plan for water resources and meteorology, 2013 – 2017. Ministry of Water Resources and Meteorology, Kingdom of Cambodia.

¹²² Ibid

¹²³ Rizvi, A. R., and Singer, U. (2011). CAMBODIA COASTAL SITUATIONAL ANALYSIS. The International Union for Conservation of Nature, Building Resilience to Climate Change Impacts, Coastal Southeast Asia No.6. <https://portals.iucn.org/library/sites/library/files/documents/2011-114.pdf>

¹²⁴ Green Climate Fund (2021). Enhanced actions to respond to climate change through sustainable waste management in Coastal Cities in Cambodia. Readiness & Preparatory Support. UN-Habitat, Cambodia. <https://www.greenclimate.fund/sites/default/files/document/cambodia-un-habitat-khm-rs-006.pdf>

¹²⁵ *Provincial Socioeconomic Report 2019*, Kampot Province.

¹²⁶ *Provincial Socioeconomic Report 2019*, Koh Kong Province.

4. The current trends in climate change and disaster risks call for enhanced and coherent adaptive action in Kampot and Koh Kong provinces by generating more efficient and effective preparedness, response and recovery processes while making more efficient use of financial and human resources.
5. Poor and marginalised households tend to be less resilient and face greater difficulties in absorbing and recovering from the impacts of natural disasters. Recurrent disasters observed in Kampot, and Koh Kong provinces compound the losses for many households, forcing them to organise their livelihood such that overall risks can be reduced in the face of uncertainty, even if it means a reduction in their income and increased poverty. Therefore, supporting the vulnerable communities with their livelihoods would aid in increasing their resilience against disasters.
6. Local housing, especially of low-income households is typically associated with construction defects, poor workmanship, unsuitability of construction and poor local building techniques, consequently, are prone to disasters. Therefore, disaster resilient shelter construction and adoption of leading practices based on the local context is paramount.
7. Climate change and water pollution crises are driving a greater need for water filtration systems in many areas in Kampot and Koh Kong provinces. More than 80 percent of the wastewater flows back into the environment without being treated or reused. Droughts can aggravate the effluent concentration runoff, pH, and chemical quality, and contaminating water. Small/medium-scale purification plant would facilitate in improving the quality of water that is released to waterways and ultimately the sea.
8. Climate change can impact waste facilities both directly and indirectly. At the same time, improper waste management observed in Kampot and Koh Kong provinces, e.g., waste blocking drainage exacerbating flooding during rainfall events have reduced the ability to cope with extreme climate events. Therefore, solid waste management should consider of being resilient to climate change. The prevention of waste blocking the drainage systems is paramount in both Kampot and Koh Kong provinces, and also adopt a post-flood action plan, as floods will carry large quantities of waste that will end up in the open, once the water level lowers down. Kampot and Koh Kong provinces, should have a plan in order to quickly collect it and divert as much as possible, and to safely dispose of the residual waste.
9. As a coastal ecosystem, mangrove play a significant role in climate change adaptation. Mangroves are regularly referred to as a “nature-based solution” in tackling the climate crisis. Under sustainable management, mangroves provide many livelihood opportunities (shellfish gathering, fishing, and beekeeping are some of these opportunities that communities living alongside mangroves can benefit from with a thriving mangrove forest) for local communities in Kampot and Koh Kong provinces that can help to keep these valuable coastal ecosystems intact. 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, saltwater intrusion, 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 in Kampot and Koh Kong provinces mainly due to unplanned development.

Selected locations and beneficiaries

As mentioned above, the project focuses on four (4) districts, namely, Kampong Trach, Krong Kampot, Khmerak Phonumin and Mondul Seyma. Out of the fourteen (14) communes in Kampong Trach district, three (3) communes have been selected, viz., Damnak Kantuot Khang Cherng, Brasat Phnom Kchorng, and Ang Sophy communes.

In total the selected districts have 102,759 females, 98,796 males and the total population is 201,555. The proposed Project will benefit 60,104 females, 57,856 males and the total population being 117,960, which is 58.5 percent of the total population of the selected districts, see Table 1 for details. Annex 2 presents the maps of the selected districts, and these districts were selected in consultation with relevant stakeholders (Annex 3).

In the current context, the most durable benefits will result from strengthening the resilience of rural communities. Therefore, the proposed activities will focus on ‘Recommended adaptation interventions’, which includes, clear drainage systems, large canals, and waterways to meet new adaptation requirements for inundation/flooding/saltwater intrusion and controlling vector-borne and water-borne diseases, establishing/renovating medium/small-scale wastewater treatment plants, establishing of filter nets on the outlet of drainage pipes, renovating waterbodies (minor irrigation tanks and embankments), designing and building climate resilient housing and toilets, building sluiceways and embankments to prevent saltwater intrusion, establishing Early Warning System (EWS) for flooding and drought forecasting to reduce disaster risks of vulnerable communities. Moreover, the proposed Project intends to work on restoration of mangrove ecosystems and developing Ecosystem-based Adaptation (EbA) management plans. Community participation is viewed as a key to success in ecosystem restoration and EbA under the proposed Project. IN addition, the Project will explore livelihood diversification options (inland fisheries, fisheries product processing/value addition, seaweed cultivation, mat making and livestock raising etc.) and support the most vulnerable households to support agriculture and inland fishing to Increase income of vulnerable households (including women and youth) with initiation of these livelihoods. Moreover, the proposed Project intends to conduct participatory vulnerability/risk assessments to mainstream climate change adaptation, including community-based in community/sub-national/district development plans and promote climate change/disaster resilience in local development plans, build capacity of provincial and sub-national level Government entities and communities on mainstreaming climate change adaptation, and sub-national level Government officials/communities in managing solid waste and wastewater to strengthening of waste collection and existing management systems, training communities in target locations on resilient housing/latrines construction technique, organising communities to manage, monitor and maintain infrastructure investments to ensure sustainability, and sharing knowledge and lessons through documentation of climate resilient actions for increased adaptive capacities.

Table 1: Population of selected districts in Kampot and Koh Kong provinces (2021) ^{127 128}

Province	District	Number of Communes (C)/Sangkats (S)	Female	Male	Total
Kampot	Kampong Trach	Beung Sala Khang Cherg (C)	3,538	3,220	6,758
		Beung Sala Khang Tbound (C)	4,256	4,073	8,329
		Damnak Kantuot Khang Cherg (C)	3,508	3,304	6,812
		Damnak Kantuot Khang Tbound (C)	4,871	4,383	9,254
		Kampong Trach Khang Kert (C)	5,680	5,564	11,244
		Kampong Trach Khang Lech (C)	3,379	3,055	6,434
		Brasat Phnom Kchong (C)	1,806	1,567	3,373
		Phnom Brasat (C)	2,704	2,550	5,254
		Ang Sophy (C)	2,868	2,880	5,748
		Svay Tang Khang Kert (C)	2,031	2,102	4,133
		Svay Tang Khang Tbound (C)	2,770	2,708	5,478
		Prek Kreis (C)	4,944	4,700	9,644
		Rursey Srok Khang Kert (C)	2,748	3,019	5,767
	Rursey Srok Khang Lech (C)	5,734	5,566	11,300	
	Krong Kampot	Kampong Kadal (S)	3,259	2,936	6,195
		Krang Ormpil (S)	2,552	2,212	4,764
		Kampong Bay (S)	3,084	2,797	5,881
Orndong Khmer (S)		6,616	6,295	12,911	
Trouy Kos (S)		3,910	3,654	7,564	
Koh Kong	Khemerak Phoumin	Smach Mean Chey (S)	6,816	6,472	13,288
		Dang Tang (S)	6,950	6,945	13,895
		Steung Veng (S)	2,285	2,365	4,650
	Mondul Seyma	Bak Klong (C)	6,894	6,802	13,696
		Peam Krasoub (C)	831	805	1,636
		Tuol Korky (C)	8,725	8,822	17,547

Through previous development interventions of UN-Habitat, it has been 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. Indigenous knowledge on climate change adaptation will be utilised where possible.

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”¹²⁹. In addition, the proposed Project will work with underprivileged e.g., women, older persons, 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 implement concrete adaptation actions that support climate resilient infrastructure in Kampot and Koh Kong Provinces to adapt to current impacts of climate change, in particular, extreme hydro-meteorological events.
- To reduce of the impacts of coastal climate hazards through recovery of coastal ecosystems (Ecosystem-Based Adaptation) and minimise related socioeconomic impacts on communities.
- To enhance institutional capacity, at provincial and local level relevant Government entities, and communities, for decision making and management of the implementation of adaptation measures/actions to address climate change and variability in Kampot and Koh Kong Provinces.

The overall objective of the proposed project:

- To support climate resilient and adaptive development and increase capacity for climate variability/change adaptation of target communities living in Kampot and Koh Kong Provinces.

¹²⁷ Provincial Socioeconomic Report 2021, Kampot Province.

¹²⁸ Provincial Socioeconomic Report 2021, Koh Kong Province.

¹²⁹ USAID Adapting to Coastal Climate Change - A Guidebook for Development Planners, May 2009

Project/Programme Components and Financing:

This project is organised under three (3) strategic components:

1. Increasing coping capacity by promoting climate resilient small-scale infrastructure.
2. Adapting to current impacts of climate change through recovery of coastal ecosystems, and livelihood improvement and diversification.
3. Building capacity and knowledge sharing to reduce vulnerability to climate change.

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. Increasing coping capacity by promoting climate resilient small-scale infrastructure	Output 1.1. Clear drainage systems, large canals, and waterways in Chaneang Reservoir (Kampong Trach District, Kampot) to meet new adaptation requirements for inundation/flooding/saltwater intrusion and controlling vector-borne and water-borne diseases, and renovate waterways namely Sva Bridge, Prek Svay, Sangkat Steung Veng, Koh Kong for saltwater intrusion prevention.	Increased adaptive capacity of built infrastructure and communities to withstand extreme weather and climate variability and change.	883,783
	Output 1.2. Establish/renovate four (4) medium/small-scale wastewater treatment plants (with two (2) each in Kampot and Koh Kong Provinces).		967,952
	Output 1.3. Establish of filter nets on the outlet of drainage pipes in Phum 4 (Sangkat Dang Tong, Koh Kong) to capture waste.		631,273
	Output 1.4. Renovate waterbodies (minor irrigation tanks and embankments), namely, Kampong Trach Reservoir near the Kampong Trach Mountain in Kampot, Lompu Reservoir in Kampong Trach district of Kampot province.		1,052,122
	Output 1.5. Resilient housing and toilet designs developed, and demonstration housing units constructed.		1,031,080
	Output 1.6. Build five (5) sluice-gates and embankments to prevent saltwater intrusion (Mondul Seyma District, Koh Kong Province).		1,073,165
	Output 1.7. Establish Early Warning System (EWS) for flooding and drought forecasting to reduce disaster risks of vulnerable communities in Koh Saloa and Koh Kapi (community in Ramsar site, Koh Kong Province).		336,679
2. Adapting to current impacts of climate change through recovery of coastal ecosystems, and livelihood improvement and diversification.	Output 2.1. Restoration of destroyed mangrove ecosystems in Pream Krasoub Community (Mondul Seyma District, Koh Kong Province), including elimination and/or control of invasive alien species in coastal wetlands to improve mangrove ecosystem resilience.	Improved conditions of coastal ecosystems and income diversification of vulnerable communities have enhanced the resilient capacity of these communities.	799,613
	Output 2.2. Develop Ecosystem-based Adaptation (EbA) management plans for restored mangrove ecosystems, including prevention of waste/pollution in Phum 3 (Sangkat Smach Meanchey, Koh Kong) and Phum 4 (Sangkat Dang Tong, Koh Kong).		252,509
	Output 2.3. Explore livelihood diversification options (inland fisheries, fisheries product processing/value addition, seaweed cultivation, mat making and livestock raising etc.) and support the most vulnerable households to support agriculture and inland fishing to increase income of vulnerable households (including women and youth) with initiation of these livelihoods.		547,104
3. Building capacity and knowledge sharing to reduce vulnerability to climate change.	Output 3.1. Conduct participatory vulnerability/risk assessments to mainstream climate change adaptation, including community-based in community/sub-national/district development plans and promote climate change/disaster resilience in local development plans.	Improved effectiveness of climate adaptation planning/implementation to increase coping capacity to address climate variability/risk reduction, and to sustain/scale-up actions for transformative adaptation interventions at the local level.	168,340
	Output 3.2. Capacity building of provincial and sub-national level Government entities and communities on mainstreaming climate change adaptation.		138,880
	Output 3.3. Capacity building of sub-national level Government officials/communities in managing solid waste and wastewater to strengthening of waste collection and existing management systems, in Phum 3 (Sangkat Smach Meanchey, Koh Kong) [Linked to Outputs 1.2 and 1.3]		113,629
	Output 3.4. Training communities in target locations on resilient housing/latrines construction technique [Linked to Output 1.5]		168,340
	Output 3.5. Organising communities to manage, monitor and maintain infrastructure investments to ensure sustainability. [Linked to Outputs 1.1, 1.4 and 1.6].		105,212
	Output 3.6. Share knowledge and lessons through documentation of climate resilient actions for increased adaptive capacities. (<i>Special note: Material produced will be disability inclusive</i>)		147,297
3. Project/Programme Execution cost (9.5%)			799,613
4. Total Project/Programme Cost			9,216,590
5. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable), i.e., Overhead cost (8.5%)			783,410
Amount of Financing Requested			10,000,000

Projected Calendar:

Table 3: Milestones (48 months – January 2024 to December 2027)

Milestones	Expected Dates
Start of Project/Programme Implementation	January 2024
Mid-term Review (if planned)	December 2025
Project/Programme Closing	December 2027
Terminal Evaluation	December 2027

PART II: PROJECT/PROGRAMME JUSTIFICATION

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

To achieve the overall objective of the proposed project -- *Increasing climate resilience through small-scale infrastructures and enhancing adaptive capacity of vulnerable communities in Kampot and Koh Kong Provinces in the Kingdom of Cambodia*, the actions proposed by the project have been designed to target the poorest and most vulnerable people in Kampot and Koh Kong provinces. The actions proposed have been 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.

