



ADAPTATION FUND

REGIONAL PROJECT PROPOSAL

PART I: PROJECT INFORMATION

Title of Project/Programme: **Building urban climate resilience in south-eastern Africa**

Countries: Madagascar, Malawi, Mozambique and Union of Comoros

Thematic Focal Area: Disaster risk reduction and early warning systems

Type of Implementing Entity: Multilateral Implementing Entity

Implementing Entity: United Nations Human Settlements Programme (UN-Habitat)

Executing Entities: For regional coordination purposes: Disaster Risk Reduction Unit of the Southern Africa Development Community (SADC), in partnership with DiMSUR: Technical Centre for Disaster Risk Management, Sustainability and Urban Resilience

For national level activities: National Government Entities

For city level activities: Oxfam International (in cooperation with municipalities, local NGOs and communities) and sub-contractors

Amount of Financing Requested: **US\$13,997,423**

Project Background and Context:

i. Introduction: African context of climate change, urbanisation and adaptive capacity

Africa is undergoing rapid urbanisation that will result in almost 1.33 billion people living in cities by 2050, compared to 470 million at present. Although currently Africa's population is mostly rural, the continent will become predominantly urbanised in the next 20 years with an urban population of over 50% by 2036¹. With a lack of local capacity to manage this rapid urban growth much of the population expansion is taking place outside or in absence of official planning frameworks. A large part of the housing demand is being met by growing informal settlements characterised by poor living conditions, lack of access to basic services and infrastructure, and often located in areas exposed to natural hazards.

Urban areas are generally more vulnerable to risks than rural areas, due to denser populations, concentration of assets and variety of activities within comparatively smaller geographical areas. Urban risks are exacerbated by the increasing severity and unpredictability of disruptive events caused by climate change effects. These events impact a range of sectors from water supply to food and health systems, and disproportionately affect people living with low incomes- especially women and girls, youth, older persons, persons with disabilities, seasonal migrants and other marginalized and vulnerable groups. They also damage infrastructure, interrupt services, cause food scarcity and increase the prevalence of vector and water-borne diseases.

¹ United Nations, Department of Economic and Social Affairs, Population Division (2014). World Urbanization Prospects: The 2014 Revision

A direct correlation between poverty and vulnerability to environmental risks is observed. Low-income groups in African cities are often excluded from decision-making, living in a permanent coping state, and have the least resources at their disposal during crisis. Research on African cities has highlighted the lack of capacity and awareness about climate change, combined with high levels of vulnerability among the continent's large and rapidly growing urban poor populations.²

Among the urban poor, women and the very young are shown to be the most at risk of disease, pollution and disasters.³ Women have less control over opportunities and access to information and/or education and, as a consequence, fewer resources to prevent, cope with, and adapt to disaster risks. At the same time, cultural biases and sensitivities often relegate them out of decision-making processes. However, disaster risk management can also offer opportunities by elevating the status of women as agents of change in their communities and by increasing the understanding of gender dimension during disasters.

The impact of climate change is particularly acute in small to intermediate sized cities in Africa as they host the largest share of the urban population (54%), and are projected to be the world's fastest growing urban agglomerations in the decades to come.⁴ At the same time, inadequate institutional capacities and weak governance processes are significantly exacerbated by the rapid expansion of both formal and informal urban settlements. Hence, developing local governance capacity in risk management and resilience planning is a key strategy to reduce the multiple risks cities are exposed to and adapt to the adverse effects of climate change.

The Fifth IPCC Assessment Report⁵ presents strong evidences that average temperatures in Africa have increased over the last 50-100 years. In particular, the report suggests that climate change has already impacted on the magnitude and frequency of extreme weather events in the continent, thus affecting health, livelihoods and food security of people living with low incomes. Predictions suggest that, given the increase in temperature, the severity of the consequences of climate change on environmental, economic and cultural systems across Africa will increase. The Report also highlights that climate change is one of the main drivers of rural-urban migration.

Rapid urbanisation puts a lot of pressure on governments' policies, increasing the demand for essential services/goods (water, energy, food, etc.) and calling for significant investments in creating jobs and providing infrastructure and services. African cities, in most cases, lack adequate financial resources and capacity to respond to these needs. Across the continent, most adaptation to climate variability and change is reactive, short-term based, implemented at the individual or household level, and is not appropriately supported by government stakeholders and relevant policies.

The impacts of climate change in Africa can be witnessed in disaster losses. While globally the modelled mortality risk associated with floods and tropical cyclones was estimated to have peaked in the year 2000 before trending down, the flood mortality risk in sub-Saharan Africa has grown consistently since 1980 as increasing population exposure has not been accompanied by a commensurate reduction in vulnerability⁶, which can be attributed to low levels of adaptive capacity.

² Revi, A., D.E. Satterthwaite, F. Aragón-Durand, J. Corfee-Morlot, R.B.R. Kiunsi, M. Pelling, D.C. Roberts, and W. Solecki, 2014: Urban areas. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, p. 552

³ UN-Habitat 2014, *The State of African Cities 2014 Report – Re-imagining sustainable urban transitions*, p.33

⁴ Ibid

⁵ Niang, I., O.C. Ruppel, M.A. Abdrabo, A. Essel, C. Lennard, J. Padgham, and P. Urquhart, 2014: Africa. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*; p. 1202

⁶ UNISDR, *Global Assessment Report on Disaster Risk Reduction*, 2015, p. 44

Furthermore, African countries are among the ones with the biggest financing gap for addressing climate vulnerability and are hence severely challenged by rising economic loss. In addition, risks financing is a relatively new concept and still difficult to be applied at scale. Most loss is uninsured and governments do not have the emergency financial reserves or access to contingency financing that would allow them to absorb losses, recover quickly and rebuild. Such disasters also often create fiscal risks and drive major budget volatilities which then negatively impact national economies. For example, while Canada and the United States would only face challenges in absorbing the impact from a 1-in-500-year loss, Madagascar and Mozambique would face difficulties finding the resources to absorb the impact from a 1-in-325-year loss⁷, and a significant number of countries would not pass a stress test of their financial capacity to absorb the impact of a 1-in-100-year loss (see Figure 1).

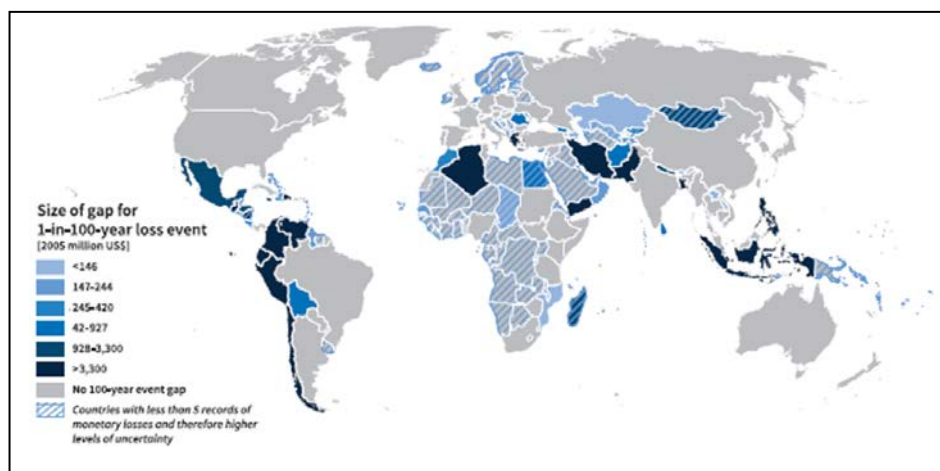


Figure 1: Map of gap size for 1-in-100-year loss event

Multiple uncertainties in the African context mean that successful adaptation will depend on developing resilience in the face of uncertainty.⁸ Planning for climate change adaptation requires that urban planning, development and management are focused on producing urban systems that have a greater capacity to absorb

shocks and adapt to climate-related impacts, thus ensuring the continuity of the city's key functions. Transport and mobility are essential for evacuation and delivering rapid assistance during disaster response and recovery. In general, good mobility and connectivity in a city are indicators of its capacity to recover quickly and to maintain a certain level of functionality at times of crisis. Street layouts and the correlated drainage networks facilitate water flow in case of flooding, and much depends on land use planning and land management systems. Green areas can provide a space for community gatherings in case of disasters and can also contrast the negative effects of urbanisation, like air pollution. A diversified urban economy can provide people with alternative jobs or sources of incomes so that they can adapt to changing situation without completely undermining their livelihoods.

At times of disaster, impacts and losses can be substantially reduced if authorities, individuals and communities in hazard-prone areas are resilient: well prepared, ready to act and equipped with the knowledge and capacities for effective disaster risk management within a longer-term development perspective. Building adaptive capacity at different levels is essential for ensuring future urban climate resilience. Participation and inclusion are key elements for boosting adaptive capacity at local levels, to help identify the key existing and potential vulnerabilities in specific communities, and to link short-term priorities to long-term plans.

⁷ UNISDR, Global Assessment Report on Disaster Risk Reduction, 2015, p. 102, and citations therein

⁸ Niang, I., O.C. Ruppel, M.A. Abdrabo, A. Essel, C. Lennard, J. Padgham, and P. Urquhart, 2014: Africa. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change; p. 1126

Yet, despite the fact that urbanisation has progressively taken on a central role in understanding risk and its associated vulnerability, there is a noticeable lack of contextually adapted urban risk reduction and resilience initiatives in sub-Saharan Africa. Existing tools and approaches are not tailored to low capacity local governments in the region, while at the same time tend to be dedicated to a narrow audience. They often heavily rely on outside technical expertise, are too technical, and depend on costly data collection methods- disincentivizing local governments.

The present project will strengthen urban climate resilience by working with various levels of government and stakeholders and ensuring strong participation, in particular, of the most marginalized and vulnerable groups, in all its phases – from conception to evaluation. The main activities will take place in Madagascar, Malawi, Mozambique and the Union of Comoros – all located in the south-eastern part of the African continent, which is a region highly vulnerable to common transboundary extreme climate-related events.

Four cities with different types of vulnerabilities have been selected in these countries to implement pilot climate adaptation projects following a participatory approach, namely: Morondava, Madagascar; Zomba, Malawi; Chokwe, Mozambique; and Moroni, Comoros. These urban settlements were selected in coordination with the national authorities, according to the following criteria: (i) high exposure to climate-related hazards (cyclones, floods, sea level rise or coastal erosion, drought); (ii) low institutional and financial capacity of the municipality (typical situation of a fast growing small/intermediate city of sub-Saharan Africa with a population ranging between 50,000 and 150,000 inhabitants); and (iii) cities in which UN-Habitat has recently engage in implementing risk reduction and resilience building activities.

ii. Sub-regional, country and city perspective

a) Environmental context at the sub-regional and country levels

Southern Africa is highly exposed to recurrent natural hazards such as cyclones, floods, sea level rise/coastal erosion and drought. Based on the Emergency Events Database (EM-DAT), over the last two decades, countries in the southern Africa region have been affected by a number of natural hazards that have led to disasters including: 42 droughts, 66 storms, and 172 floods. These events have resulted in loss of lives and livelihoods and displacement of millions of people. Compounding the effects of these natural hazards are additional threats that exist in this region, some of natural origin (such as earthquakes, volcanic activity) and others induced by anthropogenic interventions, such as land and environmental degradation and uncontrolled urbanisation.

According to projections from the Intergovernmental Panel on Climate Change (IPCC), as a consequence of climate change, risks of drought, especially in south-western sub-regions, will be higher. There is uncertainty concerning projected changes in landfall of tropical cyclones originating in the southwest Indian Ocean, which have led to intense flooding in the last decades. As for precipitation changes in the region, drought and heavy rainfall have been experienced more frequently during the last 30 years. An increase in extreme warm indices (hot days, hot nights, and hottest days) and a decrease in extreme cold indices (cold days and cold nights) in recent decades are consistent with the general warming. Future precipitation projections show changes in the scale of the rainfall probability distribution, indicating that extremes of both sides may become more frequent in the future.⁹

According to the UNISDR Global Assessment Report 2015, with the exception of Small Island Developing States (SIDS), the Philippines and Madagascar are the two countries in the world with the largest proportion of their capital investment at risk as a consequence of tropical cyclones. In the sub-region targeted by the project, Mozambique and the Union of Comoros follow

⁹ Ibid., p.1211

Madagascar as the most vulnerable to this type of natural hazard (see Figure 3). While Malawi is affected to a lesser extent, it is impacted through tropical cyclones in the form of severe flooding, similarly as the other three countries. In addition, Madagascar, Comoros and Mozambique have several coastal cities that are likely to be affected by sea level rise resulting from increasingly warmer temperatures.

There is a clear need to enhance inter-country collaboration to mitigate effectively the impact of floods in this sub-region. The hydro-geographical profile of the region shows that nine international river basins flow to Mozambique, among which the Zambezi is the largest one, followed by the Limpopo, Rovuma and Save (see Figure 2). This means that flooding is a regular seasonal phenomenon in that country, and its extent depends on the amount of rainfall registered in the neighbouring countries located upstream. Chokwe, located in the lower Limpopo River basin, was severely flooded in 2000 and 2013, in particular because of the high level of discharges observed upstream.



Figure 2: International river basins in South-East Africa - Atlas for Disaster Preparedness and Response in the Limpopo Basin, INGC, UEM & FEWSNET MIND (2003).

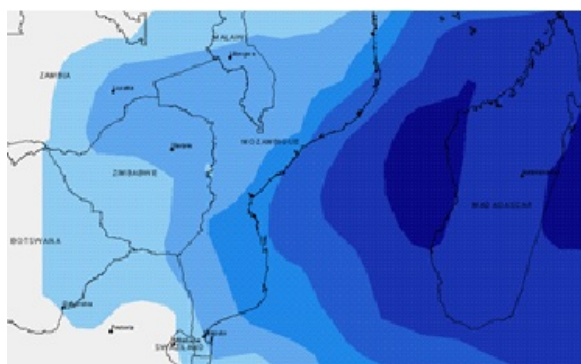


Figure 3: Frequency of cyclone impact in south eastern Africa – Atlas for Disaster Preparedness and Response in the Limpopo Basin, INGC, UEM and FEWS NETMIND (2003).

Drought is another chronic natural disaster in the sub-region. It dramatically increases the vulnerability of an already poor population, particularly in terms of food security and livelihoods. Drought has especially negative effects on women by increasing their daily domestic workload as they spend more time on collecting water or securing food. In urban contexts, micro-informal business activities represent the prevalent source of income; during droughts, availability of food decreases, food prices increase, and purchasing power is lower - increasing the cost of doing business. In addition, limited access to water can cause serious health problems in poor urban areas, with a higher likelihood for the spread of diseases due to overcrowding.

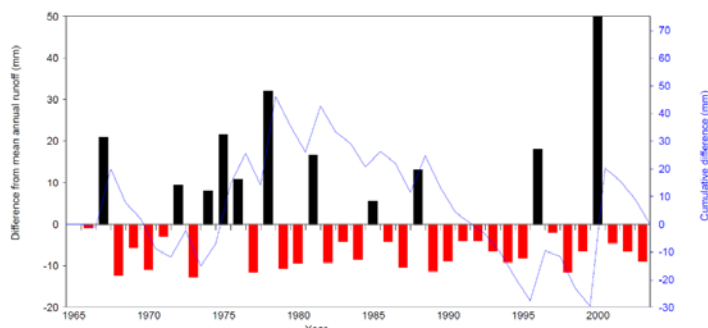


Figure 4: Hydrological anomalies in the Limpopo basin - Extracted from the presentation made by the Minister of Public Works and Housing, Mozambique, 15 Dec 2005, "Experiences of Mozambique on Disaster Management"

In 2016 and 2017, Mozambique has been affected by a protracted drought. Affected populations do not have sufficient time to recover from the economic and social impacts provoked by droughts between one cycle and the next. Figure 4 depicts the irregular hydrological regime of an important river like the Limpopo, showing the constant alternation of flood peaks and longer drought periods.

Disaster impacts vary between the four countries targeted by the project, with Madagascar and Mozambique having a

different disaster risk profile because of their greater geographical size. A rapid risk profile for each country is provided below.

- Madagascar

Madagascar is extremely exposed to cyclones originating in the Indian Ocean. One-quarter of the country's population (approximately 5 million people) lives in areas at risk of natural disasters, including tropical cyclones, storm surges, floods and drought.

Each year, an average of three to four cyclones make landfall on Madagascar. The most impacted areas are generally the eastern and western coasts. However, as a consequence of climate change, cyclones appear to have reduced in frequency but have intensified in power in recent years- impacts are now also felt further north. In 2015, over 100,000 people were affected by flooding and the after-effects of tropical storms Chedza and Fundi. As a result, more than 70,000 people lost their homes.¹⁰ Tropical Cyclone Ava struck Madagascar in January 2018, before the country could recover from the devastation caused by Cyclone Enawo in early 2017, when 434,000 people were affected. Cyclone Ava affected 161,000 people, of which nearly 15,000 were displaced. It also damaged 92 schools and many areas were cut-off due to subsequent flooding. In January 2018, 810,000 people were classified at risk of food insecurity due to recurrent disasters with pockets of malnutrition, which reached the emergency thresholds, and 2,603 cases of pneumonic plague have been registered since August 2017, as a consequence of stagnant water.

Flooding is inherently associated with cyclones (which provoke heavy and tropical rains) and represents the second major natural threat to the country. Rains and flooding can cause landslides. Flood impact has been exacerbated by the effects linked with climate change as well as anthropogenic activities leading to deforestation, erosion and general land degradation.

Another important climate-related threat is drought. Climate change affects the regularity of rainfall and results in higher temperatures, with a major impact on agriculture. Drier conditions are observed, especially in the south. In 2015, approximately 80,000 people were affected and food security heavily impacted.¹¹ According to UN Office for the Coordination of Humanitarian Affairs (OCHA), 1,424,000 people are expected to be effected by floods and droughts in 2018 and 750,000 displaced as a consequence of climate change disasters.

Other natural threats that can be found in Madagascar are the risk of tsunami, fires, locust invasion and minor seismic events. There are also epidemics such as plague, chikungunya (mosquito-borne viral disease), pandemic influenza, cholera and malaria.

- Malawi

The main natural hazards affecting Malawi are floods and drought. As a consequence of climate change there are unusual rainfall patterns with dry periods in the middle of the rainy season while drought spells are lengthening. The mean annual temperature in the country has increased by an average rate of 0.21°C per decade over the last 30 years.

Flooding results in sediment deposits in river channels, reservoirs and floodplains. In turn, this causes catchment degradation, loss of arable land and damage to irrigation infrastructure. Many communities live close to streams due to their dependency on agriculture, fishing and other subsistence activities, leaving them especially vulnerable to floods. In 2015 the country was impacted by unprecedented flooding which affected more than 1.2 million people, destroyed agricultural fields and damaged key infrastructure leading to a massive loss in livelihoods.¹² In

¹⁰ GFDRR country profile for Madagascar, <https://www.gfdr.org/sites/gfdr/files/region/MG.pdf>, accessed on 29 December 2016

¹¹ IRIN: Disaster-prone Madagascar battles flooding and drought, <http://www.irinnews.org/analysis/2015/03/05/disaster-prone-madagascar-battles-flooding-and-drought>, accessed on 29 December 2016

¹² GFDRR country profile for Malawi, <https://www.gfdr.org/sites/gfdr/files/region/MW.pdf>, accessed on 29 December 2016

February 2017, a total of 35,304 people were effected by flooding, of which 7,216 people were displaced.

Flash floods due to heavy rain are also recurrent, further stressing vulnerable communities. In February 2018, flash floods affected 2,200 people in the districts of Salima, Karonga and Phalamba. In March 2018, flash floods in the City of Lilongwe impacted several informal settlements. In January 2018, 6 out of the country's 28 districts were on high alert for cholera outbreaks due to the poor hygiene and sanitation conditions associated with climate change effects.

- Mozambique

Mozambique ranks third among the African countries most exposed to multiple weather-related hazards, suffering from periodic cyclones, drought, floods and related epidemics. Drought occurs primarily in the southern region, with a frequency of seven droughts for every ten years. Floods occur every two to three years, with higher levels of risk in the central and southern regions.¹³ Major rivers flow into Mozambique so heavy rainfall in upstream countries often determines seasonal flooding, impacting on the large population living along the river banks and depending on agriculture activities. High profile events are the 2000 and 2013 floods especially in the lower Limpopo River and those of 2001, 2007 and 2008 in the lower Zambezi River. In February 2018, some 4,000 people were affected by extreme weather conditions (including lightning strikes, floods and strong winds) in northern and central regions. Recurrent floods in urban areas are caused by poor drainage, creating conditions conducive to malaria and cholera. Between August 2017 and February 2018, 1,800 cases of cholera were registered.

Due to the effects of climate change, rainy seasons have become more irregular, starting late and with an uneven distribution. As a result, cyclones are becoming more intense in recent years, the latest being in 2007, 2008, 2015 and 2017, and are affecting the population settled along the coastline of the country who are already enduring high levels of poverty and livelihood conditions that are difficult to sustain. In addition to the impact on housing and public facilities, especially affecting the roofing structures, cyclones have damaging effects on infrastructure. Storms and strong winds below cyclone strength also cause a lot of damage.

In February 2018, the government issued an "orange alert" for the southern region following severe drought, particularly in the Umbeluzi River basin in Maputo province. In the previous four years this basin had recorded below average rainfall and an increment in the rates of evaporation. The Pequenos Libombos dam, which is the main source of drinking water for the greater Maputo metropolitan area, is therefore in a critical situation. The dam is reported less than 20 per cent full. Water rationing has been imposed to more than 2.5 million people living in the capital city, Maputo, and surrounding urban areas, raising fears of disease outbreaks.

Hazards caused by anthropogenic interventions are deforestation and land degradation leading to soil erosion and desertification, mangroves depletion and bush fires. Sea level rise as potential threat linked with climate change is a great concern as Mozambique's major cities are located along the coast.

- Union of Comoros

The Comoros is a volcanic archipelago, with Karthala volcano dominating Grand Comore, the main island. An eruption in 2005 affected 245,000 people. Flooding occurs on a more regular basis and can have a serious impact, especially as a result of cyclones.

Climate risks listed in the country's National Adaptation Programme of Action (NAPA) include: both seasonal and acute drought; increased incidence of heavy rains and cyclones; and a rise in

¹³ GFDRR country profile for Mozambique, <https://www.gfdr.org/sites/gfdr/files/region/MZ.pdf>, accessed on 29 December 2016

sea level. The latter, a clear consequence of climate change, represents one of the biggest threats. According to projections, sea level rise within the country may increase by 0.13 to 0.56 metres by the 2090's.¹⁴ This potential hazard can be highly destructive as main settlements are located along the coast, and it is not likely to be contained by dykes.

Comoros' Initial National Communication to the UN Framework Convention on Climate Change (UNFCCC) discusses the potential impacts of climate change in key sectors of the country, including: an expected increase in the occurrence of malaria; a decrease in crop yields, agricultural production and fisheries; and flooding and internal displacement.¹⁵

The overall vulnerability situation is worsened by salinization and poor water management, soil water logging (through volcanic ash), deforestation, soil erosion and landslides. Land degradation and the disappearance of around 400 acres of forest per year have also had a negative effect on the country's socioeconomic development.¹⁶

b) Socioeconomic context at the country level

Fast paced urbanisation is a reality for the four countries. They show significantly high urban annual growth rates surpassing their overall population growth, indicating the increasing importance of the urban dimension (see Table 1). At the same time, local administrations face a capacity gap which is compounded by weak coordination between the national, sub-national and local levels, and constrains the ability of urban and peri-urban areas to adequately plan for, respond to, and adapt to climate variability effects.

	Total Population (2016 Estimate)	Urban Population (2016 Estimate)	Percentage Urban (2016 Estimate)	Urban Pop. Annual Growth Rate (2010-2015)	Total Pop. Annual Growth Rate (2010-2015)	Capital City and Population (2014)
Madagascar	24,915,000	8,905,000	35.7%	4.69%	2.79%	Antananarivo: 2,487,000
Malawi	17,802,000	2,929,000	16.5%	3.77%	2.84%	Lilongwe: 867,000
Mozambique	27,781,000	9,031,000	32.5%	3.27%	2.47%	Maputo: 1,174,000
Union of Comoros	788,000	224,000	28.4%	2.67%	2.40%	Moroni: 56,000

Table 1: Demographic and socioeconomic characteristics of the targeted neighbourhoods in Morondava¹⁷

- ***Madagascar***

Madagascar ranked 158th out of 188 countries in the 2016 UN Human Development Index (HDI) and did not reach any of the UN Millennium Development Goals (MDG) by 2015. Between 1980 and 2014, Madagascar's life expectancy at birth increased by 16.1 years, mean years of schooling increased by 0.8 years and expected years of schooling increased by 2.5 years.

It is estimated that approximately five million people currently live in zones at high risk of natural disasters.¹⁸ According to the Global Facility for Disaster Reduction and Recovery (GFDRR), the country has a low adaptive capacity, influenced by a high poverty rate, rapid population growth, high dependency on natural resources and weak institutional capacity. Adverse effects of flooding

¹⁴ Hilary Hove, Daniella Echeverría, Jo-Ellen Parry: Review of Current and Planned Adaptation Action: Southern Africa, p. 63

¹⁵ Ibid

¹⁶ Ibid

¹⁷ United Nations, Department of Economic and Social Affairs, Population Division (2014). World Urbanization Prospects: The 2014 Revision, custom data acquired via website

¹⁸ <http://www.worldbank.org/en/country/madagascar/overview>, accessed on 29 December 2016

events are significant in urban areas due to: (i) a lack of early warning systems; (ii) inadequate urban planning; and (iii) poorly maintained drainage infrastructure.¹⁹

Madagascar's gross domestic product (GDP) per capita decreased by about 35.5% between 1980 and 2014.²⁰ In 2016 GDP was at USD 9.99 billion. A World Bank economic update reveals a slow economic recovery in 2015 due to weak growth in the tourism and mining sectors. Catastrophic meteorological conditions in recent years also took a toll on the economy, resulting in higher inflation and a reduction of household purchasing power. The country continues to rank poorly on the ease of doing business index: 164 out of 189 countries.²¹

- Malawi

Malawi ranked 170th out of 188 countries in the 2016 HDI²², which put the country in the low human development category. It did not reach any of the UN Millennium Development Goals by 2015.