Component 1. Increasing coping capacity by promoting climate resilient small-scale infrastructure.

Infrastructure will be affected by the physical impacts of climate change, nonetheless, will also play an essential role in building resilience to those impacts. Therefore, infrastructure assets should always be prioritised, planned, designed, built and operated to account for the climate changes that may occur now and over their lifetimes. The proposed interventions are developed based on the current and future climate impacts. However, further assessments and analysis based on climate change data, population projections etc. will be done in collaboration with relevant stakeholders prior to finalisation of the designs.

Output 1.1. Clear drainage systems, large canals, and waterways in Chaneang Reservoir (Kampong Trach District, Kampot) to meet new adaptation requirements for inundation/flooding/saltwater intrusion and controlling vector-borne and water-borne diseases, and renovate waterways namely Sva Bridge, Prek Svay, Sangkat Steung Veng, Koh Kong for saltwater intrusion prevention. Recently, Kampot and Koh Kong provinces have experienced frequent, medium/large-scale flooding due to changes in the climate. As mentioned elsewhere, the existing urban drainage systems are designed to cope with weather conditions in specific areas and ages of systems vary and, in some places, are quite old, i.e., the existing drainage systems have been designed for past climate conditions and are not suitable for current circumstances or able to accommodate future changes.¹³⁰ Although the effects of climate change at the local level are understood, there appears to be lack of funding, however, warrants immediate interventions.

Output 1.2. Establish/renovate four (4) medium/small-scale wastewater treatment plants (with two (2) each in Kampot and Koh Kong Provinces).

The quality of water is compromised in Kampot and Koh Kong provinces due to waste (solid waste and wastewater) being dumped into waterways, and this is exacerbated by climate change leading to more untreated sewer overflows, increased flooding, etc. Due to increased scarcity of water resources, wastewater reuse will become more necessary as climate change accelerates.

Output 1.3. Establish of filter nets on the outlet of drainage pipes in Phum 4 (Sangkat Dang Tong, Koh Kong) to capture waste. Runoff created by floods and dumping of wastes clogs waterways. During recurrent flooding, the issue gets intensified due to accumulation of waste. Establishment of filter nets is considered as the 'simple pollution solution', a sock-like net that fits over a stormwater drain outlet to collect rubbish before it enters a waterway.

Output 1.4. Renovate waterbodies (minor irrigation tanks and embankments), namely, Kampong Trach Reservoir near the Kampong Trach Mountain in Kampot, Lompu Reservoir in Kampong Trach district of Kampot province.

Farmers in Kampot province 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 topsoil and harbouring fish. All stakeholders, including farmers urge upscaling of tank restoration as a measure to tackle future droughts and increasing climate resilience.

Output 1.5. Resilient housing and toilet designs developed, and demonstration housing units constructed.

Climate change brings challenges, but it also brings the opportunity to design the resilience necessary to improve housing and sanitation for the most vulnerable. UN-Habitat will draw lessons from the 'Climate Change Adaptation through Protective Small-Scale Infrastructure Interventions in Coastal Settlements of Cambodia', particularly on the adoption of housing designs piloted under the

¹³⁰ Berggren, K. *Indicators for urban drainage system-assessment of climate change impacts*. In Proceedings of 11th International Conference on Urban Drainage, Edinburgh International Conference Centre, Scotland: 11 ICUD, Munich, Germany, 31 August–5 September 2008.

aforesaid Project. Strong winds and frequent flooding damage houses, especially those of the most vulnerable. Climate resilient housing and toilets will enable people to adapt autonomously to climate change.

Output 1.6. Build five (5) sluice-gates and embankments to prevent saltwater intrusion (Mondul Seyma District, Koh Kong Province) The vulnerability of coastal groundwater resources/coastal aquifers to saltwater intrusion has evolved to become a challenge in Koh Kong province. 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, embankments/earth bunds with sluice gates to prevent saltwater intrusion will positively affect the agriculture activities in the area. Surveying will be carried out at the proposed location, and the earth quantity for the formation bund will be estimated.

Output 1.7. Establish Early Warning System (EWS) for flooding and drought forecasting to reduce disaster risks of vulnerable communities in Koh Saloa and Koh Kapi (community in Ramsar site, Koh Kong province).

EWS is an adaptive measure for climate change, using integrated communication systems to help communities prepare for hazardous climate-related events. Sub-national level Government and affected communities in Koh Kong province have inadequate access to weather information and EWS. A successful EWS saves lives and jobs, land and infrastructures and supports long-term sustainability. EWS will also assist public officials and administrators in their planning, saving money in the long run and protecting economies, in addition, local people are equipped with greater information and have more ability to protect their houses and property from severe climate conditions.

Component 2. Adapting to current and future impacts of climate change through recovery of coastal ecosystems, and livelihood improvement and diversification.

Healthy mangrove ecosystems play an important role in delivering services that help people adapt to climate change, and economic and livelihood diversification serves to enhance the resilience of vulnerable communities. In addition, it might also help to address the resilience of ecosystems by reducing the drivers of degradation.

Output 2.1. Restoration of destroyed mangrove ecosystems in Pream Krasoub Community (Mondul Seyma district, Koh Kong province), including elimination and/or control of invasive alien species in coastal wetlands to improve mangrove ecosystem resilience.

Mangrove restoration is an underutilised natural climate solution, as mangroves and other terrestrial and coastal ecosystems are an important sink and natural tool for climate adaptation in Koh Kong province. Mangrove forests provide critical ecosystem services, such as coastal protection, support livelihoods and food security. Mangrove restoration may be considered a win-win investment, providing adaptation solutions to climate change while also supporting the implementation of other international pledges of Cambodia and agreements for the SDG Agenda 2030.

Output 2.2. Develop Ecosystem-based Adaptation (EbA) management plans for restored mangrove ecosystems, including prevention of waste/pollution in Phum 3 (Sangkat Smach Meanchey, Koh Kong) and Phum 4 (Sangkat Dang Tong, Koh Kong).

EbA involves people using biodiversity and ecosystem services to adapt to the adverse effects of climate change and promote sustainable development. Similar to Community-based Adaptation (CbA) it has people at its centre, and it uses participatory, culturally appropriate ways to address challenges, but there is a stronger emphasis on ecological and natural solutions. Therefore, EbA has great potential to increase people's resilience in Koh Kong province and their ability to adapt. However, EbA is being overlooked in sub-national/district/provincial level policy processes.

Output 2.3. Explore livelihood diversification options (inland fisheries, fisheries product processing/value addition, seaweed cultivation, mat making and livestock raising etc.) and support the most vulnerable households to support agriculture and inland fishing to Increase income of vulnerable households (including women and youth) with initiation of these livelihoods.

Livelihood diversification is essential for reducing vulnerability to climate change.^{131 132} Livelihood diversification of vulnerable communities consists of maintaining and adopting a diverse portfolio of activities to survive and improve living standards^{133 134} by assisting in increasing income, improving assets, and most importantly, building economic resilience against climate disasters.

Component 3. Building capacity and knowledge sharing to reduce vulnerability to climate change.

Sharing of knowledge and experiences are important contributors to further increase capacity building and learning over time.

Output 3.1. Conduct participatory vulnerability/risk assessments to mainstream climate change adaptation, including community-based in community/sub-national/district development plans and promote climate change/disaster resilience in local development plans.

Conducting participatory vulnerability/risk assessments will help in communities raise awareness, assess their climate change and disaster risks and to develop adaptation strategies, particularly on areas that not being supported by the proposed Project, and these could be incorporated to community/sub-national/district development plans and can be utilised to promote climate change/disaster resilience in sub-national level development plans.

Output 3.2. Capacity building of provincial and sub-national level Government entities and communities on mainstreaming climate change adaptation.

Mainstreaming climate change adaptation can make development and societies more resilient to the impacts of climate change, and to current climate variability and extremes which are of immediate concern and relevance to both Kampot and Koh Kong provinces.¹³⁵

¹³¹ Asravor, R. K. (2018) Livelihood Diversification Strategies to Climate Change among Smallholder Farmers in Northern Ghana. *Journal of International Development*. 2018: 30:1318–38.

¹³² Belay, A., Recha, J. W., Woldeamanuel, T., Morton, J. F. (2017). Smallholder farmers' adaptation to climate change and determinants of their adaptation decisions in the Central Rift Valley of Ethiopia. *Agriculture and Food Security*. BioMed Central; 2017: 6:1–13.

¹³³ Alobo S. (2015). Rural Livelihood Diversification in Sub-Saharan Africa: A Literature Review. *Journal of Development Studies*. Routledge; 2015: 51:1125–38.

¹³⁴ Ellis, F. (2000). The Determinants of Rural Livelihood Diversification in Developing Countries. *Journal of Agricultural Economics*. 2000: 51:289–302.

¹³⁵ Burton, I. & van Aalst, M. (2004) Look Before You Leap: A Risk Management Approach for Incorporating Climate Change Adaptation in World Bank Operations. Final draft. World Bank, Washington, DC. <http://www->

In addition, mainstreaming climate change adaptation can also bring synergies between development and adaptation and significant developmental benefits. Therefore, capacity building of provincial and sub-national level Government entities and communities on mainstreaming climate change adaptation is crucial to ensure sustainability of the interventions proposed.

Output 3.3. Capacity building of sub-national level Government officials/communities in managing solid waste and wastewater to strengthening of waste collection and existing management systems, in Phum 3 (Sangkat Smach Meanchey, Koh Kong) [Linked to Outputs 1.2 and 1.3]

Training and capacity building on aforementioned areas will facilitate both behavioural changes and stakeholder support in managing solid waste and wastewater to strengthening of waste collection and related interventions. Not all stakeholders are aware and fully informed about the negative impacts of solid waste and wastewater and how climate change will exacerbate the issue increasing the vulnerability. Training and capacity building are therefore an important component to manage solid waste and wastewater in order to minimising the impacts of climate change, enhance adaptive capacity, and reduce overall vulnerability.

Output 3.4. Training communities in target locations on resilient housing/latrines construction technique [Linked to Output 1.5]

Training of communities, including artisans within the community on hazard resilient housing/latrines will enhance the knowledge on hazard resilient construction techniques. This will also address best construction practices. As mentioned under Output 1.5, lessons learnt, and methodologies utilised under 'Climate Change Adaptation through Protective Small-Scale Infrastructure Interventions in Coastal Settlements of Cambodia' will be adopted in the current Project.

Output 3.5. Organising communities to manage, monitor and maintain infrastructure investments to ensure sustainability. [Linked to Outputs 1.1, 1.4 and 1.6].

Organising and empowering communities create strong and supportive social entities that facilitate the sustainability of the *hard* investments. Moreover, in the long run it will create benefits for local people and places.