Real GDP grew by 5.7 per cent% in 2014 but slowed down to 2.8% in 2015 as Malawi suffered from the dual challenges of adverse weather conditions and macroeconomic instability. Flooding in southern districts followed by countrywide drought conditions saw a contraction in agricultural production.²³ Natural disasters have had serious impacts on Malawi's economic development. Drought and dry spells in Malawi cause, on average, a 1% loss of GDP annually. Additionally, an average loss of 0.7% of the annual GDP is due to lakes flooding and rivers overflowing.²⁴

Poverty and inequality remain high in Malawi. The 2010/11 Integrated Household Survey showed that over half of the population was poor, and one quarter lived in extreme poverty. These numbers have not changed much when analysing 2017 data. Poverty has been increasing in rural areas where 85% of the population lives, compared to urban areas where it fell significantly from 25 to 17%.²⁵

- Mozambique

Mozambique ranked 181st out of 188 countries in the 2016 HDI. Between 1980 and 2014, Mozambique's gross national income per capita increased by about 106.8% between 1980 and 2014²⁶. Nevertheless, Mozambique's rapid economic expansion over the past decades has only had a moderate impact on poverty reduction, and the geographical distribution of poverty remains largely unchanged.

World Bank projections place economic growth at 3.6% for 2016, with significant downward risks. The discovery in April 2016 of previously undisclosed debt worth almost \$2 billion, over 10 per cent of Mozambique's GDP, combined with the impact of the exchange rate depreciation have led to a substantial increase in debt ratios. As a result, the fiscal position is likely to remain under stress until the end of the decade.

Mozambique also needs to improve its social indicators. For instance, the social progress index for access to improved sources of water and sanitation ranks Mozambique 128th and 119th,

¹⁹ GFDRR country profile for Madagascar, accessed on 29 December 2016

²⁰ http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/MDG.pdf, accessed on 29 December 2016

²¹ <http://www.worldbank.org/en/country/madagascar/overview>, accessed on 29 December 2016

²² http://hdr.undp.org/sites/default/files/2016_human_development_report.pdf, accessed on 7 April 2018

²³ <http://www.worldbank.org/en/country/malawi/overview>, accessed on 29 December 2016

²⁴ GFDRR country profile for Malawi, <https://www.gfdr.org/sites/gfdr/files/region/MW.pdf>, accessed on 29 December 2016

²⁵ Ibid

²⁶ GFDRR country profile or Mozambique, <https://www.gfdr.org/sites/gfdr/files/region/MZ.pdf>, accessed on 29 December 2016

respectively, out of 135 countries. Indeed, Mozambique has one of the lowest levels of water consumption in the world despite being endowed with a variety of water sources.²⁷

- *Union of Comoros*

Comoros has a dense population of about 390 inhabitants per square kilometre. More than half of the population (53%) is younger than 20 years of age.²⁸ Its HDI rank was 160 out of 188 countries in 2016, which puts the country in the low human development category.²⁹ Progress has been made on several of the MDGs. However, one of the most important challenges will be to halve the proportion of people who suffer from hunger.

According to the World Bank, citing the most recent Household Budget Survey for 2014, 42.4% of the population (around 320 thousand people) is poor, with real monthly consumption per capita below the national poverty line. Around 18% of the population lives below the international poverty line of US\$1.9 per capita per day, in 2011 Purchasing Power Parity (PPP) exchange rate. World Bank projections indicate slow progress in poverty reduction until 2018, due to stagnant economic growth.

Recent economic developments point to a deteriorating economic situation as growth slows and the Comorian franc depreciates against the US dollar. Comoros has a small and undiversified economy. While the economy had showed signs of recovery after years of political instability, achieving an eight-year high in terms of economic growth at 3.5% in 2013, conditions since then have deteriorated with growth slowing from 2.1% in 2014 to 1% in 2015.³⁰

c) City level contextualisation

While the focus of this project is on building urban climate resilience in four countries, and adaptive capacity will be strengthened through planned activities at the regional and national levels, the main entry point for this project is at the city level. Four urban settlements were selected for this purpose: Morondava (Madagascar), Zomba (Malawi), Chokwe (Mozambique) and Moroni (Union of Comoros).

A participatory assessment and planning process using the City Resilience Action Planning (CityRAP) tool (described in more detail later) was conducted in all four cities from 2015 to 2017 to identify vulnerable communities that would most benefit from climate resilience building activities. The use of this tool allowed the targeted municipalities, jointly with the selected communities at the neighbourhood level, to assess their vulnerabilities and prioritise key interventions for climate adaptation.

A detailed profile of each of the four cities is provided below.

➤ *Morondava, Madagascar*

Socioeconomic background

The city of Morondava lies on the south-western coast between the Mozambique Channel and the Morondava River Delta (Figure 5) and is the capital of the Menabe region. Today, Morondava has an estimated population of 60,000 inhabitants and is urbanising very rapidly, with a relatively young population (approximately 60% are under 25, while only 3% are older than 60). In fact, it registered the highest annual population growth (5.2%) in the Menabe Region, resulting in several urban development challenges. Approximately 45% of the neighbourhoods are considered informal and 25% of the inhabitants live below the national poverty line. The city's population

²⁷ <http://www.worldbank.org/en/country/mozambique/overview>, accessed on 29 December 2016

²⁸ <http://www.worldbank.org/en/country/comoros/overview>, accessed on 29 December 2016

²⁹ http://hdr.undp.org/sites/default/files/2016_human_development_report.pdf, accessed on 7 April 2018

³⁰ <http://www.worldbank.org/en/country/comoros/overview>, accessed on 29 December 2016

shows a gender-balance with 50.7% women and 49.3% men (details on marginalised and vulnerable groups in Morondava in **Annex 2**).

As the capital and main urban centre of the Menabe region, Morondava shows some economic potential in the areas of commerce and services, tourism, craft, agriculture and livestock. Located near the renowned Baobab Avenue, which receives visitors from all around the world, the city has plans to develop its touristic potential.

Geographical context and exposure to natural hazards



Figure 5: Map of Madagascar showing the location of Morondava – Extracted from www.nationsonline.org

As a coastal city positioned in the middle of a delta, Morondava is surrounded by water (Figure 6). It is crossed by two rivers called Morondava and Kabatomena. The Morondava River splits in two branches. Its mouth is located about 5km north of the city boundary in an unpopulated area. There is little or no water flow in the river bed during the dry season.

The Kabatomena River is located south of the city (Figure 7). During the dry season it discharges about 7-10 m³/s and during the wet season and/or storms the discharge reaches 200-300 m³/s. Kabatomena is an alluvial river made of sandy banks which, with high discharges, are eroded and the sand is transported to the river mouth. During high discharges the water overflows the riverbanks and due to the lower elevation north of the river, the water then flows towards the city.

The western part of the city is located adjacent to the sea (with an eroding coast). In general, along the coastal stretch of Morondava, the main flooding type is swelling. According to several local sources, moderate to low wave conditions are observed during normal conditions. During cyclones, the estimated wave height can be up to 2 metres and swell waves have more strength.

Swell waves are wind generated waves that are transformed into longer, faster, lower and more regular waves due to a process called frequency dispersion and frequency dependent damping.



Figure 6: Map of Morondava

The map presented in Figure 8 summarises the locations impacted by the main natural threats affecting the city. As result of the explained upstream and downstream factors, extreme weather events cause major floods in both the northern and southern sides of the city, especially in the neighbourhoods close to the Hellot channel (see location of the channel in Figure 6). The neighbourhoods of

Ankisirasira, Tanambao (south-east), and Avaradrova and Sans Fil (west) are the worst affected.

The most recent disastrous event to affect the city was caused by the landing of Cyclone Chendza on 16 January 2015. The tropical cyclone resulted in heavy rains that caused severe flooding, affecting more than 62,000 people in Madagascar. Morondava was the second



Figure 7: Site description of Kabatomena River

most affected city in the country in absolute numbers (and the most affected one in terms of proportion of the population) with more than 16,000 persons impacted and 3,184 displaced.³¹

The city also regularly experiences severe flooding during high tides, a phenomenon already increasing in intensity, which will worsen due to sea level rise. In the past 50 years, the coastline has retreated about 1km. This caused the main city boulevard and many buildings to be swallowed by the sea. Flooding of low lying areas is reported on a fortnightly interval, correlating to neap tide cycles. During high tides seawater enters the river mouths.

Key issues to be addressed

The risks threatening Morondava city are related to its complex water system and are compounded by several characteristics that increase the vulnerability of its population. The key issues to be addressed to build Morondava's climate resilience are:

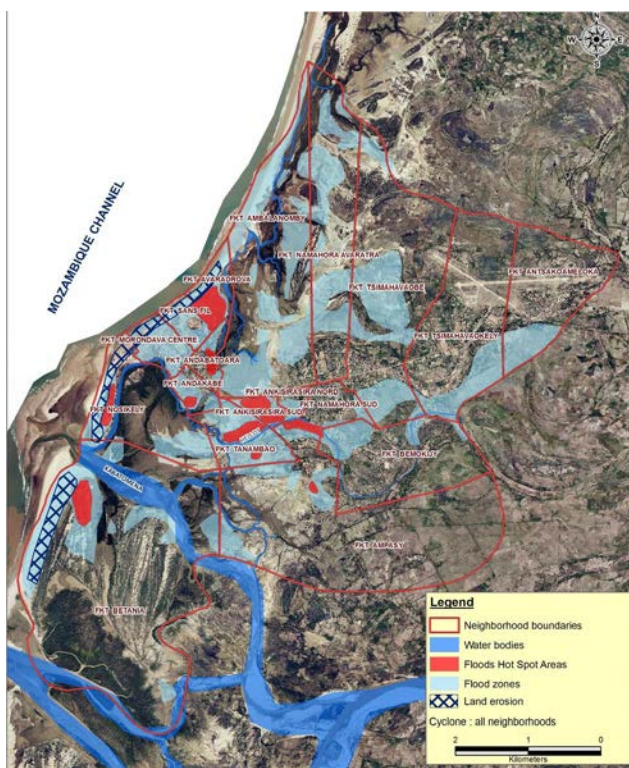


Figure 8: Risk map of Morondava City

Expansion of informal settlements in high risk areas: the rapid growth of the city results in an increased number of people living in high risk areas, especially the urban poor. Most of these settlements at risk are informal with low housing quality, thus highly vulnerable to the impacts of floods and strong winds.

Limited access and mobility: The city is spatially divided into two main areas, the historic and colonial centre in the west and the urban agglomeration in the east that followed the major traffic infrastructure. These areas are connected by one road in the middle that forms the main connection between the two sides (see the circled road in Figure 6 above). The road is surrounded by flood plains in the north and south and is therefore crucially important in case of emergencies. The area around this road used to be covered by mangrove trees but due to woodcutting this is no longer the case, making the road more vulnerable to cyclones and related floods. In addition, a few bridges cross the Hellot channel which connects the southern and northern neighbourhoods. These

³¹ <http://reliefweb.int/sites/reliefweb.int/files/resources/Madagascar%20MDRMG011.pdf>

bridges are crucial in case of an evacuation of the southern neighbourhoods but are currently in poor condition (see Figure 9).



Figure 9: Bridges crossing the Hellot Channel

Poor drainage conditions: the city has a drainage system consisting of the Dabara Channel, the Hellot Channel and secondary channels. All channels have a relatively small cross-sectional area (see figure 10). The Dabara channel is made for maximum discharges of 12 m³/s. Secondary channels are approximately 4.5 km long, as is the Hellot Channel. The latter crosses the southern part of the city centre and functions as the main flood drainage channel. The downstream section of the Hellot channel is influenced by the sea tide. With the rising tide, seawater flows into the channel, while during low tide and with limited discharge from upstream, the channel almost runs dry. Increased sedimentation (from the Kabatomena River, which carries the bulk of sediments into the Hellot channel) has critically reduced the drainage capacity, resulting in higher flood levels.

The downstream section of the Hellot channel is influenced by the sea tide. With the rising tide, seawater flows into the channel, while during low tide and with limited discharge from upstream, the channel almost runs dry. Increased sedimentation (from the Kabatomena River, which carries the bulk of sediments into the Hellot channel) has critically reduced the drainage capacity, resulting in higher flood levels.



Figure 10: Drainage conditions in Morondava

Inefficient solid waste management: as shown in Figure 10, drainage channels are often filled with sediment and solid waste. In particular, high tides cause problems in the neighbourhoods located along the Hellot Channel, when the seawater enters the secondary drainage system coming from the city centre. This causes stagnation or overflow of sewage water filled with solid waste (as waste management is still lacking and a large proportion of the population still practices open air defecation), leading to public health risks (i.e. infections and acute diarrhoea) especially for children and the most vulnerable.

Mangrove deforestation: mangrove areas have been cut down for fuel wood purposes. This has detrimental effects on several fronts. With regard to the ecosystem, deforested areas show less fauna density and decreased biodiversity. In Morondava, the loss in crab and prawn population can already be witnessed today. This is causing negative economic and livelihood repercussions for the fishermen of Morondava. With regards to adaptation, mangroves play an important function as flood buffers and protection from coastal erosion.

Lack of disaster preparedness:

the municipality has insufficient capacity and resources to operationalize its plans aimed at rehabilitating and developing the necessary infrastructure to be prepared for, and be able to timely respond to flood or cyclonic risks. The situation is aggravated by the absence of an early warning system, the lack of accessible evacuation routes in vulnerable areas and the absence of safe havens (NB: a new legislation adopted in 2017 forbids taking shelter in schools).



Figure 11: Mangrove trees located in the intertidal area near the Kabatomena river mouth



Figure 12: Map of Malawi showing the location of Zomba – Extracted from www.nationsonline.org

➤ **Zomba, Malawi**

Socioeconomic background

The city of Zomba is located in the southern part of Malawi, some 70 km northeast of Blantyre, on the foot of Zomba Plateau (2,085m above sea level) – see Figure 12. It was Malawi's first capital city before it was moved to Lilongwe in 1975. In 2017 Zomba has a population of 156,022 and an annual growth rate of 3% as projected by the National Statistical Office in 2011. Like other cities in Malawi the population is relatively young, with 73% of residents under 30 years of age. Socially, the religions live peacefully next to each other with a majority of Christians (78.2%), followed by Muslims (13.7%) and other religions (8.1%) (details on marginalised and vulnerable groups in Zomba in **Annex 2**).

Poverty and unemployment rates are both high in Zomba (the unemployment rate is 59.1% and poverty levels show 16.3% as 'poor' and 3% as 'ultra-poor'³²). Approximately 70% of the city's population lives in slum conditions characterised by poor housing design and building materials, limited access to basic services and infrastructure, and high exposure to natural

hazards.³³

Geographical context and exposure to natural hazards

The city is located at the foot of the Zomba Plateau, which dominates the city on its north-western side and is the source of important rivers (Likangala and Mulunguzi) running through the city. The slopes of the plateau above the inhabited locations have experienced erosion and landslides. As a consequence, the top soil was removed, exposing rocks and making the slopes unstable.

³² Malawi Integrated Household Survey, National Statistics Office (NSO), 2011

³³ Malawi NSO, 2010

The topography of Zomba is further dominated by several hills surrounding the city and some within the city. From these hills (mainly in the north towards Zomba Plateau and south), small streams connect to the main Likangala River, which flows through the city centre from west to east. Meanwhile, the Mulunguzi River, which originates from Zomba Plateau, flows through two of the wards in the north-east of the city.



Figure 13: Map of Zomba – extracted from www.googlemaps.com

During the rainy season, increased water run-off in up-hill areas into the rivers flowing through the city causes flooding. In particular, Likangala River is the source of most floods and disasters, as it flows through densely populated areas.

The risk profile of Zomba includes flooding, cyclones and strong winds. Since the city is located in the African Rift Valley, it is prone to earthquakes. Bush fires also occur, especially in the Zomba Plateau and its forests. Soil erosion, gully development, landslides and rock avalanches are common and to a certain extent linked to deforestation, which causes land degradation. This became very apparent in 1946, when a landslide killed hundreds of people. The most recurrent natural hazard in Zomba is flooding. The 2015 floods damaged/destroyed 1,883 houses (mainly those made of mud) and displaced 8,713.

Overall, these hazards are causing severe damage to housing, property and assets resulting in cascading disruptive effects such as food insecurity, malnutrition, health/hygienic problems,

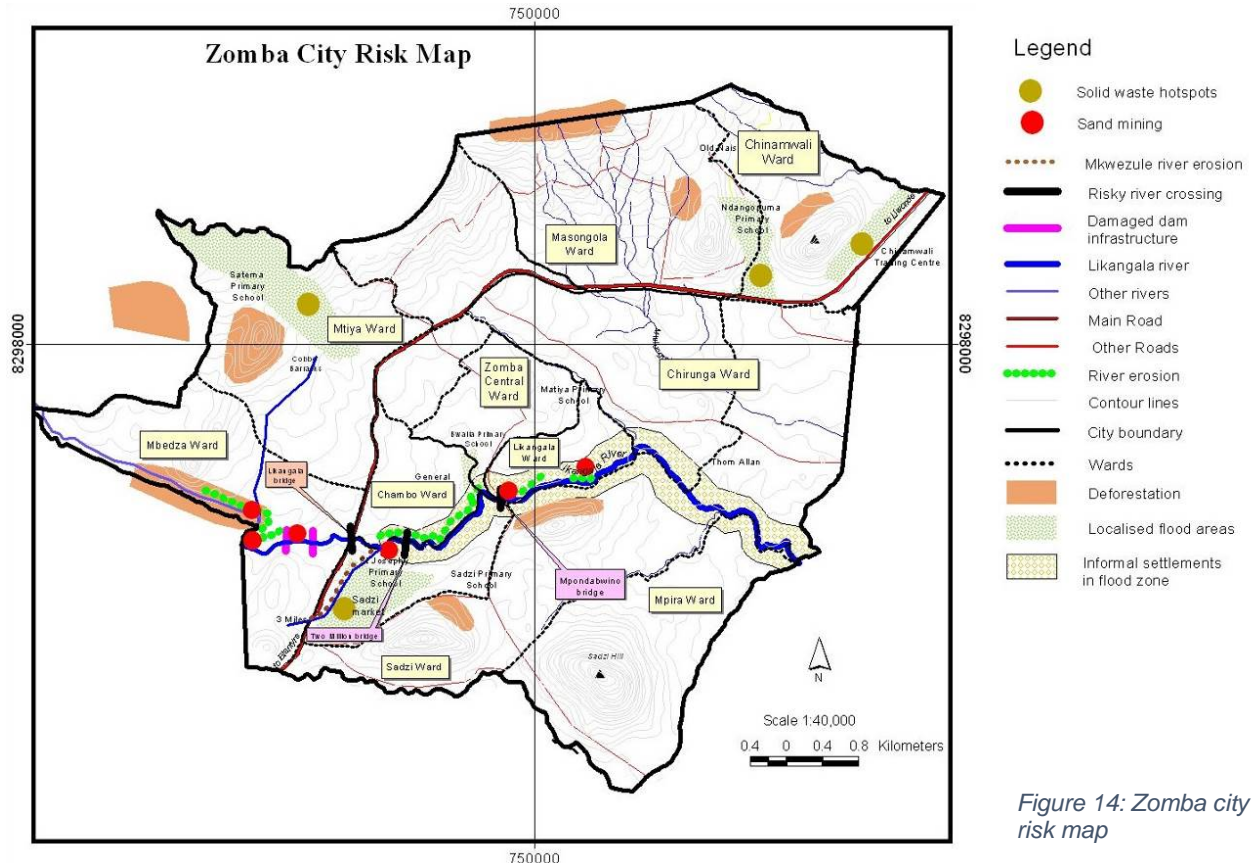


Figure 14: Zomba city risk map

increased poverty and vulnerability, especially for women and children. Importantly, main public infrastructure is threatened, such as: Ndangopuma primary school and roads in Masongola Ward; St. Joseph primary school, St. Peter's seminary and roads in Sadzi ward; Satema primary school and roads in Mtiya ward; and Chiperoni primary school and Malindi secondary school in Likangala ward.



Figure 15:
Likangala River at
Mboga riverside
lodge during and
after the 2015
floods

Key issues to be addressed

Deforestation: More than 80% of Zomba's population use firewood and charcoal for cooking because other sources of cooking fuel, such as gas or electricity, are too expensive for the majority of the urban poor. These materials are extracted through wood cutting from the Zomba Plateau, the surrounding hills and along the streams and rivers within the city, resulting in heavy deforestation and environmental degradation. Deforestation is threatening not only the catchment of the local rivers, but also increasing the risk of a repeated landslide. Housing units built in precarious positions at the foot of slopes are at risk of the full onslaught of flood waters and debris, from minor flows to full-scale landslide recurrence.

Uncontrolled urban development in hillsides and flood prone areas: Expanding settlements, agriculture, increasing population and urbanisation are putting severe pressure on the integrity of the ecosystem. Developments and deforestation are increasingly observed on mountain sides, negatively impacting on the vulnerability of those developments and surrounding areas. New settlements have been sprouting along and close to the banks of the Likangala River. Although existing urban zoning does not permit settling close to rivers, low enforcement capacity by the city council and poor community advocacy has increasingly seen encroachment of settlements on the river banks (see Figure 16). This is coupled with low awareness of climate change adaptation and mitigation at the household, community and council levels. Consequently, river bank erosion (also worsened by sand mining), soil degradation and gully growth are happening rapidly. Flash floods and landslides along the slopes and river banks are common and are putting people at risk, especially the most vulnerable.



Figure 16: Encroachment of settlements near the Likangala River



Figure 17: Effects of a relatively moderate rainfall event in Zomba

Poor drainage: Informal settlements lack adequate drainage solutions. These are quickly (and informally) introduced through haphazard coping mechanisms such as stone walls and self-made drainage, which are not sustainable. These ad hoc improvised drainage interventions increase or

transfer risks to other locations, re-directing the flow of water to neighbouring houses and resulting in social conflicts. Road infrastructure has been improved in recent times, with some integration of drainage. However, many drains are blocked through indiscriminate dumping of solid waste as well as naturally-occurring siltation. Drainage is particularly poor in Mitya, Sadzi, Chambo, Masongola and Chinamwali wards.

Inefficient solid waste management: Due to the limited capacity of the city council in terms of human resources and equipment, waste management services are only available in the high-income areas and the city centre. The city council has just one operational waste collection vehicle. Waste collection is critically lacking especially in informal areas and in areas with high population density, specifically Chambo, Chinamwali, Likangala, Masongola, Sadzi and Mpira wards.

The households in these poor urban areas dispose of garbage in drains and streams or burn it along the roadside. This has created a growing rubbish problem, which is aggravating flood effects due to clogged drainage and greatly polluting the environment, thus adding additional threats to the health of marginalized and vulnerable groups such as women and children. Water stagnation gives rise to mosquito-borne diseases in all the above-mentioned areas. Malaria cases affect 70-80% of the inhabitants. Flood events also impact the sanitation system, causing pollution to enter the drainage system, aggravated by the collapse and flooding of pit latrines used by most of the households.

Disease outbreaks have been experienced (cholera) due to poor waste management and blocked drainage at Chinamwali market. The market areas lack skips and waste bunkers and become public health threats, especially for women who spend the majority of their time in markets. This becomes most apparent in Komboni market near the Zomba Central Hospital in Chambo ward. The solid waste landfill site is located on the western side approximately 5km away from the city. The composition of waste is 80% organic and biodegradable, yet there is currently no recycling or composting being undertaken.

Lack of early warning system and safe havens: The gravity and impact of any flood event in the city is aggravated by the absence of an early warning system. Flooding appears rapidly and unexpectedly downstream, while the high flood wave could be detected some distance upstream. When it reaches the city, the flood wave has increased in size and speed, catching river users and households within the flood area by surprise. Women, children, older persons and persons with disabilities are therefore among the most affected. People are generally reluctant to leave the house and evacuate for fear of theft, hence increasing their situation of vulnerability. Furthermore, there is a lack of resilient housing and public buildings (e.g. none of the schools are built to withstand the effect of flooding). Skills and awareness for resilient construction are generally absent. In the face of lacking evacuation centres, schools are currently being used as makeshift evacuation centres, causing disruptions in schooling for children.

➤ **Chokwe, Mozambique**

Socioeconomic background

According to 2007 census data, the municipality of Chokwe had at that time a total population of 61,666 people³⁴. Chokwe city shows rapid development (approx. 5% per year) and is often considered to be the economic capital of Gaza province, considering its important agricultural potential (NB: 40% of Mozambique's irrigated lands are located around Chokwe, with the most important production of rice and tomatoes). About 60% of the population lives below the poverty line. Life expectancy is around 44 years of age, and child mortality reaches 107 for every 1,000 births. These numbers are higher than the national average.

³⁴ National Institute of Statistics (INE), 2017



Figure 18: Map of Mozambique showing the location of Chokwe – Extracted from www.nationsonline.org



Figure 19: Map of Chokwe

³⁵ Silva, J.; Eriksen, S. and Ombe, Z.A. (2010) Double exposure in Mozambique's Limpopo River Basin, *The Geographical Journal*, Vol. 176, No. 1, March 2010, pp. 6–24.

Chokwe's population has a high dependency on agriculture, employing 80% of the active labour force. In a country where most food is imported from neighbouring countries, a fertile area like Chokwe is of crucial importance. There are other economic activities like food industry (cattle), clothing and commerce, however economic diversification remains low. Most of the city's economy is informal. (details on marginalized and vulnerable groups in Chokwe in **Annex 2**)

Urbanisation takes place mostly in a chaotic and unplanned manner. New urban areas are informal and characterised by precarious housing conditions: sticks and palm trees, and 44.3% live in so-called conventional housing.