Output 3.6. Share knowledge and lessons through documentation of climate resilient actions for increased adaptive capacities.

Knowledge sharing for evidence-based climate change adaptation is key to reducing vulnerabilities, as knowledge sharing activities enhance understanding of best practices in climate change adaptation. The material produced will be disability inclusive.

Table 4: Project alignment with the Adaptation Fund results framework

Project Outcome	Project Outcome Indicator	Fund Outcome	Fund Outcome Indicator	Grant Amount
Increasing coping capacity by promoting climate resilient small-scale infrastructure.	Number of drainage systems, canals and waterways, and waterbodies upgraded to adapt to current impacts of climate change.	Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets	4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	5,976,054
Adapting to current impacts of climate change through recovery of coastal ecosystems, and livelihood improvement and diversification.	Percentage reduction of the impacts of coastal flooding through recovery of coastal ecosystems.	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	5. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress	1,599,226
Building capacity and knowledge sharing to reduce vulnerability to climate change.	Percentage increase in capacity to respond to climate variation/changes.	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic & environmental losses Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses. 3.2. Percentage of targeted population applying appropriate adaptation responses.	841,698

B. Economic, social, and environmental benefits

The proposed Project focuses on upgrading drainage systems, canals and waterways, and waterbodies to adapt to current impacts of climate change; reducing the impacts of coastal flooding through recovery of coastal ecosystems; and mainstreaming adaptation and capacity building of provincial and local level Government entities and communities to reduce vulnerability to climate change and increase coping capacity, and the maintenance and restoration of essential ecosystem functions in the coastal zone, with the goal of reducing climate change induced flooding, erosion and saltwater intrusion through ecosystem based adaptation measures.

By increasing the capacity of rural and coastal communities of Kampot and Koh Kong Provinces to adapt to climate change, the project will reduce the need for investment in immensely costly structural solutions (seawalls and dikes) and/or relocation away from

the most vulnerable coastal areas. As a result, government funds can be directed towards social welfare and human development priorities, thereby generating significant national benefits. In addition, if projections for sea level rise and increased intensity of rainfall become a reality, more and more of the coastal zone and peripheral rural villages in Kampot and Koh Kong Provinces will require some combination of coastal protection structures and EbA approaches in the coming decades. Therefore, by providing models for the design and construction of future coastal protection infrastructure, the approaches developed in the project will provide benefits to the entire country.

The vulnerability of population to climate change impact and climate hazards in Kampot and Koh Kong provinces are extremely high. The provinces have experienced flooding/inundation and droughts for a long history, however, the intensification of hazards due to climate change entails a higher magnitude of impact, especially the most vulnerable rural and coastal communities. 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: Destructive impacts of climate change like droughts and floods are the primary culprits behind decreased farming output in Kampot and Koh Kong provinces, effecting food security and nutrition. In addition, flooding and rising sea levels have resulted in saltwater intrusion threatening coastal farmland and fresh water supply, including inland fisheries. 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 Kampot and Koh Kong provinces, making it more difficult for them to escape and remain out of poverty. The income from agriculture, including fisheries has primary importance in the provinces, 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 etc. Previous work carried out in by UN-Habitat, especially on climate change adaptation have revealed that 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. In addition, areas with significant potential for ecotourism development will be protected with resilient and robust ecosystems that are necessary to continue to support tourism development and thus greater levels of employment, especially for local communities. Flood defenses will contribute to reducing and eliminating loss and damage occurring because of climate change hazards. Moreover, areas with significant potential for tourism development will be protected through resilient and robust ecosystems that are necessary to continue to support tourism development and thus greater levels of employment for vulnerable communities. With investments being made on resilient housing and toilets, households will not have to spend their savings on repairing houses and toilets after climatic hazards. The target locations will have access to year-round water for both daily consumption and agriculture and will be less likely to have to buy bottled water and this will also increase the agriculture productivity. The flood defenses proposed by the Project will contribute to reducing and eliminating loss and damage occurring due to climate hazards. The use of people's process to implement Project investments will directly contribute to increase in income (during the Project period) and have the co-benefit of improving vocational skill levels, which will enable people to earn higher wages (after the Project). Improved protective infrastructure will have the co-benefit of protecting agricultural areas and other service infrastructure, which will also benefit community livelihood activities in Kampot and Koh Kong provinces.

Social: Empirical evidence has shown that climate change is deeply intertwined with patterns of inequality in Cambodia, where the most vulnerable farmer/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. Improved protective infrastructure will have the co-benefit of protecting agricultural areas and other service infrastructure, which will also benefit livelihoods. In addition, alignment with the commune/district investment plans and increased capacity of decision makers will enable better management of climate resilient investments and will ensure that infrastructure and settlements are more resilient in the long-term. In addition, vulnerable communities will have increased capacities and opportunities to gain income from eco-tourism. As mentioned under the 'Economic' section, which is also applicable to 'Social' is that improved protective infrastructure will have the co-benefit of protecting agricultural areas and other service infrastructure, which will also benefit community livelihood activities. Alignment with the commune/sub-national/district investment plans and increased capacity of officials at those levels to plan for and manage climate resilient investments will ensure that infrastructure and settlements are maintained and made more resilient in the long-term.

Environmental: As mentioned elsewhere, severe environmental degradation has taken place throughout the coastal area of Cambodia, particularly in areas where there have been investments on infrastructure and tourism. Therefore, interventions on mangrove prioritise the environment, while other investments made under the Project aim to strengthen the ability of people to live symbiotically with the environment. In addition, the *soft* interventions of improving solid waste and wastewater management is designed to rectify a local environmental problem and prevent further damage to the environment from a lack of solid waste management and wastewater issues. The combined effects of sea-level rise, coastal flooding and onshore development issues (especially disposal of wastewater) is causing coastal erosion, thus, better onshore management of water proposed by the Project will contribute to reducing effects of coastal erosion in Kampot and Koh Kong provinces.

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 areas of Kampot and Koh Kong Provinces are still largely responsible for securing food, water, and energy for daily use. With frequent droughts/flooding being experienced, women need to travel great distances to access clean water sources (potable water), 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 and coastal

villages in Kampot and Koh Kong provinces 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.

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 will be conducted based on the available data/information in the public domain, consultations with the community, experience from development activities carried out by UN-Habitat and data/information shared by Kampot and Koh Kong provincial/local officials. 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. As mentioned elsewhere, the proposed Project will benefit 60,104 females, 57,856 males and the total population being 117,960, which is 58.5 percent of the total population of the selected districts. Emphasis will be given to FHH and families with persons with disability. 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.

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>Households face damage and financial losses because of various climate change related hazards, primarily floods and storms.</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 and coastal settlements in the Kampot and Koh Kong provinces still lack basic and resilient infrastructure and residents have limited livelihood options.</p> <p>Land and productive capacity are damaged by seawater and/or a lack of fresh water.</p>	<p>Improved protective infrastructure will have the co- benefit of protecting agricultural areas and other service infrastructure, which will also benefit 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 (hazard resilient houses/latrines, medium/small irrigation tanks, sluice gates etc.) 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>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>

	The lack of (resilient) infrastructure, high poverty incidences in informal settlements lead to social conflicts, diseases, and safety issues, especially for women, older persons, the disabled and youth.	Capacity development and involvement in adaptation actions increases the resilience of disadvantaged women and other marginalised groups. New climate resilient infrastructure and services contribute to social wellbeing.
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 improved resilience through small-scale infrastructure and increased cash income of communities through improvement of livelihood. 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 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. In addition, the project will maximise the investment by emphasis being given to *hard* interventions over *soft* interventions, i.e., 75 percent of the implementation budget will be directed towards the investments proposed under Components 1 and 2. The *soft* initiatives directly support *hard* investments, viz. training in installation or operation and maintenance, or investments to strengthen commune/district level planning – which will assist in sustaining and replicating the benefits of the project. This approach maximises the adaptation benefits per dollar invested.

UN-Habitat already has excellent relationships with Government stakeholders/provincial/local authorities and communities, 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 design of the Project is founded on the premise of reducing vulnerability of targeted communities through infrastructure interventions, securing livelihoods, and building capacities to face challenges of climate change and climate variability in rural and coastal communities of Kampot and Koh Kong Provinces. 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 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”.¹³⁶ 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

¹³⁶ IUCN (2017). <https://www.iucn.org/news/forests/201708/mangroves-nurseries-world%E2%80%99s-seafood-supply>

negatively affecting the quantity and quality of groundwater resources. Therefore, interventions to minimise/eradicate saltwater intrusion will have profound economics benefits.

Hard investments of the proposed Project ultimately improve the quality of life of affected communities. However, maintenance of infrastructure is a priority, and increased support to facilitators and communities needs to be offered. Therefore, as mentioned elsewhere, communities will be trained to manage monitor and maintain infrastructure investments that will be officially handed over to the community and the rest of the hard investments that are under the purview of the sub-national level will be officially handed over. Both relevant communities and Government officials will be responsible for maintenance. Business maintenance/development plans will be drafted where necessary.

Cost effectiveness and nexus between *hard* and *soft* interventions: The design and implementation of the project focuses on maximising the size of the *hard* components to directly benefit the most vulnerable populations, and where the project makes investments in *soft* activities, these will either, directly support the *hard* investments through training in installation or operation and maintenance, or invest in strengthening commune/district level planning – which will help to sustain and replicate the benefits of the project. In addition, implementation arrangement for operation and maintenance will be conducted at local level to ensure sustainability. Therefore, *soft* component is required to support the appropriate implementation of the *hard* component to ensure sustainability of the project.

Cost effective investments: Drawing lessons from previous climate change adaptation projects, when undertaking project action planning -- cost effectiveness, adaptation-cost effectiveness, 'time to adaptation benefits' and 'no-regret' will all be factors in prioritising investments which is a standard practice according to UN-Habitat's well-established Planning for Climate Change methodology, i.e., cost-effectiveness; adaptation effectiveness and development effectiveness are all part of the action planning process, e.g., Outputs 1.6 and 2.1 were derived based on the location and the cost effectiveness of the intervention, and most importantly with minimal impact to the environment. However, these will further be assessed prior to developing the full proposal. UN-Habitat also has experience of conducting cost-benefit analysis of specific project options, where their immediate benefit is not clear. UN-Habitat will also explore the possibility of partnering with technical institutions to conduct feasibility studies for environmental technology implementation, thus, cost-benefit analysis will be based on technical grounds.

Cost effective operation through community contribution: 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 provincial/district/local government institutions. This implementation approach has been shown to reduce implementation costs by 20 – 30 percent over the life of the project, viz. by using community labour instead of external contractors, procuring local materials where they are available.

Designs: All investments will be designed to be resilient. UN-Habitat will ensure that it does not select the cheapest options, but the most cost effective, viz., if resilient infrastructure has a higher investment cost for a demonstrated longer lifespan and/or greater adaptation benefits, it will be chosen over options with a lower initial cost. Moreover, the alternative implementation model to the People's Process is to use external contractors, which, as highlighted above, is more expensive and less likely to foster local ownership of the project.