Geographical context and exposure to natural hazards

Chokwe is located in southern Mozambique in Gaza Province, along the lower Limpopo River (see Figure 18). Due to its location and low-lying lands/flat terrain, Chokwe is susceptible both to fluvial and rain flooding.

In terms of risks, the city is exposed to the impacts of drought, recurrent cyclones, storms, and especially flooding. The area is considered one of the most exposed to natural hazards in the country³⁵. Chokwe is experiencing cyclical flooding from the Limpopo River. Interviews with local engineers and consultation with the local community made it clear that pluvial flooding (flash floods) occurs frequently. Extreme downpour with a yearly return period ($T=1$) has an intensity of 500 mm in 4 hours.

The regularity and the magnitude of the floods in the area have varied throughout the years, ranging from small occurrences to catastrophic events, notably the 2000 and the 2013 floods, during which the

entire population of the city was affected. In 2000 and 2013 inundation levels of 2 meters were measured within the urban area. In 2000, the floods displaced 250,000 people living in the lower Limpopo region and caused over 700 deaths³⁶.

Key issues to be addressed

Non-functioning drainage system: as the terrain in Chokwe is flat, a storm water drainage system is required. Currently, this system is malfunctioning, mainly due to insufficient coverage and blockage of drains and discharge pipes. This has been particularly detrimental for unplanned neighbourhoods and significantly impactful on marginalized and vulnerable groups during flood events. Drainage issues are aggravated by ineffective and inappropriate local coping mechanisms, such as re-directing water flows to neighbouring houses through self-dug drainage ditches. Due to the relatively flat location and dysfunctional or non-existing drainage, it takes weeks before flood water recedes. This situation causes severe disruption of all aspects of daily life during flood times: income generation, food security, education and health.

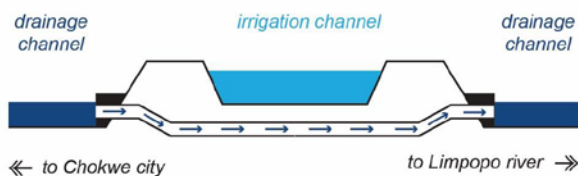


Figure 20: Structure of Chokwe's drainage system



Figure 21: Detail of crossing "2" where the pipes under the irrigation channel are collapsed

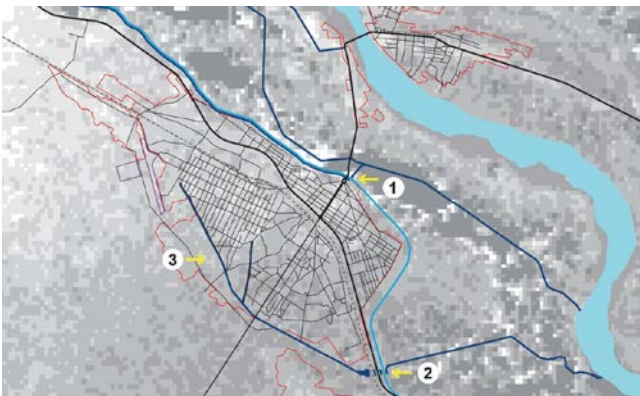


Figure 22: Conceptual sketch of underground drainage crossings connecting in Chokwe

Chokwe's drainage system relies heavily on two main channels, one in the north and one in the south of the city. Both channels are intersected by the local irrigation channel, which is situated in between the Limpopo River and the city. To allow storm water to pass the irrigation channel in order to reach the Limpopo River, two underground crossings have been constructed (see numbers "1" and "2" in Figure 22).

The underground crossings are done with several pipes equipped with check valves (see sketch in Figure 20). The functioning of the whole drainage system of the city is dependent on these two crossings. Crossing "1" is operating normally. Crossing "2" is not functioning (see Figure 21). The pipes have collapsed, and the inlets are silted up. As a result, the main drainage channel to the south (indicated as number "3" in Figure 22) cannot properly drain the collected storm water, leading to prolonged flooding after cloudbursts and fluvial flooding events.

Inefficient solid waste management: Chokwe faces great challenges to manage increasing solid waste disposal because of its growing population. Currently, there are limited capacities for collection, transportation and disposal or recycling. As a result, local habitants tend to discard their rubbish haphazardly or in sporadic landfill sites created and utilised as informal disposal zones. These informal waste disposal sites are

³⁶ Brouwer, R. and Nhassengo, J. (2006) About bridges and bonds: community responses to the 2000 floods in Mabalane District, Mozambique, Disasters, Vol. 30, No 2, pages 234-255

rarely collected by the municipality, resulting in growing landfill sites. Waste accumulation has affected drainage capacity, with ditches and channels being often overflowing with various types of rubbish. Strong rain water and even mild flooding can therefore result in high health and safety risks for the inhabitants, especially for the most vulnerable ones.

Lack of an efficient early warning system and access to safe havens: Despite the several flood events that affected the city, Chokwe is still lacking an effective early warning system and accessible safe havens in case of floods. Communication is underdeveloped and inaccessible, whereby 0.8% of the population has a telephone landline, 0.6% has access to a computer, and 18% possess a TV. Radio is the main means of communication, used by 47% of the households.

There are implications in the inherent inability to warn of impending flood events, throughout the local communities and/or via the existent early warning system in place regionally. This was observed during the 2013 flood event. A warning and a call for evacuation was aired on the radio, albeit reaching a limited amount of people.

In some cases, as it occurred for the 2000 floods, the gravity of the situation was not understood or believed or not communicated effectively. Fluvial flooding is still not well understood by a large part of the population. For example, the lack of local rainfall during the 2013 floods that affected the city gave a false perception of safety and non-criticality. As such, many chose not to evacuate, especially women.

In addition, the lack of evacuation centres or safe havens reduces the ability to manage a flood emergency situation, putting many at risk. During both the 2000 and 2013 flood events, the majority of the city's population escaped to higher locations such as rooftops, where they had to wait until they were rescued and taken to a safer location by rescue teams.

➤ **Moroni, Union of Comoros**

Socioeconomic background

The city of Moroni is located on Ngazidja island (also called Grande Comore island), one of the four islands of the Comoros archipelago (see Figure 23). It is the largest urban centre of the country and the capital city since 1958. The population of Moroni is rapidly growing from 37,800 inhabitants in 1991 to over 55,000 in 2016 with an annual growth rate of 2.1%. Youth represent 53% of the population, with 42% under 15 years old.

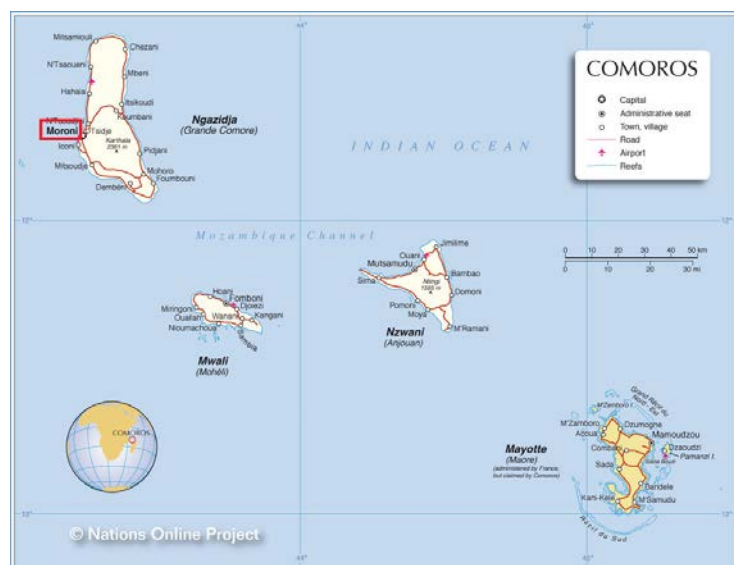


Figure 23: Map of Comoros showing the location of Moroni – extracted from www.nationsonline.org

The poverty rate is high in Comoros (45.6% of the total population), especially in urban areas, and the informal sector is omnipresent. Unemployment is a concern, in particular among young people (25% between 15 and 29 years old) and women (18.5%). This socioeconomic profile strongly limits the capacity of poor communities to anticipate and respond to the adverse effects of climate change due to limited financial and human resources. Most of the population is Sunni Muslim, and a small minority (2%) is Roman Catholic (details on marginalised and vulnerable groups in Moroni in **Annex 2**)

Geographical context and exposure to natural hazards

Located at the foot of Mount Karthala, a 2361 meter volcano of which the last four eruptions were between 2005 and 2007, Moroni is built on lava stone on the main island of the Comoros archipelago (NB: the 2005 eruption affected 245,000 people). Some relatively new neighbourhoods, such as Coulee-Sahara, are built on lava flows from the 1985 eruption. Although the city is at risk of future eruptions, it is unlikely lava flows will follow the same paths as before.

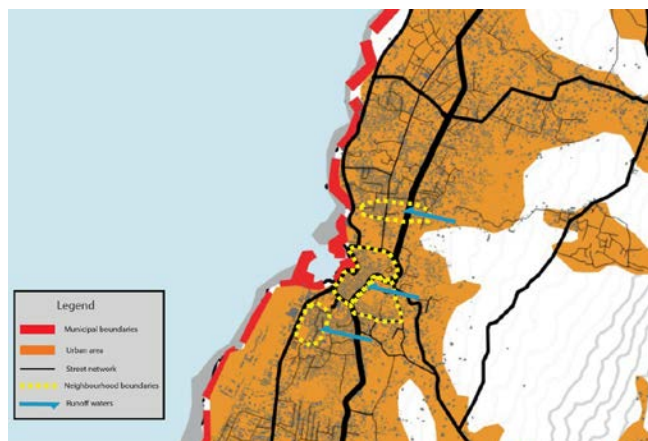


Figure 24: Climatic threats in Moroni and location of neighbourhoods

One of the biggest climate-related threats for the city is sea level rise and subsequent coastal erosion. Projections for the country show a possible increase from 0.13 to 0.56m by 2090³⁷. Otherwise the most recurrent natural hazards affecting Moroni are cyclones and floods, resulting in damage and casualties.

In addition, heavy rains result in flash floods in the city. The combination of a long and steep slope of the Karthala volcano combined with a large catchment area (above Moroni) and heavy rains (up to 500 mm in a day) result in large amounts of water running down, even during short rainfall events. The lack of infrastructure to drain or channel the water flow aggravates the situation.

Key issues to be addressed

Unplanned urban development: the city has mostly developed in a 'self-urbanising' way, where the absence of government planning, regulation and investment in basic infrastructure has resulted in communities organising themselves, and once they have the means (often from remittances received), construct basic infrastructure such as roads themselves. Unfortunately, the negative side of this dynamic is that often important investments are made (e.g. opening of cement roads) with the wrong design, hence increasing the vulnerability of the residents. Many new developments are precarious and in high risk areas. As a result, more than half of the city's population resides in informal settlements and often in areas most vulnerable to natural hazards (see figure 25).



Figure 25: Conditions of informal settlements in Moroni

Poor drainage: the drainage system in most of Moroni is almost non-existent, exacerbating the

³⁷ Hilary Hove, Daniella Echeverria, Jo-Ellen Parry: Review of Current and Planned Adaptation Action: Southern Africa, p. 63

risk exposure of marginalized and vulnerable groups, especially in case of cyclones and heavy rains. Even a moderate rain event causes flooding.

Limited access to drinking water: access to clean water is a major issue in many informal or unplanned neighbourhoods, where the current practice is to collect water in containers from other areas of the city. This is a serious challenge to the adaptive capacity to climate change of a large part of the city's population is seriously challenged by this aspect.

Outbreak of water-borne diseases: poor drainage conditions combined with lack of sanitation, proper waste management and adequate access to water result in disease outbreaks (diarrhoea). High malaria incidence is also noted due to formation of breeding sites. Water borne diseases are particularly badly affecting children and women.

Limited disaster preparedness capacity: knowledge about risk levels and climate change adaptation needs is low at the household, community and council levels. In general, there is limited information and communication about natural hazards. Although the city is relatively well equipped for monitoring the volcanic activity of the Karthala, there is limited capacity to manage risks related to floods and cyclones, with no adequate early warning system in place. There is also a lack of evacuation routes due to poor road conditions and no protection of critical infrastructure, especially during floods.

d) Institutional context

In the context of this project, the following institutional set up is relevant, at the different levels.

➤ **At the sub-regional level**

- *The Southern African Development Community (SADC) Disaster Risk reduction (DRR) Unit*

SADC is a regional economic community comprised of sixteen member States: Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, eSwatini, Tanzania, Union of Comoros, Zambia and Zimbabwe. Established in 1992, SADC is committed to regional integration and poverty eradication within southern Africa through economic development and ensuring peace and security.³⁸

When unexpectedly heavy floods displaced more than a million people in southern Africa in 2007, SADC began to meet annually to prepare for future occurrences. Concrete steps were taken to ensure that DRR is effectively mainstreamed into national policies. Consequently, in July 2008 SADC established a Disaster Risk Reduction Unit responsible for coordinating regional preparedness and response programmes for transboundary hazards and disasters.³⁹ The SADC DRR Unit, with the support of the existing SADC DRR Technical Committee, has the responsibility of coordinating and providing regional leadership on matters pertaining to disaster risk reduction, mitigation, preparedness and related management activities.