Table 6: Cost Effectiveness Criteria

Proposed Action	Cost Effectiveness Criteria		Alternative Action	Cost Effectiveness Criteria	
Clear drainage systems, large canals, and waterways in Chaneang Reservoir (Kampong Trach District, Kampot) to meet new adaptation requirements for inundation/flooding/saltwater intrusion and controlling vector-borne and water-borne diseases, and renovate waterways namely Sva Bridge, Prek Svay, Sangkat Steung Veng, Koh Kong for saltwater intrusion prevention.	Future cost of climate change	✓	*Relocation of communities living along the drainage systems, large canals, and waterways *Rebuilt new structures to facilitate the projected adaptation requirements.	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	Higher risk
Establish/renovate four (4) medium/small-scale wastewater treatment plants (with two (2) each in Kampot and Koh Kong Provinces)	Future cost of climate change	✓	Construct large wastewater treatment plants.	Future cost of climate change	✓
	Project efficiency	✓		Project efficiency	✗
	Community involvement	✓		Community involvement	✗
	Cost/Feasibility	✓		Cost/Feasibility	✗
	Environmental and social safeguarding risks	Lower risk		Environmental and social safeguarding risks	Higher risk
Establish of filter nets on the outlet of drainage pipes in Phum 4 (Sangkat Dang Tong, Koh Kong) to capture waste.	Future cost of climate change	✓	*Take no action. *Waste collection through the usage of large machinery.	Future cost of climate change	✓
	Project efficiency	✓		Project efficiency	✗
	Community involvement	✓		Community involvement	✗
	Cost/Feasibility	✓		Cost/Feasibility	✗
	Environmental and social safeguarding risks	Lower risk		Environmental and social safeguarding risks	Higher risk
Renovate waterbodies (minor irrigation tanks and embankments), namely,	Future cost of climate change	✓	*Renovate/rehabilitation of medium or large/medium tanks.	Future cost of climate change	✓
	Project efficiency	✓		Project efficiency	✗

Kampong Trach Reservoir near the Kampong Trach Mountain in Kampot, Lompu Reservoir in Kampong Trach district of Kampot province.	Community involvement	✓	*Usage of pipe-borne water.	Community involvement	×
	Cost/Feasibility	✓		Cost/Feasibility	×
	Environmental and social safeguarding risks	Lower risk		Environmental and social safeguarding risks	Higher risk
Resilient housing and toilet designs developed, and demonstration housing units constructed.	Future cost of climate change	✓	*Relocation. *Addition of large-scale infrastructure to prevent flooding.	Future cost of climate change	✓
	Project efficiency	✓		Project efficiency	×
	Community involvement	✓		Community involvement	×
	Cost/Feasibility	✓		Cost/Feasibility	×
	Environmental and social safeguarding risks	Lower risk		Environmental and social safeguarding risks	Higher risk
Build five (5) sluice-gates and embankments to prevent saltwater intrusion (Mondul Seyma District, Koh Kong Province).	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	Lower risk		Environmental and social safeguarding risks	Higher risk
Establish Early Warning System (EWS) for flooding and drought forecasting to reduce disaster risks of vulnerable communities in rural and coastal areas in Koh Saloa and Koh Kapi (community in Ramsar site, Koh Kong Province).	Future cost of climate change	✓	Taking no action.	Future cost of climate change	×
	Project efficiency	✓		Project efficiency	×
	Community involvement	✓		Community involvement	×
	Cost/Feasibility	✓		Cost/Feasibility	×
	Environmental and social safeguarding risks	Lower risk		Environmental and social safeguarding risks	Higher risk
Restoration of destroyed mangrove ecosystems in Pream Krasoub Community (Mondul Seyma District, Koh Kong Province), including elimination and/or control of invasive alien species in coastal wetlands to improve mangrove ecosystem resilience.	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	Lower risk		Environmental and social safeguarding risks	Higher risk

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

The proposed Project has been designed to align with national and sub-national development policies, strategies and plans on sustainable development, climate change and disaster resilience reforms of the Royal Government of Cambodia on national poverty reduction. In terms of consistency with national sustainable development and poverty reduction strategies laid down in the current Vision for 2050, National Strategic Plan for Sustainable Development (NSPSD) 2019 – 2023, national communications along with SDG goals, the project components are designed to align with (adaptation) priorities of key Government plans. This includes the Cambodia Climate Change Strategic Plan (CCCSP) 2014 - 2023, the Climate Change Action Plan (CCAP), and the Nationally Determined Contributions (NDC), Third National Communications to United Nations Framework Convention on Climate Change, which consider climate change impacts under four sectors i.e., agriculture, water resources, human health, and coastal zone. In align with national as well as global climate goals and plans, the proposed project aims to enhance climate change adaptation and resilience of the most vulnerable rural and coastal human settlements of Cambodia through concrete adaptation actions, particularly in areas where eco-tourism has the potential to sustain such interventions.

The Rectangular Strategy for Growth, Employment, Equity and Efficiency: Building the Foundation Toward Realising the Cambodia Vision 2050, highlights the acceleration of governance reform at its core, along with contributing elements, namely, (1) Human resource development; (2) Private sector and job development; inclusive and sustainable development; and (3) Economic diversification. The Cambodian government has also set environmental sustainability as one of their prioritized actions. Actions on environmental sustainability include reducing the impact of climate change by enhancing the adaptive capacity and resilience to climate change, particularly through the implementing the CCCSP.

The CCCSP details Cambodia’s strategic response to climate change and is implemented through the Climate Change Action Plan (CCAP). The vision of CCCSP is to develop “towards a green, low-carbon, climate-resilient, equitable, sustainable and knowledge-based society” under eight (8) strategic objectives, namely, (1) Promote climate resilience through improving food, water and energy security; (2) Reduce vulnerability of sectors, regions, gender and health to climate change impacts; (3) Ensure climate resilience of critical ecosystems (Tonle Sap Lake, Mekong River, coastal ecosystems, highlands etc.), biodiversity, protected areas and cultural heritage sites; (4) Promote low-carbon planning and technologies to support sustainable development of the country; (5) Improve capacities, knowledge and awareness for climate change responses; (6) Promote adaptive social protection and participatory approaches in reducing loss and damage; (7) Strengthen institutions and coordination frameworks for national climate change responses; and (8) Strengthen collaboration and active participation in regional and global climate change processes. The proposed project aligns with strategic objectives, 1, 2, 3, 5 and 7.

The NDC identifies that national vulnerability to climate change is caused not only by geography and high reliance on agriculture sector but also by lack of financial, technical, and human capacities. Infrastructure and coastal zones are recognised as one of most vulnerable sectors by climate change. The NDC also raises the profile of increased adaptive capacity to address climate change as

a priority. NDC priority actions that are aligned with the proposed project are, (a) Promoting and improving the adaptive capacity of communities, especially through community-based adaptation actions; (b) Restoring the natural ecology system to respond to climate change; (c) Implementing management measures for protected areas to adapt to climate change; (d) Strengthening early warning systems and climate information dissemination; and (e) Developing and rehabilitating the flood protection dykes for agricultural and urban development.

In addition, according to the Sub-Decree 219 on Development Plan and Commune 3-Years Rolling Investment Plan dated 14 December 2009, one of the principles of the Preparation and Development of Commune 3-Years Rolling Investment Plan (CIP) focuses on Ensuring Natural Resources and Environmental Sustainability. Moreover, the Technical Guidance on the Preparation and Development of Commune 3-Year Rolling Investment Plan published in 2017 by the National Committee for Sub-National Democratic Development (NCDD) indicated that the content of the investment plan shall include a section on Natural Resources, Environment, and Climate Change Adaptation. Outcomes 1 and 2 of the proposed project aim to increase coping capacity by promoting climate-resilient small-scale infrastructure and to adapt to the current impacts of climate change through the recovery of coastal ecosystems, and livelihood improvement and diversification. Therefore, both outcomes are strongly aligned with the principles, structure, and content of the Commune 3-Year Rolling Investment Plan (CIP) as indicated in Sub-Decree 219 and the Technical Guidance as well as to the current CIP target areas. Below is content of CIP: Moreover, UN-Habitat will further acquire information on ensuring complementarity and sustainability prior to developing the full proposal and to avoid the risk of maladaptation.

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

Key National Policy and Responsible Agency	Project elements consistent with policy
1. Rectangular Strategy Phase IV Vision 2018-2023, Royal Government of Cambodia (RGC)	The Rectangular Strategy for Growth, Employment, Equity and Efficiency: Building the Foundation Toward Realizing the Cambodia Vision 2030 and 2050 puts acceleration of governance reform at its core, along with contributing elements: i) Human Resource Development, ii) Economic Diversification, iii), Promotion of Private Sector Development and Employment and iv). Inclusive and Sustainable Development. Specifically, the proposed outcomes and corresponding outputs are specifically consistent with Rectangular 4, side 4 on ensuring environment sustainability and readiness for climate change.
2. Cambodia Sustainable Development Goals (CSDGs) 2016-2030, Royal Government of Cambodia (RGC)	The proposed outcomes and corresponding outputs are contributing to the targets of Goals 13 to take urgent actions to combat climate change and its impacts such as the target 13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in the country, target 13.2 Integrate Climate change measures into national policies, strategies, and planning, and target 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.
3. National Strategic Development Plan (NSDP) 2019 – 2023, Royal Government of Cambodia (RGC)	NSDP 2019-2023 has been formulated for the implementation of the Rectangular Strategy Phase IV and the achievement of the CSDGs with the identification of the priorities, indicators and timeframe for the implementation and with the identification of mechanism for the monitoring and evaluation of the Result Framework, especially setting the responsibility of the line ministries and agencies. In corresponding to proposed outcomes and outputs, NSDP 2019-2023 emphasizes that the MoE and the NCSD will continue to implement its priority activities on responses to climate change.
4. Cambodia Climate Change Strategic Plan (CCCSP) 2014 - 2023, Royal Government of Cambodia (RGC)	The CCCSP details Cambodia's strategic response to climate change with the vision to develop "towards a green, low-carbon, climate-resilient, equitable, sustainable and knowledge-based society". To achieve its vision, Royal Government of Cambodia (RGC) sets eight strategic objectives in which the proposed outcomes and outcomes are relevant to strategic objective 1 to promote climate resilience through improving food, water and energy security, strategic objective 2 to reduce sectoral, regional, gender vulnerability and health risks to climate change impacts, strategic objective 3 to ensure climate resilience of critical ecosystems (especially coastal ecosystems), strategic objective 5 to improve capacities, knowledge and awareness for climate change responses, and strategic objective 7 to strengthen institutions and coordination frameworks for national climate change responses.
5. Updated Nationally Determined Contributions (NDC) 2030, Royal Government of Cambodia (RGC)	The NDC indicates that the infrastructures and coastal zones are recognized as one of most vulnerable sectors by climate change. With this regard, the target areas and the component 1 in this concept note are strongly relevant. Moreover, the proposed outcomes and outputs are corresponding the priority actions identified in NDC such as promoting and improving the adaptive capacity of communities, especially through community-based adaptation actions, restoring the natural ecology system to respond to climate change, implementing management measures for protected areas to adapt to climate change, strengthening early warning systems and climate information dissemination, and developing and rehabilitating the flood protection dykes for agricultural and urban development.
6. Long-Term Strategy for Carbon Neutrality 2050, Royal Government of Cambodia (RGC)	By presenting this LTS4CN, Cambodia demonstrates her commitment to the Paris Agreement on Climate Change and presents a policy scenario to realize a vision of a carbon neutral and resilient society in 2050. The LTS4CN modelling suggests that Cambodia could achieve carbon neutrality in 2050 with the Forestry and other Land Use (FOLU) sector providing a total carbon sink of 50 megatons of carbon dioxide equivalent (MtCO _{2e}). The energy sector is expected to be the highest emitter in 2050 at 28 MtCO _{2e} , followed by the agriculture sector at 19 MtCO _{2e} . The waste and Industrial Processes and Product Use (IPPU) sectors are projected to emit 1.6 and 1.2 MtCO _{2e} , respectively. Therefore, the component 2 of this concept note is contributing FOLU sector by restoration of the ecosystem in the coastal zone such as mangrove plantation.
7. Municipal Solid Waste Management Policy 2020-2030, Royal Government of Cambodia (RGC)	To address the main challenges in solid waste management in urban areas, the capital, cities and districts such as the rapid growth in both quantity and component of solid waste, lack of infrastructure, management, financing mechanisms, policies, and the limited engagement of all relevant actors, the Municipal Solid Waste Management Policy 2020-2030 sets specific measures and action plan for short-term (1-2 years), medium-term (3-5 years) and long-term (6-10 years). Particularly, the output related to improvement of solid waste management will contribute to the action plan of this policy.