The SADC DRR Unit is a member of the DiMSUR Executive Board (see next section). During DiMSUR's fourth Executive Board meeting at the side-line of the Africa Regional Platform for DRR held in Mauritius in 2016, the SADC DRR Unit Leader expressed high appreciation for DiMSUR's efforts. The partnership between DiMSUR and SADC was further reinforced at the recent conference organised in Pretoria, South Africa in March 2018 with all SADC member States entitled: "Accelerated collaboration and partnerships for the implementation of DRR for sustainable development in the SADC region", during which the work of DiMSUR got the interest

³⁸ <https://www.sadc.int/about-sadc>, accessed on 6 January 2017

³⁹ <http://www.sadc.int/themes/disaster-risk-management>, accessed on 6 January 2017

of many participants. It was agreed that SADC's coordination and leadership role and the mandate of DiMSUR were complementary and that further cooperation was urgently needed. During the meeting, representatives from Botswana, South Africa, Swaziland and Zambia, among others, expressed their strong interest in joining DiMSUR, which highlights the relevance of this institution at the regional level. The current proposal reflects this and includes the SADC DRR Unit as one of the Executing Entities of the project, with responsibilities for supporting Component III of the project related to regional activities (see Part II, section A).

Importantly in March 2017 the Executive Director of UN-Habitat wrote a letter to the Executive Secretary of SADC to formalise and strengthen the partnership with DiMSUR (see <http://dimsur.org/un-habitat-ed-letter-to-sadc/>). In May 2017 a technical mission was undertaken by UN-Habitat to SADC Headquarters in Gaborone, Botswana to discuss and define the way forward, including the SADC DRR Unit's role in implementing this project proposal. (see mission report: <http://dimsur.org/un-habitat-mission-report-gaborone/>). One of the main outcomes is the preparation of a tripartite Memorandum of Understanding (MoU) between SADC, DiMSUR and UN-Habitat to formalise the partnership, which is currently under signature.

SADC has also recently produced a Gender Protocol which introduces new directives on gender and climate change. The Protocol provides the Governments with evidence-based research on the gendered impact of climate change to allow them to develop gender responsive programmes for disaster reduction and to utilise women's skills and knowledge in mitigation and adaption strategies.

- *The Technical Centre for Disaster Risk Management, Sustainability and Urban Resilience (DiMSUR)*

At the request of the four countries targeted by this project, UN-Habitat has facilitated since 2010 the establishment of the Technical Centre for Disaster Risk Management, Sustainability and Urban Resilience (DiMSUR), which was launched in June 2013. It was endorsed at the ministerial level by the four member countries as an international non-profit, autonomous and regional organisation through a signed Memorandum of Understanding in December 2014 (see <http://dimsur.org/dimsur-mou-and-charter/>). DiMSUR aims at fostering development and dissemination of knowledge and solutions as well as developing capacities for disaster risk management, climate change adaptation and urban resilience.

The effort to build a centre of excellence such as DiMSUR originated from the awareness of the four governments (which has been confirmed by several other members States of SADC during the above-mentioned March 2018 meeting) of the need to increase coordination and collaboration between neighbouring countries to exchange information, knowledge and mutual capacity reinforcement. The same is also mentioned in the 6th Session of the Africa Regional Platform on DRR held in November 2016 in Mauritius, under Section 4 on Targets: "Substantially increase the number of regional networks or partnerships for knowledge management and capacity development, including specialized regional centres and networks" and under Section 6 on Means of Implementation: "Support, and develop, as appropriate, regional centres engaged in DRR".

DiMSUR is composed of four organs (see Charter in MoU linked above):

- the Conference of Ministers of the member States, responsible for endorsing and validating the mission, vision, policies and strategies of the Centre and other extraordinary items when requested;
- the Executive Board, composed of the National Directors responsible for disaster risk reduction (DRR) and/or climate change adaptation (CCA) of each member State and other relevant stakeholders (UN system, academia, civil society) and responsible for making the key decisions and validating the guiding documents and products of the centre;

- the Consultative Group, consisting of recognised stakeholders of the DRR/CCA and urban resilience fields at various levels that advise and guide DiMSUR when consulted;
- the Secretariat, which conducts all operational functions that are conducive to the achievement of the objectives of DiMSUR as an autonomous body.

UN-Habitat has operated since 2010 as the Centre's Secretariat ad interim. Following its establishment in 2013, UN-Habitat has been responsible for implementing all activities planned in the Biannual Action Plan with full acknowledgement and consent of the DiMSUR Executive Board. Among these activities, it is worth mentioning the organisation of five meetings of the DiMSUR Executive Board since 2014, the participation of the Centre's representatives in numerous conferences and events worldwide (e.g. African Platforms for Disaster Risk Reduction, Africities Summit 2015, the Third United Nations Conference on Housing and Sustainable Urban Development – Habitat III, the 2014 World Urban Forum), the development of the CityRAP Tool methodology (see below) as well as the organisation of trainings and workshops on urban resilience involving more than 1,000 participants in various African countries.

UN-Habitat has also supported the Government of Mozambique in drafting and validating with all four members the Host Country Agreement for establishing the centre in Maputo. This has been a long-negotiated process that successfully resulted in the receiving the clearance of different Ministries and concerned national institutions in Mozambique. The Host Country Agreement was approved by the Mozambican Cabinet on 31 January 2017 during the Second Ordinary Session of the Council of Ministers chaired by H.E. the President Filipe Nyusi. The Government of Mozambique, through its Hon. Minister of State Administration and Public Function (MAEFP), which is the high-level government official responsible for disaster risk management, has repeatedly requested UN-Habitat, since this Cabinet approval, to further support the operationalization of the Centre as the Government and the other concerned countries are eager to see it up and running, considering the urgent need for its services.

As mentioned above, UN-Habitat and DiMSUR have developed the City Resilience Action Planning (CityRAP) tool. The main objective of the tool is to enable local governments of small to intermediate sized cities (or urban districts of bigger cities) to understand risks and plan practical actions to progressively build urban resilience. CityRAP targets local governments with no to limited experience in risk reduction and resilience planning. Its implementation helps prioritising key actions to build the city's resiliency. The main output of the tool is a City Resilience Framework for Action (RFA), based on local government self-assessments, participatory risk mapping exercises, and cross-sectorial action planning by the local government engaging relevant stakeholders, most importantly, communities themselves. CityRAP involves a bottom-up consultative process and has been designed as an enabling rather than prescriptive tool. A more detailed description of the tool methodology can be found on: <http://dimsur.org/cityrap-tool-briefing/>.

The tool was tested in several countries and a second, revised version was developed in conjunction with London King's College under the Urban Africa Risk Knowledge Programme funded by DFID, taking into account the lessons learnt. CityRAP Tool activities have been conducted in 25 cities in nine different countries (Madagascar, Mozambique, Malawi, Union of Comoros, Ethiopia, Cape Verde, Sao Tome and Principe, Guinea Bissau and Burkina Faso) and directly involved more than 1,000 local participants - from city authorities and technicians to local community leaders and civil society representatives.

In addition, under the Nairobi Work Programme on impacts, vulnerability and adaptation to climate change, UN-Habitat has developed a number of good practices in Africa, including: (i) a tool to mainstream gender consideration into city-level climate change plans and strategies, which was applied in Kampala, Uganda; (ii) simple and low-cost pilot interventions as effective local solutions for creating climate-resilient settlements, such as school buildings built with locally available

materials in Mozambique which can offer shelter in case of floods or cyclones; (iii) rooting sustainable development and desert prevention in Bobo Dioulasso, Burkina Faso, through participatory sanitation improvement and afforestation; (iv) sustainable resettlement and reconstruction in flood-prone peri-urban areas in Saint Louis, Senegal; and (v) youth initiative to sustain mangroves and livelihoods in Mombasa (Kenya).

In southern Africa, and in Africa in general, DiMSUR is unique as it is the only centre of excellence in the continent currently focusing on **urban resilience**, which is still a weakly explored and addressed topic in the region. DiMSUR, with UN-Habitat support, has been able to demonstrate its added-value, cost-effectiveness and relevance by addressing issues which the countries targeted by this project are currently ill-equipped to face, i.e. disaster risk and sustainable management of their fast-growing cities and towns. By using the CityRAP tool, the flagship product of DiMSUR, 25 African cities were able to develop *by themselves* a Resilience Framework for Action (RFA). Thanks to their own-developed RFAs, UN-Habitat gathered evidence/documentated that (just to cite few success stories):

- In Chokwe, Mozambique, the municipality was able to mobilise vulnerable communities and undertake effective risk reduction measures without any external financial or technical support.
- In Morondava, Madagascar, the municipality was able to leverage 1.5 million Euros from *Agence Française de Développement* to implement the identified priority actions in the RFA.
- In Guinea-Bissau, the CityRAP tool implementation in Bafatá and Bolama city districts was so successful that the concerned central government authorities, through the Vice-Minister for Planning, which is part of the Ministry of Economy, Planning and Regional Integration, requested for this methodology to be replicated at the national scale especially for elaborating local economic development (LED) plans. To this end, UNDP, which is leading a LED national programme, has officially established a partnership with UN-Habitat to integrate key elements of the CityRAP tool into the local development planning tool that it has drafted. The partnership is showing positive preliminary results.
- In Cabo Verde, the municipality of Praia, the capital city, has taken advantage of the CityRAP tool to systematically integrate aspects related to risk reduction and resilience while developing detailed urban plans, and is intending to improve its by-laws accordingly.
- In the Union of Comoros, after the CityRAP Training of Trainers delivered in January 2016, the Directorate-General of Civil Security has decided to disseminate the tool nationally in all the island of the country using its own funding.

It seems important to underline that, before deciding to set up the Centre, the countries requested UN-Habitat to carry out a feasibility study (see the summary of the study: <http://dimsur.org/feasibility-study-dimsur-summary/>) between 2010 and 2011. Among other aspects, the study recommends that: *“the Centre should ensure to remain at the cutting edge of DRR concepts and practice, that it is flexible in the management of its programme and that it is able to be innovative and relevant. Hence the Centre should, as soon as possible, be identifying technical specialities that give it its individuality.”* This is exactly what was done by focusing on urban resilience and developing/testing the CityRAP tool. Furthermore, the topic of urban resilience was identified thanks to a baseline study that can be found here: <http://dimsur.org/baseline-study-dimsur/>. Two independent evaluation of the tool's effectiveness were prepared in 2017 and 2018 and are available on the DiMSUR website.

As this project falls under the umbrella of DiMSUR and the SADC DRR Unit for regional activities, the following key partners of the Centre are mentioned in this proposal at the sub-regional and national levels. It will be noted that, while the institutions responsible for climate change adaptation are mentioned for each country, they are more linked to the broader area of disaster risk reduction, in line with the key mandate of these two regional executing entities.

- *Other relevant institutions in southern Africa*

Regarding the UN system and humanitarian partners such as international NGOs, a Regional Inter-Agency Coordination and Support Office (RIACSO) was established in 2002 in Johannesburg covering southern Africa, and is chaired by UNOCHA. RIACSO provides support to strategic planning, assessment and monitoring of crisis situations and coordination for emergency response. It has a functional partnership with SADC, in particular by playing an important role in strengthening networks such as the Famine Early Warning System Network and the Southern Africa Regional Climate Outlook Forum. Hence the standard *modus operandi* of RIACSO is mainly on supporting preparedness and early warning across the region through annual plans, which match the yearly meteorological cycles. Oxfam, a recognised non-governmental organization working in southern Africa and part of RIACSO, is a member of the DiMSUR Executive Board and will support executing this project at the local level.

The southern African region is vibrant with initiatives from the academic sector, which offer a choice of learning options, including professional training in the area of disaster management and increasingly on DRR. Among them, the Disaster Mitigation for Sustainable Communities and Livelihoods Programme implemented by the University of Stellenbosch, South Africa, apart from working with poor communities in projects aimed at strengthening their resilience in the face of disaster risk, also acts as a facilitator for the inter-university Peri Peri U project which supports ten universities throughout Africa to promote a DRR agenda. The latter project encourages interchange and knowledge-sharing between these academic bodies with a view to developing overall capacities in DRR on the continent. Two of these universities are in Madagascar and Mozambique. In Madagascar, the disaster management course (supported by UNDP) is taking momentum and is increasingly recognised. The Antananarivo University, Madagascar, which is part of the Peri Peri U, is a member of the DiMSUR Executive Board.

The North-West University at Potchefstroom in South Africa houses the African Centre for Disaster Studies, which focuses on the development of knowledge tools and offers postgraduate education courses and the facility for capacity development. The Centre is offering a variety of modules on disaster management and DRR and increasingly hosts international students. It is also a member of the DiMSUR Executive Board.