Table 8: Project alignment with national plans and strategies

Project Components	Cambodia NAP Process 2017 – Key Objectives of NAP Process	Climate Change Financing Framework (CCFF) 2015 – Key Proposed Response	Cambodia Climate Change Action Plan 2016 – Actions to deliver to Cambodia Climate Change Strategic Plan (CCCSP) – CCCSP Strategic Objectives	Cambodia National Adaptation Plan Financing Framework and Implementation Plan 2017 – Short-Medium-Long Terms Recommendations
1. Upgrade drainage systems, canals and waterways, and waterbodies to adapt to the current impacts of climate change	*Medium- and long-term approaches to reducing vulnerability to the adverse effects of climate change.	*Broadly in line with the CCFF as financial resources for climate change response focus on infrastructure investment.	<p>*Promote climate resilient through improving food, water, and energy security.</p> <p>*Reduce sectoral, regional, and gender vulnerability and health risks to climate impacts.</p> <p>*Ensure climate resilience of critical ecosystems (Tonle Sap Lake, Mekong River, coastal ecosystems, highlands, etc.), biodiversity, protected areas, and cultural heritage sites.</p> <p>*Promote adaptive social protection and participatory approaches in reducing loss and damage due to climate change.</p>	*Consistent with the short-medium- and long-term recommendations and also in line with the 40 priority actions of the NAP Financing Framework.
2. Reduction of the impacts of coastal flooding through the recovery of coastal ecosystems.	*Medium- and long-term approaches to reducing vulnerability to the adverse effects of climate change		<p>*Promote climate resilient through improving food, water, and energy security.</p> <p>*Ensure climate resilience of critical ecosystems (Tonle Sap Lake, Mekong River, coastal ecosystems, highlands, etc.), biodiversity, protected areas, and cultural heritage sites.</p> <p>*Promote adaptive social protection and participatory approaches in reducing loss and damage due to climate change.</p>	
3. Adaptation mainstreaming and capacity building of provincial and local level Government entities and communities to reduce vulnerability to climate change and increase coping capacity.	*Integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programs, and activities, in particular, development planning processes and strategies, within all relevant sectors and at different levels.	*Largely in line with the CCFF's climate change response as it also focuses on capacity building, awareness, and training.	<p>*Improve capacities, knowledge, and awareness of climate change responses.</p> <p>*Promote adaptive social protection and participatory approaches in reducing loss and damage due to climate change.</p> <p>*Strengthen institutions and coordination frameworks for national climate change responses.</p>	

In line with the national or sub-national sustainable development strategies, the execution, coordination, and oversight of the proposed Project will be further agreed upon in close consultation with the Ministry of Environment (MoE), as the national designated authority to the Adaptation Fund, the National Council for Sustainable Development (NCSD), the inter-ministerial body chaired by H.E. Minister of Environment and the sub-national government in the two target provinces. As per the current discussions, the Project will be executed at two (2) levels, namely, national and sub-national (which consists of the provincial, district and commune levels). At the national level, the overall coordination of the Project's execution will be led by the NCSD, who will be the signatory of the project MoU and AoC with UN-Habitat. The NCSD will also ensure that the Project is executed in a timely manner, chair the Project Management Committee, and coordinate its activities and results across the Cambodia government system. The NCSD will work directly with the Ministry of Environment for the execution of Project Components.

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. In addition, the proposed project has 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 coastal ecosystem management, fisheries sector, disaster management, solid waste management and water resources management etc. technical guidelines and norms. Technical safeguards for *hard* interventions 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 provincial/district/commune 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 ¹³⁷	Relevant Rules, Regulations, Standards and Procedures	Compliance procedure and authorising offices
Output 1.1. Clear drainage systems, large canals, and waterways in Chaneang Reservoir (Kampong Trach District, Kampot) to meet new adaptation requirements for inundation/flooding/saltwater intrusion and controlling vector-borne and water-borne diseases, and renovate waterways namely Sva Bridge, Prek Svay, Sangkat Steung Veng, Koh Kong for saltwater intrusion prevention.	4, 6, 8, 9, 12, 13 and 15	Technical Guidelines for Commune	Department of Water Resources and Meteorology
Output 1.2. Establish/renovate four (4) medium/small-scale wastewater treatment plants (with two (2) each in Kampot and Koh Kong Provinces).	2, 5, 6, 10, 12 and 15	Law on Water Resource Management Article 5 - 11 Drinking Water Quality Standards (Ministry of Industry, Mines and Energy) Law on Environmental Protection and Natural Resources Management (1996) National Strategic Plan on Green Development 2013 - 2030	Department of Water Resources and Meteorology
Output 1.4. Renovate waterbodies (minor irrigation tanks and embankments), namely, Kampong Trach Reservoir near the Kampong Trach Mountain in Kampot, Lompu Reservoir in Kampong Trach district of Kampot province.	2, 5, 6, 10, 12 and 15	Law on Water Resource Management Article 5 - 11 Drinking Water Quality Standards (Ministry of Industry, Mines and Energy) Law on Environmental Protection and Natural Resources Management (1996) National Strategic Plan on Green Development 2013 - 2030	Department of Water Resources and Meteorology
Output 1.5. Resilient housing and toilet designs developed, and demonstration housing units constructed.	2, 3, 5, 6, 11, 12, 13	National Housing Policy (to provide people, especially low- and medium-income households and vulnerable groups with access to decent housing or improving a house to ensure the right to adequate housing)	Department of Land Management, Urban Planning and Construction – Kampot and Koh Kong Provinces
Output 1.6. Build five (5) sluice-gates and embankments to prevent saltwater intrusion (Mondul Seyma District, Koh Kong Province).	4, 6, 8, 9, 12, 13, 15	Technical Guidelines for Commune/Sangkat (2009) Law on Water Resource Management Article 5 - 11	Department of Water Resources and Meteorology – Kampot and Koh Kong provinces

¹³⁷ 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

Output 1.7. Establish Early Warning System (EWS) for flooding and drought forecasting to reduce disaster risks of vulnerable communities in Koh Saloa and Koh Kapi (community in Ramsar site, Koh Kong Province).	9, 10, 11 and 14	CCSP, Updated NDC	Department of Water Resources and Meteorology
Output 2.1. Restoration of destroyed mangrove ecosystems in Pream Krasoub Community (Mondul Seyma District, Koh Kong Province), including elimination and/or control of invasive alien species in coastal wetlands to improve mangrove ecosystem resilience.	6, 8, 9, 10 and 15	Law on environmental protection and natural resources management (1996) National Strategic Plan on Green Development 2013 - 2030	Provincial Halls of respective provinces will be responsible for ensuring the construction/maintenance is implemented in accordance with national laws and technical standards.
Output 2.2. Develop Ecosystem-based Adaptation (EbA) management plans for restored mangrove ecosystems, including prevention of waste/pollution in Phum 3 (Sangkat Smach Meanchey, Koh Kong) and Phum 4 (Sangkat Dang Tong, Koh Kong).	6, 8, 9, 10 and 15	Law on environmental protection and natural resources management (1996) National Strategic Plan on Green Development 2013 - 2030	Provincial Halls of respective provinces will be responsible for ensuring the construction/maintenance is implemented in accordance with national laws and technical standards.
Output 3.3. Capacity building of sub-national level Government officials/communities in managing solid waste and wastewater to strengthening of waste collection and existing management systems, in Phum 3 (Sangkat Smach Meanchey, Koh Kong)	9 and 12	Sub-decree on Urban Solid Waste Management Sub-decree on Plastics Bags Management	Adherence to national technical standard and localising capacity building at the community level.

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

The Project is planned for Kampong Trach district and Krong Kampot in Kampot province and Khemera Phoumin and Mondul Seyma districts in Koh Kong province, with minimal initiatives on climate adaptation being implemented. No activities are included that are already being supported from other funding sources. In addition, the sites selected for the proposed Project was chosen based on the high vulnerability and inability to adapt to climate change and based on coastal zones being prioritised by the Royal Government of Cambodia. The Project will complement, build on and learn from several on-going projects as detailed below, particularly for supplementary knowledge in the implementation of the proposed activities. 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/Local Government members and communities. The project will be responsive and responsible for board execution, as a government-led effort to implement an adaptation project based on policy and identified priorities on the ground. It will complement on-going government programmes/projects that are being implemented to manage, mainly focused on, flooding/inundation, drought, sea level rise/saltwater intrusion, waste management, improving rural livelihoods, water management, EbA and conservation of coastal 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 Global Environment Facility/Small Grants Programme (GEF/SGP), 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	Implementation Arrangement, Project Timeline and Budget	Project Objective(s)/Lessons Learnt from the Project	Potential Synergies
1. Vulnerability Assessment and Adaptation Programme for Climate Change in the Coastal Zone of Cambodia Considering Livelihood Improvement and Ecosystems	Implemented by United Nations Environment Programme (UNEP) Executed by Ministry of Environment Funded by Global Environment Facility (GEF)/Least Developed Countries Fund (LDCF) USD 1.6 million 2012 - 2015	A significant number of stakeholders feel that the Vulnerability Assessment (VA) is insufficient for planning of local investments for climate change adaptation.	The current project has utilised findings for the VA conducted by the UNEP in Prey Nob District.
2. Building climate resilience of urban systems through Ecosystem-based Adaptation (EbA) in the Asia-Pacific region	Implemented by UNEP Executed by Ministry of Environment Funded by LDCF USD 1.5 million (Cambodia) 2018	Adherence to a 'green – brown complementarity' [ADD]	UN-Habitat is an implementing partner on the UNEP project, which enables it to ensure complementarity potential.

3. Strengthening Climate Information and Early Warning Systems to Support Climate-Resilient Development in Cambodia	Implemented by United Nations Development Programme (UNDP) Executed by Ministry of Water Resources and Meteorology Funded by GEF/LDCF USD 4.9 million 2014 - 2017	The UNDP project does not work in the same target areas as this project. The UN-Habitat concept note formulation mission met UNDP to discuss this project (section H)	While MoWRAM is the main stakeholder at the national level the project works with NCDD at the national level. NCDD and MoWRAM will sit on this project's Management Committee.
4. Reducing the Vulnerability of Cambodian Rural Livelihoods through Enhanced sub-national Climate Change Planning and Execution of Priority Actions	Implemented by UNDP Executed by Ministry of Environment/ National Council for Sustainable Development (NCSD) Funded by GEF/LDCF USD 4.5 million 2017 - 2019	The UNDP project does not work in the same target areas as this project. The UN-Habitat concept note formulation mission met UNDP to discuss this project (section H)	The project works with NCDD at the national level. NCDD will sit on this project's Management Committee.
5. Pilot Programme for Climate Resilience (PPCR)	Implemented and funded by Asian Development Bank (ADB) Executed by Ministry of Environment and Ministry of Rural Development and Planning USD85 million 2009 - 2019	The implementation/infrastructure component of PPCR doesn't overlap target areas with the proposed project.	UN-Habitat is a partner in a small component of PPCR, so is well placed to coordinate lessons learned at the national Level.
6. Cambodia Climate Change Alliance	Implemented by UNDP Executed by Ministry of Environment Funded by the EU, SIDA and DANIDA. Less than USD 20 million 2010 - 2019	Under the National Council for Sustainable Development (NCSD) supervision and management, the proposed project will invite a representative of the CCCA programme to be on the management board, as CCCA is the largest project at the MoE.	Under the NCSD supervision and management, the proposed project will invite a representative of the CCCA programme to be on the management board, as CCCA is the largest project at the MoE.
7. Green Secondary City Planning	Implemented by GGGI 2015 - 2019	The actions taken in this project will be shared with GGGI, who will incorporate their lessons learned in the overall city plans for Kep and Sihanoukville.	The actions taken in this project will be shared with GGGI, who will incorporate their lessons learned in the overall city plans for Kep and Sihanoukville.
8. Fishery Conservation and Mangrove Protection in Preah Sihanouk and Kep Provinces	Implemented by the International Union for the Conservation of Nature (IUCN) 2016 - 2019	IUCN is currently working with MoE to establish a protected karst landscape in Kampot Province and its first marine protected area around the Koh Rong Archipelago.	IUCN partnered with the Ministry of Environment in May 2017, through a memorandum of understanding, providing complementarity Potential.
9. Partnerships for Environmental Management in the Seas of Southeast Asia, an intergovernmental organisation operating in East Asia to foster and sustain healthy and resilient oceans, coasts, communities and economies across the region	2006 to ongoing	UN-Habitat has worked with PEMSEA previously, including during the Sihanoukville climate change vulnerability assessment work undertaken in 2011, and has good relationships with the organisation and its work.	Women Empowerment, reconciliation, social integration are important components of the proposed project
10. Mangrove planting in Fishery Communities	Implemented by the Fisheries Action Coalition Team (FACT) 2016 - ongoing	FACT is implementing small- scale mangrove works in Prey Nob district.	The work is small scale and limited to mangrove, however, FACT has lengthy experience which the project can draw Upon.
11. Marine Protected Area related activities on Koh Rong Island	Implemented by a coalition of NGOs, including Fauna and Flora International, CARE, SONGSA Foundation and IUCN 2016 - ongoing	The Marine Protected Area was established by Government Declaration No. 364 dated 16 June 2016	The experience of implementing these projects will inform activities implemented in Koh Rong. However, this project does not directly work on strengthening the marine protected area around Koh Rong.
12. Small scale NGO Actions in the Tumnap Rolok area	Ongoing	Three small NGOs: Peur un Sourire d'Enfant (PSE), Operation Enfant du Cambodia (OEC) and M'lob Tapang have small scale education programmes in the area.	These projects are small scale and primarily relate to education, thus no direct linkage exists.