- *The World Bank / Global Facility for Disaster Reduction and Recovery (GFDRR)*

This important stakeholder supported the establishment of DiMSUR from 2013 to 2016 through the provision of an 810,000 USD grant to UN-Habitat under the ACP-EU Natural Disaster Risk Reduction Programme. Currently, at the request of SADC DRR Unit, after witnessing the strong interest manifested by SADC member States during the above-mentioned meeting in March 2018 and appreciating the innovative aspects proposed by DiMSUR and the effective impact of the CityRAP tool, the World Bank / GFDRR is providing a second grant (500,000 USD) to UN-Habitat/DiMSUR for implementing the tool in other southern African countries during 2019 and mainstreaming DRR and urban resilience in national developing planning in the SADC region.

➤ **At the national level**

- *Madagascar*

The National Climate Change Coordination Bureau, which is attached to the Ministry of Environment, Ecology and Forestry, coordinates all actions related to the ratification of the UNFCCC, i.e. to promote a resilient economy, adapted to climate change, and to promote low-emission sustainable development of greenhouse gases.

There are two main institutions dealing with disaster management in Madagascar:

- The Emergency Prevention and Management Unit (*Cellule de Prévention et Gestion des Urgences*), which is a technical unit within the Prime Minister's office managing DRR and prevention projects with the support of the UN International Strategy for Disaster Reduction (UNISDR) and the World Bank. Its mandate concerns the following functions: (i) to elaborate and update the national strategy for DRR; (ii) to assess and control the implementation of national policy of disaster risk management and reduction; (iii) to support the sector for the implementation of prevention activities; (iv) to assist the Prime Minister in decision making regarding DRR. The flagship intervention of the CPGU is the work developed on building norms and codes in areas prone to cyclones.
- The National Disaster and Risk Management Office (*Bureau National pour la Gestion des Risques et des Catastrophes - BNGRC*) at the Ministry of Interior supports the Council for National Risk and Disaster Management and coordinates the organisation and management of operations in case of emergency, as well as disaster-related activities in general across the country. It has a disaster risk management mandate, with clear responsibilities regarding civil protection, preparedness (including stock-piling and pre-positioning) and response. It has capillary presence on the ground in coordination with the Red Cross and a network of stakeholders at local level. BNGRC is a member of the DiMSUR Executive Board in representation of the Government of Madagascar.

Another key project partner will be the municipality of Morondava for supporting the execution of the project activities at the municipal level.

- Malawi

The Cabinet Committee on Climate Change is the highest level and enables all arms of government to coordinate their actions in climate change adaptation activities. The Parliamentary Committee on Climate Change serves to assist in lobbying for passing environment related policies and legislations in the national assembly. The National Technical Committee on Climate Change is the technical multisectoral body advising on climate change in Malawi. Climate change is a cross-cutting issue and is mainstreamed in all Ministries of the Government of Malawi.

The key coordinating institutions for climate change issues at national and /or district levels include:

- The Ministry of Natural Resources, Energy and Mining is the National Climate Change Management Policy holder and is responsible for the formulation of environmental and climate change policies and coordination of their implementation through the other ministries. This includes the national adaptation strategies (of the NAPA). The Ministry also provides weather and climate related information and services. Its key role in climate change adaptation is to provide scenarios of climate change and provide early warnings and communication of forecasts.
- The Department of Disaster Management Affairs (DoDMA) is responsible for disaster risk management in the country. Its role in climate change adaptation is in preparedness and response for expected changes in disaster profile.

The Disaster Preparedness and Relief Act establishes the National Disaster Preparedness and Relief Committee (NDPRC) responsible for providing policy directions on the implementation of DRM programs. The NDPRC comprises of Principal Secretaries of all line ministries and departments. It is chaired by the Chief Secretary to the Government.

The Act also provides for the appointment of a head of DoDMA, which is responsible for coordinating and directing all DRR and disaster risk management programs in the country. The DoDMA, which is answerable at the level of the NDPRC, is part of the Commission for Poverty and Disaster Management Affairs at the office of the Vice-President, and is represented down

to district level. DoDMA is a member of the DiMSUR Executive Board in representation of the Government of Malawi.

- The Ministry of Agriculture, Irrigation and Water Development (MoAIWD) has key roles in the area of climate change adaptation including educating farmers about climate change, promoting climate smart agriculture, irrigation and providing hydrometric modelling to aid floods early warning.

Another key project partner will be the municipality of Zomba for supporting the execution of the project activities at the municipal level.

- Mozambique

In Mozambique, the institution responsible for Climate Change Adaptation is the Climate Change Unit, which is part of the Ministry of Land, Environment and Rural Development (*Ministério da Terra, Ambiente e Desenvolvimento Rural - MITADER*). The MITADER is tasked to organise and manage the execution of policies under the areas of Land and Geomatics, Environment, Forests, Fauna, Conservation Areas and Rural Development. The Climate Change Unit was created following the approval of the National Strategy for Climate Change Adaptation and Mitigation and has the following main roles: (1) Coordinate and facilitate inter-institutional connections related to Climate Change; (2) Prepare programmes and annual work plans related to climate change; (3) monitor the implementation of the National Strategy for Climate Change Adaptation and Mitigation and (4) provide technical advice on climate change projects and programmes financed through funds from environmental multilateral agreements.

The National Council for Disaster Management Coordination (*Conselho Coordenador de Gestão das Calamidades – CCGC*), led by the Prime Minister and including several ministries, is the highest political body dealing with disaster-related issues in Mozambique. Its mandate is to ensure multi-sectoral coordination for disaster prevention, assistance to the victims and rehabilitation of damaged infrastructures.

Importantly, the CCGC as political decision-making organ receives advices from the Technical Council for Disaster Management (*Conselho Técnico de Gestão de Calamidades - CTGC*), which is constituted by technical staff from the concerned departments of the different Ministries represented in the CCGC, as well as partners from the UN system.

The National Institute for Disaster Management (*Instituto de Gestão de Calamidades – INGC*), under the Ministry of State Administration and Public Function (*Ministério da Administração Estatal e da Função Pública – MAEFP*), coordinates the CTGC and reports to the CCGC. The main functions of INGC are to: (i) coordinate disaster prevention and mitigation activities; (ii) lead the government's response to emergencies; and (iii) deal with arid and semi-arid areas, reconstruction and resettlement. The structures of INGC go down to the three regions (Southern, Central and Northern Mozambique) and eleven Provinces both politically and technically. There are inter-sectorial technical committees for disaster management organised at the provincial level. Focal points are nominated at district levels which deal with the local committees. INGC is a member of the DiMSUR Executive Board in representation of the Government of Mozambique.

Another key project partner will be the municipality of Chokwe for supporting the execution of the project activities at the municipal level.

- Union of Comoros

The main institution responsible for climate change adaptation in Comoros is the Directorate General of the Environment and Forests (*Direction Générale de l'Environnement et des Forêts, DGEF*).

In terms of disaster management, the Directorate General for Civil Security (*Direction Générale de la Sécurité Civile - DGSC*) is recognised as the main governmental institution. DGSC is a member of the DiMSUR Executive Board in representation of the Government of Comoros.

Different sectors are responsible for disaster preparedness and response depending on the type of hazard. Sectors cooperate in response once alerted by the crisis cell, and propose an action to the government. The PIROI (Indian Ocean Regional Intervention Platform) network, part of the French Red Cross that carries out a regional programme of disaster risk management in the south-west Indian Ocean, strongly focuses on civil protection, disaster preparedness and response.

Another key project partner will be the municipality of Moroni for supporting the execution of the project activities at the municipal level.

Project Objectives:

In alignment with the Adaptation Fund Results Framework, in particular Outcome 2 (Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses), Outcome 3 (Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level) and Outcome 4 (Increased adaptive capacity within relevant development and natural resource sectors), the project has two objectives, namely:

1. To develop capacities and establish conditions to adapt to the adverse effects of climate change in vulnerable cities of Madagascar, Malawi, Mozambique and the Union of Comoros;
2. To promote inter-country experience sharing and cross-fertilisation regarding the adaptation to transboundary climate-related natural hazards and disseminate lessons learned for progressively building urban climate resilience in south-eastern Africa.

Objective 1 responds to the problem raised in the project background regarding the low capacity of local governments in sub-Saharan Africa in identifying and planning actions for effectively adapting to the negative effects triggered by climate change. This is especially true in fast growing small and intermediate cities. In these urban centres, under-serviced informal settlements are sprawling in an uncontrolled manner and municipal authorities are ill-prepared to face the unwanted consequences of this dynamic process. These range from the increased risk to climate-related natural hazards such as floods and cyclones, simply due to the vulnerable location of the new settlements, to issues compounding the impact of climate change, such as the lack of solid waste management, or poor techniques applied in housing construction.

Through Objective 1 national authorities are also targeted. The idea is to take advantage of the practical implementation of the project at the city level and of the CityRAP tool experience to derive the needed guidelines in alignment with existing policies and legislation, and thus create the conditions for replication in other cities and towns at the country level. For this purpose, the project will also allow delivering training activities to both central and local authorities through appropriate institutions and networks and by building appropriate partnerships with on-going initiatives, and start laying the foundations for building urban climate resilience in the four participating countries.

Objective 2 represents the regional dimension of the project and will be anchored to the DRR SADC Unit, which will work in partnership with DiMSUR. As per the MoU for establishing the Centre signed among the four countries concerned by this project (see DiMSUR MoU and Charter: <http://dimsur.org/dimsur-mou-and-charter/>), DiMSUR will promote inter-country experience sharing and cross-fertilisation, and work as a knowledge platform regarding urban resilience related issues that can be disseminated in the sub-region. One of the key “*raison d’être*” for establishing this institution is the need for these countries belonging to the same geographical

region to share best practices on how to address common transboundary climate-related natural hazards. This certainly represents a strong added-value of the project, whose impacts could even reach more countries of the southern Africa sub-region.

Therefore, there are **three Project Components** (which will be described in more detail in Part II), the first two contributing to Objective 1 and the third one contributing to Objective 2:

1. *Preparation, implementation and sustainable management of priority sub-projects at the city level*, aligned with Adaptation Fund (AF) Outcome 2: “Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses”, AF Outcome 3: “Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level”, AF Outcome 4: “Increased adaptive capacity within relevant development and natural resource sectors” and AF outcome 5: “Increased ecosystem resilience in response to climate change and variability-induced stress”;
2. *Tools and guidelines development and training delivery at the national level*, aligned with AF Outcome 2: “Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses” and AF Outcome 7: “Improved policies and regulations that promote and enforce resilience measures”;
3. *Inter-country experience sharing, cross-fertilisation and dissemination of lessons learned at the regional level*, aligned with the need of a regional project to promote new and innovative solutions to climate change adaptation for urban areas in multiple countries affected by common/transboundary climatic threats, with AF Outcome 2: “Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses” and AF Outcome 7: “Improved policies and regulations that promote and enforce resilience measures”.

Project Components and Financing:

Project Components and Financing (NB: **all 4 countries** are concerned in each component. Further information on planned outputs and their indicative budgets can be found in more detail in Part II, section A)

Project Components	Expected Outcomes	Expected Outputs	Amount (US\$)
1. Preparation, implementation and sustainable management of priority sub-projects at the city level	1. Municipal staff, communities and local stakeholders have successfully planned and implemented priority sub-projects for increasing the climate resilience of their city and have acquired the required capacity to manage and maintain the realised investments	1.1. Sub-projects implementation plans fully developed with communities and municipalities, including detailed engineering studies	396,000
		1.2. Priority sub-projects are implemented in the four target cities mainly through community involvement as labour-intensive manpower	7,749,999
		1.3. Municipal staff and community members mobilised, trained and equipped for ensuring the sustainable management and/or maintenance of the implemented priority sub-projects	2,345,600
		<i>Sub-Total Project Component 1:</i>	<i>10,491,599</i>

2. Tools and guidelines development and training delivery at the national level	2. National governments have created enabling conditions for scaling up and replicating the same climate resilience approach in other urban settlements	2.1. National tools, guidelines, policies and/or legislation for promoting urban climate adaptation developed	270,000	
		2.2. National and local officers trained in urban climate adaptation techniques and approaches	490,000	
		<i>Sub-Total Project Component 2:</i>	<i>760,000</i>	
3. Inter-country experience sharing, cross-fertilisation and dissemination of lessons learned at the regional level	3. Local and national governments of the 4 countries have learned from each other good urban climate adaptation practices and are better prepared to face common transboundary climate-related natural hazards	3.1. Lessons learned and best practices captured and disseminated through the SADC DRR Unit in partnership with DiMSUR as regional knowledge management platform	170,000	
		3.2. Cross-fertilisation activities among the participating countries are discussed and prepared	120,000	
		3.3. Regional workshops organized for experience sharing among the different countries, and participation to global events	240,000	
		<i>Sub-Total Project Component 3:</i>	<i>530,000</i>	
		<i>Sub-Total of the 3 Project Components:</i>	<i>11,781,599</i>	
5. Project Execution Cost (9.5%)			1,119,252	
6. Total Project Cost			12,900,851	
7. Project Cycle Management Fee charged by the Implementing Entity (8.5%)			1,096,572	
Amount of Financing Requested			13,997,423	

Project Duration: 4 years (48 months)

Projected Calendar:

Milestones	Expected Dates
Start of Project Implementation	July 2018
Mid-term Evaluation	July 2020
Project Closing	July 2022
Terminal Evaluation	January 2023

PART II: PROJECT JUSTIFICATION

A. Project components

A regional approach for this project is justified for the following reasons:

Common natural threats: the four selected countries for this project are annually affected by **cyclones** originating in the Indian Ocean and moving westwards during the period stretching from November to March, hence provoking strong winds, high precipitations and floods with devastating effects in urban areas. In addition, three out of four countries (i.e. with exception of Malawi) suffer from coastal erosion which is compounded by the effects of sea-level rising. It is crucial that the countries start learning from each other on how to adapt to these common climatic threats. Historically, this has not been the case especially because of the language barriers and prolonged conflicts affecting southern Africa for several decades until the end of the Apartheid regime in South Africa. Generally-speaking, inter-country cooperation has been weak, especially regarding DRR. Yet Madagascar, for example, is much more advanced comparing to its neighbours to withstand cyclones, being one of the most vulnerable countries in the world to this type of natural hazard. The country has developed adapted building codes which are being systematically enforced in all types of constructions. That is why the Government of Mozambique, through INGC, has requested UN-Habitat in 2012-2013 to support the transfer of knowledge from Madagascar to Mozambique in terms of cyclone-resistant construction. This was successfully done thanks to the financial support of the World Bank through the Safer schools initiative, which is now being scaled-up in the country (see: http://dimsur.org/safer-schools-project_inception-report-lessons-learned/).