As highlighted above, the proposed project has considered overlap and potential synergies with 12 other ongoing and completed projects. However, the project "Strengthening the resilience of the Mekong region wetlands" is not included as it does not overlap in the area of EWS. However, synergies could be built, and lessons could be drawn from "Strengthening the resilience of the Mekong region wetlands" in the areas of awareness raising, livelihood improvement, and community engagement in the protection of trees, mangroves and seagrass. In addition, the aforementioned project in Mekong compliments the proposed project in terms of useful information on extreme weather events in Koh Srolao and Koh Kapik, such as drought, storms, drought, etc. This information could be used to develop response activities, as proposed, the establishment of EWS. Thus, the project in Mekong is a significant source of information. The challenges facing the natural habitats and livelihood in Koh Kapik and Koh Sralao are rather complex and strong engagement from relevant stakeholders, including local communities and authorities is significant in addressing such challenges.

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, therefore, Components 3 of the project address knowledge management and sustainability. 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 are paramount. Moreover, it is obligatory to document the practices as part of the learning curve of all stakeholders involved in climate change interventions in Cambodia. Careful monitoring and assessment of results and impacts is decisive in testing the effectiveness of Government-prescribed adaptation measures, especially in water and waste management, livelihood improvement, EbA, EWS etc. The proposed Project will undoubtedly serve as part of that learning curve that will allow national technical agencies to test out their own assumptions for community-based adaptation interventions. 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 proposed Project will adopt a participatory approach to implementation, intensely practiced by UN-Habitat. The approach will promote building knowledge at the Provincial/Local and community levels, including planning, particularly at the District/community level, and technical/vocational skills for constructing and maintaining small-scale resilient infrastructure at District/community level. The Project has included the output under Component 3, '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. In addition, there will be direct and ongoing sharing of lessons from the Project implementation sites. This is part of the sustainability/exit strategy of the Project. The Project will also use a participatory monitoring process, which will enable the beneficiary communities to work directly with the Monitoring and Evaluation Officer of the Project. This will enable the communities to highlight issues in delivery and to strengthen adaptation benefits, including replication and sustaining the gains of the Project. In addition, the Project will trigger institutional learning processes, participation, knowledge exchange and replication and scale-up of good practices.

At the national level, other vulnerable Districts and Communes will be able to derive lessons learned from the Project. Information will be consolidated in reports and the Project investment will support the development or refinement of tools and guidelines for developing resilient infrastructure. The Project will be executed through the Ministry of Environment and National Committee for Sustainable Development (NCSD), in partnership with Government entities at the Provincial/Local/District level. This structure will be supported by facilitating links with other relevant Government bodies, particularly the NCDD at the national level and the Provincial Departments of Water Resources and Meteorology and Land Management, Urban Planning and Construction in both Provinces.

In addition, to guarantee lessons and experiences of the Project can reach target audiences at the local, national, and international levels, a communication plan will be established in the inception phase of the project. This will facilitate in clearly identifying stakeholders the Project that are required to reach, how and through which channel(s) to reach them. The project will capture gender disaggregated, and other relevant data pre, during and end of the project. Apart from being beneficial for monitoring and evaluation, the data and information gather will also facilitate in developing case studies and stories of change. During the proposal development stage, specific activities related to Component 3 will be finalised based on the most suitable channels of dissemination, e.g., news media, social media, and web media. For instance, local people can be effectively reached through leaflets and local radio, which is popular in Cambodia, while social media can reach more broadly citizens all over Cambodia, in addition to printed media (articles in national and local newspapers), non-printed medias (television, national radio). The use of social media would be particularly relevant to reach the youth (aged 15 - 24), which represents 20.6 percent of the total population of Cambodia. A social media platform to promote regular interaction can also be an opportunity to forge partnerships with a broader adaptation network partner. In all selected 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. Moreover, UN-Habitat is part of several international dissemination mechanisms. The Knowledge Centre on Cities and Climate Change (K4C) provides a knowledge management platform for Climate Change and Human Settlements interventions. It is proposed to use this platform (as well as the UN-Habitat website) to disseminate the lessons learned from this project. UN-Habitat will also work to integrate knowledge generated from the Project with the knowledge management component of the Cambodia Climate Change Alliance (CCCA) programme, and through the 'camclimate' website. The agency is also coordinating the UN System representation on human settlements at the Conference of the Parties (CoP).

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, 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. Throughout the formulation of the concept note, several bilateral discussions were held with the Ministry of Environment for feedback and validation—This ensured that the project was designed in alignment to the priorities of the Government, namely the Cambodia Climate Change Strategic Plan 2014 – 2023 (CCCSP).

In development of the concept note, UN-Habitat undertook several joint missions with Provincial/District level officials from 14 to 17 November 2022. The meeting with Ministry of Environment, held on 18 November 2022, followed by the missions to the field, focused primarily on alignment with national priorities, coordination, including avoiding duplication with other development partner initiatives,

the implementation modality, and the target Districts/communes. In addition, the discussion aimed at better understanding the climate hazards and underlying vulnerabilities, and the types of vulnerabilities the proposed Project should address.

At the local level in both Provinces, discussions with local officials went into greater detail on the priority areas, the development challenges/underlying vulnerabilities they face and the climate hazards. The local level meetings also discussed various adaptation options and investments that are required in the target areas. The meetings with officials of Kampot and Koh Kong Provinces identified that the climate adaptation interventions highlighted by them reflected in the Commune Investment Plan (CIP) that is the official priority investments at the Commune level. The CIPs offer 'pre-packaged' actions that could enhance alignment between donor funded development projects and government priorities. The meetings also helped understand the priorities of the different line departments at provincial as well as District level. As mentioned in Section D, the gaps, complementarity and synergies with CIPs were identified. For an example, through consultation with the target Commune councils and vulnerable groups, it was reconfirmed the issues discussed with Provincial/District level stakeholders and also understood the local issues and smaller scale interventions not covered by the CIP. These meetings also reconfirmed acceptance by the Communes, outlined alternative options for increasing resilience and potential environmental and social risks and impacts of the interventions. In addition, gender inclusivity was given prominence. The discussions/meetings were represented by both women and men, with at least 40 percent being women, who provided gender specific climate change related priorities and challenges that are already reflected in the Outputs. Moreover, when developing the full proposal, UN-Habitat will ensure issues of both women and men are fully represented whilst adhering to the UN principle of Leaving No One Behind (LNOB).

UN-Habitat has built a good rapport with the Provincial/District/ Commune level entities through these discussions. The consultative process at the Provincial/District/Commune levels 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 considered from project planning stage, as highlighted in Component 3. The project outcomes are designed to address gaps in adaptation and community needs in facing climate challenges. They align with 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. The alignment has resulted in the design of a comprehensive approach in which the different components strengthen each other and in which outputs and activities are expected to fill identified gaps in climate change response in Cambodia. Although, 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 selected targeted areas of Kampot and Koh Kong Provinces and sustain once Adaptation Fund investment concludes. Empowering 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.

The project maximises the funding amount for the investments programmed under Component 1 and 2. It allocates 75 per cent of the project budget (excluding executing costs and project cycle management) to investments in Component 1 and 2. The funding for *soft* activities under Components 3 is required for complementarity/support for Component 1 and 2, and sustainability and quality assurance of the project.

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. Upgrade drainage systems, canals and waterways, and waterbodies to adapt to current impacts of climate change.	Outcome 1 - Increase adaptive capacity of built infrastructure and communities to withstand extreme weather and climate variability and change.	The vulnerable communities have little support received so far to tackle issues related to flooding/inundation/drought, saltwater intrusion, solid waste management etc. that are directly or indirectly affecting their economic activities. The dependency on agriculture/fisheries that are vulnerable to climate change/variability increase the vulnerability of these communities to climate shocks.	The targeted vulnerable communities are protected from flooding/inundation, and saltwater intrusion and are capable withstand droughts with their livelihood activities being affected through climate change/variability.
2. Reduction of the impacts of coastal flooding through recovery of coastal ecosystems.	Outcome 2 - Improvements in the conditions of coastal ecosystems, resulting in improvements in their contribution to climate change resilience.	Vulnerable coastal communities are mainly reliant on fisheries as the main source of income, and degradation of coastal ecosystems (predominantly mangroves) have led to their income sources being affected. In addition, destructions in coastal	The restoration of coastal ecosystems improves the fauna diversity that will support the livelihoods fisher communities and minimise coastal erosion and flooding. With the minimisation of saltwater intrusion, the productivity of agricultural land could be improved.

		ecosystems have led to saltwater intrusion that is affecting agricultural productivity.	
3. Adaptation mainstreaming and capacity building of provincial and local level Government entities and communities to reduce vulnerability to climate change and increase coping capacity.	Outcome 3 - Improved effectiveness of climate adaptation planning/implementation to increase coping capacity to address climate variability/risk reduction, and to sustain/scale-up actions for transformative adaptation interventions at the local level.	Resilience capacity of the selected districts of Kampot and Koh Kong Provinces are low and capacity to prepare for and respond to climate change and natural hazards are poor. The most vulnerable people (women, youth, disabled, agriculture workers, fisher communities), are not identified or reached by local authorities/agencies through their plans and programmes as officers have limited capacity to act on climate change adaptation activities.	The most vulnerable people are the main beneficiaries. Training and capacity building of officials and the identified vulnerable members enable them to cope to climate change/variability, while improving capacities of officials 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 targeted project locations in Kampot and Koh Kong provinces. With access to funding to implement sustained adaptation practices in particular upgrade drainage systems, canals and waterways, and waterbodies to adapt to current impacts of climate change; and reduction of the impacts of coastal flooding through recovery of coastal ecosystems, the vulnerable households will benefit from improvements in coping capacity heightened by income security. Protecting assets against hazards and building of resilient livelihoods are actions of adaptation to climate change which are delivering on social benefits leading to personal material wellbeing and environmental benefits as well. The gendered approach of providing equal access to opportunities to women who are marginalised although carrying the majority burden in household upkeep, including older persons, persons with disabilities will deliver on household food security and diversity and income per se. The interventions on 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. These align with 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. As mentioned elsewhere, 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 selected targeted areas of Kampot and Koh Kong Provinces and sustain once Adaptation Fund investment concludes. As mentioned elsewhere, the proposed activities were derived based on the current needs and increased climate variability and change in the future. However, further analysis will be done prior, including further risk assessment where necessary prior to developing the full proposal.

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/variability 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 district/provincial/national plans and policies. The project approach will also provide robust lessons and insights for future funding opportunities. Furthermore, development of the small-scale infrastructure under Component 1 will specifically promote active engagement of women. This will be guaranteed through both Community Action Planning (CAP) and Community Implementation Agreement (CIP) where communities themselves will be engaged in the construction and maintenance of infrastructure, i.e., instead of using external contractors, the Project will hire communities where unskilled labour is required for construction. In this regard, the Project can guarantee that at least 50 percent of those engaged in the Project at the community level will be women. In addition, the communities including the poor and vulnerable areas increase capacities and opportunities to gain income from eco-tourism resulting from the recovery of coastal ecosystems under Component 2. Livelihood improvement and diversification activities under this Component will also target at least 50 percent of the vulnerable groups including the women, persons with disabilities and other vulnerable groups ensuring the living standards are uplifted.

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, e.g., Activities under Component 3 on the capacity building and knowledge sharing will help the communities especially the vulnerable groups, particularly the women, elderly, persons with disability and the poor, to enhance their knowledge and work towards minimising the impacts of climate change and enhance adaptive capacity, and reduce overall vulnerability. Once the benefits to local, vulnerable communities are shared nationally, it is likely that other provincial/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 EbA approach based on natural resource management is essential in fragile coastal habitat. Increased resilience of ecosystems (particularly mangroves) to provide essential ecosystem provisioning and regulating services, flood control and prevention, prevention of erosion, freshwater for human consumption and agricultural use and improved habitat biodiversity are adaptation benefits of the project. In addition, 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. Moreover, the improvement of the drainage, wastewater treatment, solid waste management systems under Component 1 are designed to rectify a local environmental problem and prevent further damage to the environment from a lack of intervention to address issues on wastewater and solid waste management. These will directly address issues and reduce the risks on vulnerable groups, including the urban poor who have settled along the canals in low quality housing units. These areas are vulnerable to the runoff created by floods and dumping of wastes that clog waterway.

Institutional sustainability: The project will open ways for provincial/local and national governments to carry forward the adaptation work implemented in Kampot and Koh Kong Provinces, 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 provincial/district level authorities. Interactions with provincial/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. Moreover, DCC has been the main project implementers of various climate change related projects including this proposed, and therefore, government has strong sense of ownership of the proposed Project and government staffs are involved in various activities and have capacities to mainstream the climate change works into practices with both domestic and external resources.

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.

The proposed Project has been designed to align with Cambodia's efforts and commitment to global contributions through planning, development of policies and strategies in response to climate change such as: CCCSP (2014 - 2023), the updated NDC, and LTS4CN focusing on GHG reduction, adaptation, budget mobilisation, and facilitation mechanisms. In the updated NDC in Section 7, the total funding required for mitigation (USD 5.8 billion) and adaptation (over USD 2 billion) for the ten-year period is over USD 7.8 billion which is around USD 780 million in average per year. The share of climate change expenditure in GDP in 2020 and 2021 were 2.2 percent and 2.3 percent respectively and mainly focused on infrastructure development, general health intervention and cash distribution for social protection, especially the poor and the vulnerable. Climate change spending, financed by domestic resources kept increasing in 2021 and represented 48 percent of total climate change expenditure, up from 46 percent in 2020. Furthermore, during COP27, the Minister, Ministry of Environment, expressed that mitigation ambition must be further increased, and actions on adaptation need to be accelerated and the USD100 billion per year. The commitment in climate finance to developing countries has not yet been reached and therefore, is a top priority for Cambodia.

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 etc., 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 EbA, disaster management and water resources management etc. 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/provincial/district levels.

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)^{138 139}, 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 Components 1 and 2 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 3 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

¹³⁸ See Annex 1 - UN-Habitat – Environment and Social Safeguards System

¹³⁹ 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

Checklist of environmental and social safeguards	Potential impacts and risks	Preventive and mitigation measures
<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 and 2, further consultations will be held and will be continued at the detailed design stage (full proposal stage) with respective mandatory law enforcement and regulatory bodies taken into consideration. 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 and 2 will be implemented through community organisations with the involvement of district/commune administration systems. The project will ensure that vulnerable groups have access to those infrastructure and are actively engaged in the project. Under Component 3, all trainings and capacity building activities will 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 favouritism.
<i>Marginalised and Vulnerable Groups</i>	Risks of adverse effects impacting disproportionately on marginalised and vulnerable groups i.e., women and girls, youth, the older persons, the displaced, people with disabilities and others.	All project Components (1, 2 and 3) are targeted to address needs of the vulnerable groups. Target geographic coverage of project interventions represents predominantly poor and vulnerable communities. Consultations have and will continue to capture all issues and needs of marginalised and vulnerable groups, assessed through vulnerability assessments, mapping of needs. Leaving no one behind (LNOB) is the central and transformative, and the proposed Project will adopt the LNOB principle.
<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 and 2 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. 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 males taking over decision making positions and unequal inclusion of women in top positions.	In current Cambodian culture, women's rights and freedom are limited in almost all spheres. Customs, belief and social norms reinforce discrimination against women and thus strengthening subordination to men. Women have been particularly marginalised, which has prevented them from developing their full potential and has hindered social and inclusive sustainable development. In many communities, cultural norms and time-intensive household care duties often impede women's abilities to participate in community consultations and decision-making processes about sustainable management initiatives. Therefore, the project has included and will actively pursue equal participation genders in project activities under Component 1, 2 and 3. Capacity development activities under Component 3 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. The UN-Habitat Human Rights and Social Inclusion Unit will monitor compliance on gender equality and women's empowerment. Gender analysis and other related assessment will be further conducted during the proposal development stage.
<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 1 and 2. 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 (8) 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.	Cambodia's indigenous peoples have no settlements in the target locations. However, the principle will be applied to all ethnic groups. 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 Components 1 and 2. Small scale Infrastructure investment under Components 1 and 2 are 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 in Kampot and Koh Kong Provinces. However, when implementing all sub projects, it will be ensured that MOUs/AoCs/contracts include standard clauses regarding evictions of people involuntarily due to project activities and monitored throughout project life.
<i>Protection of Natural Habitats</i>	Activities might have negative impacts on natural habitats and the environment. The initial screening process showed minimal environmental impacts on natural habitats is low because interventions will focus on enhancing ecosystems and developing infrastructure and services. However, further assessment and screening will be conducted during the proposal development stage.	At the design stage priority of project regarding safeguarding the environment, ecosystems, natural resources were underscored and accepted. Natural habitat 'triggers' will be included the planning, management, and monitoring process for all components particularly under activities of Component 1 and 2. Investments under Component 1 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 (Component 2) 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 (even though the project is addressing this aspect as well) 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, including provision of map(s)/figure (to scale) demonstrating the proposed extent of all infrastructural work that pose risks to natural habitats.
<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 minimal. Further assessments are needed for enhancing ecosystems and biodiversity during the proposal development stage.	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 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. Moreover, activities will be further screened for this risk during the project proposal development phase, including provision of map(s)/figure (to scale) demonstrating the proposed extent of all infrastructural work that pose risks to natural habitats.
<i>Climate Change</i>	Project activities cause mal adaptation, increasing greenhouse gas emissions.	The project 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 1 activities. 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 material 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 1 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 Components 1 and 2 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.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<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 government¹⁴⁰



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

B. Implementing Entity certification

<p>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), Cambodia's National Strategic Development Plan, its National Climate Change Strategy and Sector Action Plan, Updated Nationally Determined Contributions (NDC) 2030, Long-Term Strategy for Carbon Neutrality 2050, and its Third National Communications to United Nations Framework Convention on Climate Change, subject to the approval by the Adaptation Fund Board <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.</p>	
<p><i>Rafael Tuts, Director, Global Solutions Division and Officer-in-Charge, Office of the Deputy Executive Director</i></p> 	
<p>Implementing Entity Coordinator</p>	
Date: 6 January 2023	Tel.: +254-20-762-3726; Email: raf.tuts@un.org
Project Contact Person: Laxman Perera, Human Settlements Officer, Regional Office for Asia and the Pacific	
Tel. And Email: +81-92-724-7121; laxman.perera@un.org	

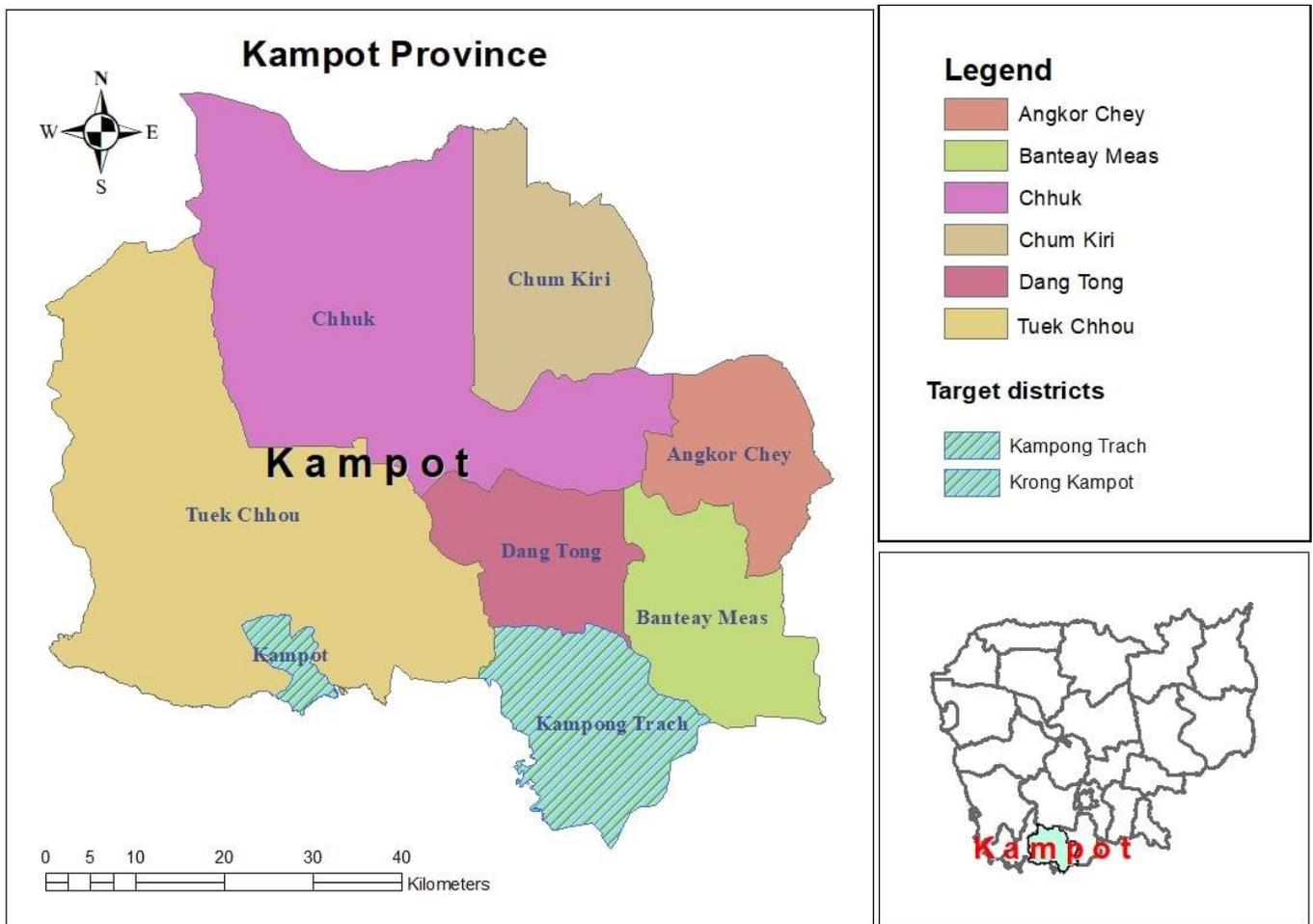
Annex 1: Environmental and social risks and impacts checklist of UN-Habitat



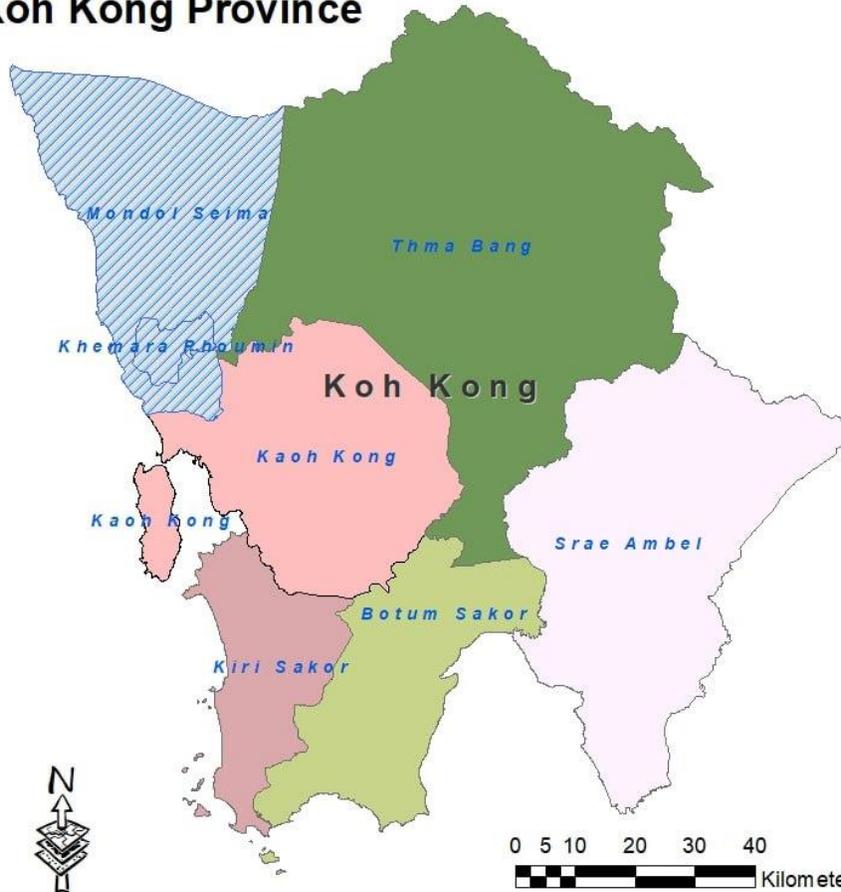
ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS CHECKLIST

Safeguard Standards	Potential risks and impacts	Is it a risk from the project/programme (yes/no)
P 1: Labour and working conditions	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 guaranteed	No
P 2: Zero-carbon development, pollution prevention and resource efficiency	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
P 3: Climate change resilience, community health, safety and security	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
P 4: Displacement and involuntary resettlement	Involves displacement, physical or economic, and/or involuntary resettlement	No
P 5: Biodiversity conservation, and sustainable management of living natural resources	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
P 6: Indigenous peoples	May adversely impact the rights, lands, resources and territories of the indigenous peoples	No
P 7: Cultural Heritage	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
P 8: Compliance with the Law	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
P 9: Access and Spatial Justice	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
SII 1: Human Rights	May imply the violation of any human right	No
SII 2: Gender	May especially have negative impacts on girls and women	No
	May adversely involve any form of discrimination against girls and women	No
SII 3: Children, Youth and Older persons	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
SII 4: Disability	May especially have negative impacts on persons with disabilities	No
	May involve any form of discrimination against persons with disabilities	No
CCTA 1: Resilience	May affect the protective factors and/or the adaptive capacity of environmental and social systems	No
CCTA 2: Safety	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: Location maps



Koh Kong Province



Legend

- Koh_Kong
- Botum Sakor
- Kaoh Kong
- Kiri Sakor
- Srae Ambel
- Thma Bang

Target Districts

- Krong
- Khemara Phoumin
- Mondol Seima



Annex 3: Meetings with stakeholders

Minute of the meeting at Kampot Province

On 14th November 2022, the project staff conducted a meeting with the Provincial Department of Environment in Kampot province as below describe:

1. The introduction by Mr. Sok Vanna, project manager of the UN-habitat: He was briefly about the profile of the previous project which were implemented in Kep and Preah Seyhaknoug provinces currently and we are preparing the new project proposal for submitting on early January 2023, the project will be extended into Kampot and Koh Kong provinces. He explained the purpose to the provincial officers and relevant offices of meeting today. He also added, we take too long process to get the approval, and in order to submit to the downer, we need some baseline information from the local authorities who stay closely with people in the community. That is the reason why we are here today for get the basic information related the challenges and what can we included in the proposal.

2. Ms. Chan Soriya: Head of chief, PDoE: She raised up about challenges in the Kampot city, currently, there are some support from organization and NGO that used to implement in here. The problem is that some projects will be ended in short time period so there is very little of knowledge gain to the communities after it is ended. The raising awareness of people is not effective at all because there are ten fishery community and some ecotourism in the whole Kampot community. She suggested several activities in Kampot city such as: natural resources restoration, livelihood improvement (provide the technical of raising seafood eg. Crab, shrimp, and the last is for improvement the infrastructure in some location are needed.

They recommend for:

- Sangkat Om Pil: Reactivate the Compost recycling which has been sponsor by SCARO project in recent year.
- They asked for proper drainage system due to people living over there disposed all the waste water into the sea directly.
- Extend the project into rural area because there are enough clean water services, they suggest to do in Kompong Bay district, there are damaged road whenever, it has been heavily raining.
- In Kampong Trach district, there are some traditional reservoirs that need to rebuild again for the agriculture, ecosystem services and tourism sector as well.



Meeting with Provincial Department of Environment and Municipality Governor, Kampot Province



Compost recycling station at Kampot Province

On 15th November 2022, the project staff conducted a meeting with District Governor, Kampong Trach district, Kampot province as below describe:

1. Mr. Chanly, head of office (Agriculture), Kampong Trach district: He mentions that, Kampong Trach district was supported by Kampu Chea Saart project in recent year. However, some reservoir is here are still needed for our support from Adaptation Fund. He suggests several reservoirs: **1. Rebuild Kampong Trach reservoir** with 1,5km width and 2km length. It is located the left-hand side from the road and close to the Kampong Trach Mountain. **2. Lompu reservoir** is located the right-hand side from the road is closed to Banteay Meas district and opposite to the Lompu pagoda. It is very important for people livelihood and for ecotourism purpose. **3. Ou Chaneang reservoir** is located along national road 31 and close to the Kampong Trach mountain. It was built since the Pol Pot regime and its benefit to the whole commune for their livelihood, and for fire prevention as well. We plan to get off the grass from the reservoir and then dig it deeper and store more water than the previous situation.



1. Rebuild Kampong Trach reservoir



2. Lompu reservoir



3. Ou Chaneang reservoir

Participation:

NO.	Name	position	Phone/email
1	Minh Chansoriya	Head of office	kp.minhchansoriya@gmail.com
2	Phat Teng	Head of office	016 511 087
3	Chheng Tim	Vice head of office	Chhengtim2002@gmail.com
4	Suy Mali	Vice head of office	097 666 0840
5	Kim Sreynea	Officer	098 88 44 42
6	Thanuja Dhamasena	Gender & Environment Advisor (UH-habitat)	thanuja.dhamasena@un.org
7	Din Phearun	Project Assistant	dinphearun555@gmail.com
8	Sok Vanna	Project Manager (UN-habitat)	012 66 27 87
9	Ney Sophal	Vice head of office	011 43 99 93
10	Et Sarith	Deputy governor	
11	Svay Mith	Head of Administration Office	012 59 30 49
12	Huy Phobraksmey	Head of office	011 20 51 49
13	Nob Savuth	Vice head of office (Kampot Trach District)	092 35 63 25
14	Chay Sophon	Head of office (Kampot Trach District)	017 49 45 30
15	Choek Chanly	Head of office (Kampot Trach District)	012 26 58 44

Minute of the meeting at Koh Kong Province

On 16th November 2022, the project staff conducted a meeting with the Provincial Department of Environment in Koh Kong province as below describe:

1. The introduction by Mr. Sok Vanna, project manager of the UN-habitat

He was briefly about the profile of the previous project which were implemented in Kep and Preah Seyhakhnouk provinces currently and we are preparing the new project proposal for submitting on early January 2023, the project will be extended into Kampot and Koh Kong provinces. He explained the purpose to the provincial officers and relevant offices of meeting today. He also added, we take too long process to get the approval, and in order to submit to the downer, we need some baseline information from the local authorities who stay closely with people in the community. That is the reason why we are here today for get the basic information related the challenges and what can we included in the proposal.

2. Mr. Brak Vichet, governor of Khemarak Phumin city, Koh Kong Province.

They were very grateful with supporting from the project and the Khemarak Phumin city will be selected for the target city. They raised up several problems have been facing in the city such as floating house, solid waste management, wastewater treatment, and lack of sanitation for people living along the canals. Meanwhile, there are some activities that had been done by municipality such as awareness raising on solid waste management, promote on sub-decree 113, and combating the illegal animal, however, it seems not effectively, they said. There was some representatives from each Sangkat have raised some challenges they were facing.

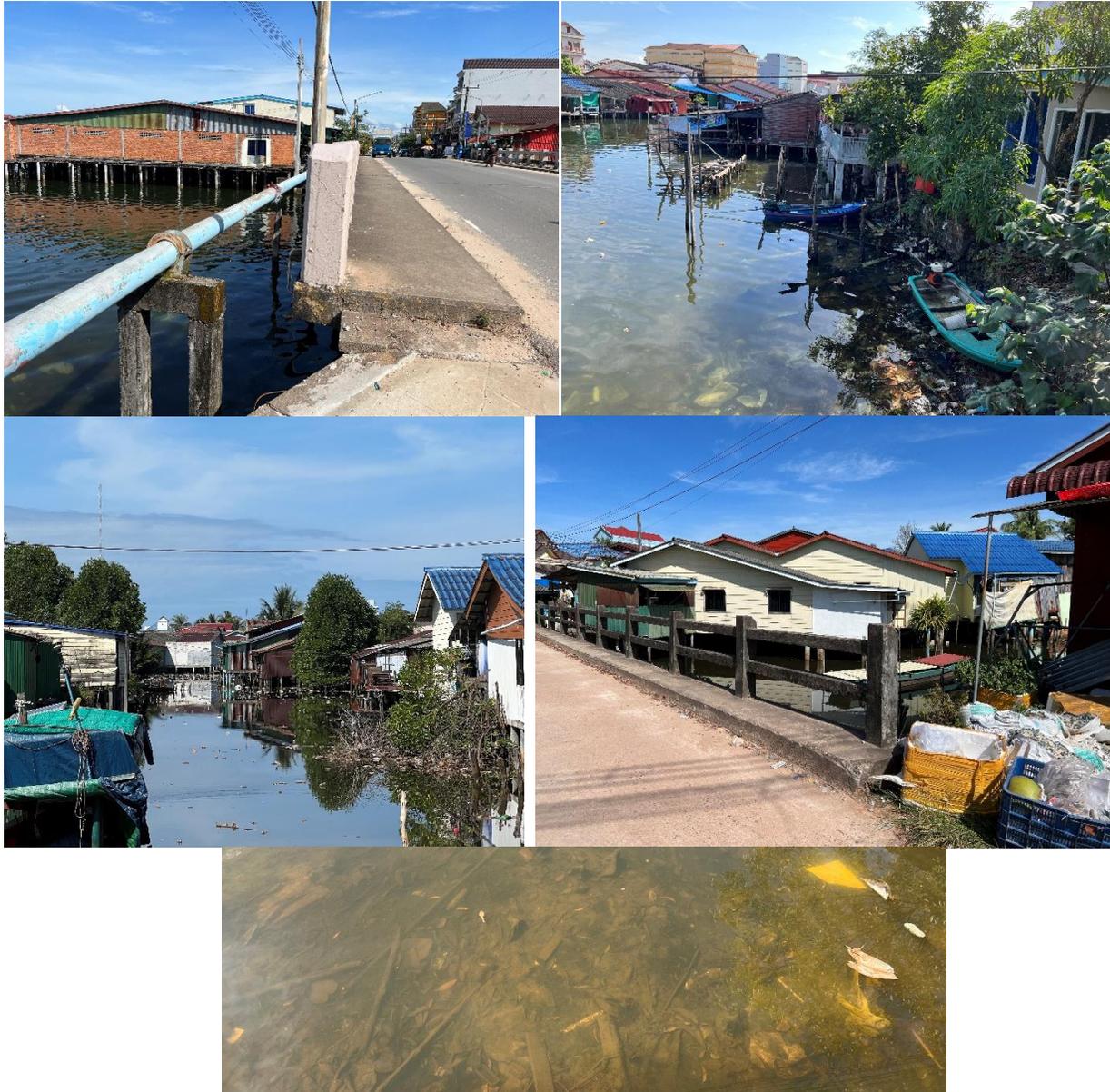


Ms. Pheng Pisey, Deputy Sangkat Chief, Smach Meanchey

- Some of infrastructures or road are flooded because it was completely blocked by solid waste or waste management
- Some families are living along the canals long time ago, and they still use the traditional method of waste usage and waste water disposal that flow directly into the sea
- It found that it effects to people health who using this source of water

They ask for rebuilt drainage system in their community and replace big size of drainage

Sangkat Dang Tong It similar to Sangkat Smach Meanchey, there are around 2000 families are living on the floating village (Phum 4). Since there is no waste water treatment, they use their waste water for their daily usage even for drinking. It found that, people are exposure to the disease and the village looks so messy.



Sangkat Steung Veng

Steung Veng is exposure to storm event, drought, flood, and sea water intrusion. They suggest fixing 5 Watergates for sea water prevention.



Sva Bridge, Prek Svay, Sangkat Steung Veng

3. Mr. Hun Marady, Director of the Department of Environment, Koh Kong Province

He recommended the project team to meet and discuss with the provincial department of land Management, Urban Planning and Construction for the solution on Phum 4 (floating house). It would great if the project team have planning to re-organize or design this village to be live able village with good sanitation and neat. We will relocate them to another area for short-time period then restore the canal and take off all the wastes from the water.

He also happy if the project could extend to another's area beside the city. He suggests for 3 more location which are under the protected area in the DPOE management.

- Koh Saloa Fishery community (there is fresh water sources but it need to be take it into account because people use it in the traditional way that depend on the climate, so they want to be restore the freshwater sources overthere)
- Koh Kapi (Ramsar side) 30 mn for taking on boat (frequency of storm, and there is no freshwater sources)
- Peam Krasoab wide life sanctuary (with frequency of flooding)

Participation:

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9	Soy Soeun	Deputy Sangkat Chief	016 35 08 27
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11	Suon Lifong	Head of office	088 80 77 468
12	Kay Krong	Sangkat Chief	097 50 90 000