Similarly, Mozambique has a greater experience than its neighbours in terms of **flood** risk management and has been providing technical assistance from 2010 to 2014 to other SADC countries. However, these recent (and still much under-developed) inter-country cooperation initiatives have been carried out in an ad-hoc manner, based on time-bound projects and/or funding, hence knowledge is then lost once the project ends or the key people are gone, since it knowledge management practices are not systematised. This very well justifies the need for a regional approach. The current proposal scales up these existing initial knowledge and cross-learning processes, notably through Component 3.

A common institution: the four countries targeted by this project requested UN-Habitat to verify the feasibility of establishing a sub-regional technical centre for Disaster Risk Management, Sustainability and Urban Resilience (DiMSUR)⁴⁰, which was launched in 2013. The Centre, which was described in greater detail earlier, aims at fostering development and dissemination of knowledge and solutions in the four concerned countries, as well as developing capacities for disaster risk management, climate change adaptation and urban resilience. In the centre's 10-Year Strategic Plan approved in October 2015 by the DiMSUR Executive Board, (see DiMSUR 10-Year Strategic Plan: <http://dimsur.org/dimsur-10years-strategic-plan/>), the Centre has defined among its six areas of work the Strategic Priority n. 4: “*Establishing networks and partnerships towards better knowledge management and dissemination for urban resilience*”. Therefore, this Centre is the best possible mechanism already in place to manage and disseminate knowledge and best practices being generated by the project. As mentioned earlier, there is currently a strong request for DiMSUR support by the targeted countries and even additional SADC member States. Meanwhile, the World Bank / GFDRR is providing financial support to satisfy this demand. It is highlighted that in the DiMSUR MoU (see DiMSUR MoU and Charter: <http://dimsur.org/dimsur-mou-and-charter/>) the intention is to enlarge DiMSUR's geographical

⁴⁰ For more information on DiMSUR, please see the Centre's website at: <http://dimsur.org/>

coverage to the whole SADC region (as mentioned, Botswana, Zambia and Zimbabwe have already expressed interest to join). The Asian Disaster Preparedness Centre (ADPC – created in the 1980's for similar reasons as DiMSUR) has already contacted UN-Habitat (in its role as DiMSUR Secretariat ad interim) several times in the past few years to establishing a joint collaboration and deliver technical advisory services in the SADC region. Furthermore, sustainability, as explained in the DiMSUR feasibility study, (see Feasibility Study DiMSUR: <http://dimsur.org/feasibility-study-dimsur-summary/>), it is being ensured by:

- Securing the full endorsement and ownership of the initiative from the concerned countries
- Involving SADC, other UN agencies, civil society, academia, and bi/multilateral donors in the initiative
- Carrying out constant advocacy and resource mobilisation efforts
- Establishing the credibility of the Centre as a viable income generator in order to sustain itself; this can be achieved if the quality of the services delivered and results achieved by the Centre are ensured; the centre needs to make itself an indispensable part of the DRR fabric in the region (NB: the fulfilment of this recommendation is on the right track through the development and consolidation of the CityRAP tool, which is currently on high demand)
- Establishing the centre progressively, through a multi-phased process: the costs for maintaining and running the centre will be shared among: 1) the contribution from external donors (which should decrease over time); 2) the contribution from the countries (which should remain fixed over time, and can also be in-kind); and 3) the contribution from income generation activities (which should increase over time);

A new topic and the possibility to learn from each other. adaptation to the effects of climate change in urban areas is a relatively new topic in Africa. The cities selected in each country suffer from different types of effects of climate change because of their diverse physical conditions: Moroni and Morondava are coastal cities, affected mainly by sea level rise and cyclones/floods, while Chokwe and Zomba are located inland, the first suffering mainly from river floods and the second from flash floods due to deforestation. This means that the selected urban centres will provide a wealth of diverse experiences and solutions for adapting to the negative effects of climate change in urban settings from which all four countries will be able to learn from, thanks to the adopted regional approach. In addition, these four cases will be a valuable representative sample of diverse situations from which different urban adaptation models and practices can be extracted, in order to compile lessons learned and further disseminate them in the SADC region.

The above-mentioned issues provide a strong justification for adopting a regional approach instead of working in each country individually. In addition, SADC, which plays the role of the regional executing entity in this project, is interested in using the lessons learned to influence its current regional policies and strategies regarding disaster risk reduction and climate change adaptation in urban areas, and to promote similar approaches in other countries of the region. As indicated above, UN-Habitat has developed a proposal on behalf of DiMSUR at the request of SADC that is being funded by the World Bank / GFDRR to carry out CityRAP Training of Trainers and implementation/dissemination in four additional southern African countries and supporting them to mainstream urban DRR and resilience in their policies and strategies.

The project consists of **three components**:

Under **Component 1**, the project intends to prepare, implement and manage in a sustainable manner priority sub-projects at the city level, which are meant to serve as entry points to progressively build climate resilience in the four target cities and selected communities.

This process builds on activities already conducted during project preparation, including the results of the CityRAP tool implemented in the four cities (a process that developed local government capacity to understand and plan actions that progressively build urban resilience and

reduce urban risk and resulted in Resilience Action Plans that identified priority issues for the short, medium and long-term; see in more detail Part II, Section B) and additional field work activities, as summarised below:

- *Morondava, Madagascar*: UN-Habitat, as DiMSUR Secretariat ad interim, supported the city of Morondava to develop, finalise and validate its Resilience Action Plan through the implementation of the CityRAP Tool between January and March 2016. (i) improve the drainage system; (ii) protect the coastline; (iii) plan the city of Morondava; and (iv) improve solid waste management. Coordination mechanisms and a monitoring and evaluation framework have been added to complete the document. Then additional field work and local consultations with key stakeholders, including marginalised and vulnerable groups, were organised end of June 2017, end of October 2017, March 2018 and October 2018 (see Part II, Section I and **Annex 4**) to determine their needs for building urban climate resilience and develop more detailed priority sub-projects, which were validated locally.
- *Zomba, Malawi*: The CityRAP methodology was implemented in Zomba between October and November 2015. The Resilience Action Plan defines 5 priority issues: (i) reduce and mitigate floods; (ii) improve the drainage system; (iii) strengthen citizen security; (iv) promote sustainable forest management; and (v) foster strategies to cope with rainstorms. Additional field work and local consultations were organised in June and July 2017, end of September 2017, March 2018 and October 2018 (see Part II, Section I and **Annex 4**) to determine the needs for building urban climate resilience and develop the priority sub-projects in a participatory manner. Through site visits and local consultations, including with marginalised and vulnerable groups, the feasibility of the project from their perspectives, potential social and environmental benefits and risks, and the specific needs of these populations were assessed and the sub-projects were revised accordingly, in conjunction with all local stakeholders.
- *Chokwe, Mozambique*: UN-Habitat, on behalf of DiMSUR, selected Chokwe as the first pilot city to implement the CityRAP Tool between August and September 2015. The City Resilience Action Plan identified six priority issues: (i) plan neighbourhoods; (ii) improve the drainage system; (iii) improve solid waste management; (iv) improve public lighting; (v) develop the urban economy; and (vi) improve education and health infrastructure. Less than one year after the CityRAP Tool was conducted, Chokwe municipality and local community started spontaneously to organise themselves to lead the city resilience process with effective actions in order to implement their resilience plan developed with the CityRAP tool (see <http://dimsur.org/chokwe-community-implements-its-urban-resilience-plan/>). Field work was carried out and local consultations held in mid-July and October/November 2017, as well as in February 2018 and end of October 2018 (see Part II, Section I and **Annex 4**), to determine develop priority sub-projects for climate adaptation and validate them locally.
- *Moroni, Comoros*: the CityRAP Tool was implemented between April and August 2017. During the prioritisation workshop held beginning of July 2017, the following actions were identified: (i) job creation; (ii) solid waste management; (iii) energy; (iv) improved urban planning; (v) water, drainage and sanitation. When carrying out field work in July/August 2017, November 2017, March 2018 and October/November 2018 (see Part II, Section I and **Annex 4**) in selected vulnerable neighbourhoods, considering the need to look at resilience from a climate adaptation angle, the following priority sub-projects were identified more specifically: (i) improved drainage conditions; (ii) solid waste management; (iii) access to drinking water; and (iv) enhanced early warning systems for floods.

Based on the four City Resilience Frameworks for Action (RFAs) and the information collected during the in-depth municipal/community consultations, the following *Expected Outputs* were defined:

1.1. Sub-projects implementation plans developed with communities and municipalities, including detailed engineering studies

For larger-size sub-projects there is a need to develop more detailed designs based on deeper assessment studies, as well as bill of quantities, and to get formal approval from national/local authorities. This will be done through local consultations, by hiring specialised engineers/architect/planners (as required), from which then local tendering processes will be carried out to hire sub-contractors.

1.2. Priority sub-projects are implemented in the four target cities mainly through community involvement as labour-intensive manpower

In total, 23 priority sub-projects have been identified in the 4 target cities (see **Annex 5**), which will contribute to improve the following key aspects of climate change adaptation in urban areas: early warning systems, drainage capacity (intrinsically linked to solid waste management), safe havens, sustainable use of natural resources (especially to mitigate erosion and flood risk, and improving water resources management) and urban mobility (essential for evacuation purposes during disaster emergency times). As there are similar sub-projects in the four target cities, best practices and lessons learned will be used to maximise positive impacts in each city from a national and regional perspective through cross-country/city experience sharing (see Component 3).

As explained above, these priority sub-projects resulted from the roll-out of the CityRAP tool and from in-depth consultations held at community and municipal levels until very recently. The following criteria were considered for their selection:

- Critical urban resilience building needs responding to current and future climate change impacts;
- Cost-effectiveness of the proposed priority sub-projects;
- Potential environmental and social risks and impact of the proposed priority sub-projects, and identified mitigation strategies;
- Expected economic, social and environmental benefits of the proposed priority sub-projects;
- Sustainability of the proposed priority sub-projects;
- Avoidance of possible duplication of efforts already undertaken at the city level, and
- The needs of marginalised and vulnerable groups and integration of gender aspects.

Implementation of these priority sub-projects, which constitute the major financial investment of the project, will allow creating temporary jobs, especially targeting poor/vulnerable people. These sub-projects will be implemented under the leadership of Oxfam International in cooperation with the target municipalities and as much as possible through community involvement (e.g. labour intensive activities), in a cost-effective manner. Only for major investments specialised local sub-contractors will be hired, always with a clause to use the resident community as unskilled/skilled (if available) labour as much as possible.

1.3. Municipal staff and community members are mobilised, trained and equipped for ensuring the sustainable management and/or maintenance of the implemented priority sub-projects

This output and related activities are of crucial importance especially for ensuring the sustainability and efficient maintenance of the priority sub-projects mentioned above. It will entail activities such as: (i) local training sessions (including vocational/skill training) for both responsible municipal staff and community members; (ii) community awareness and

sensitisation (with focus on gender/youth issues) regarding drainage/road maintenance, solid waste management, management and use of public rainwater harvesting systems, tree planting, enforcement of by-laws with climate adaptation focus, etc.; (iii) use of required maintenance equipment, among others; and the promotion of alternative livelihoods to support sustainable use of resources. In this way, local capacity will be developed so to ensure the management/maintenance of the priority sub-projects' outcomes in the longer term.

A more detailed description regarding Component 1 for each city is provided below.

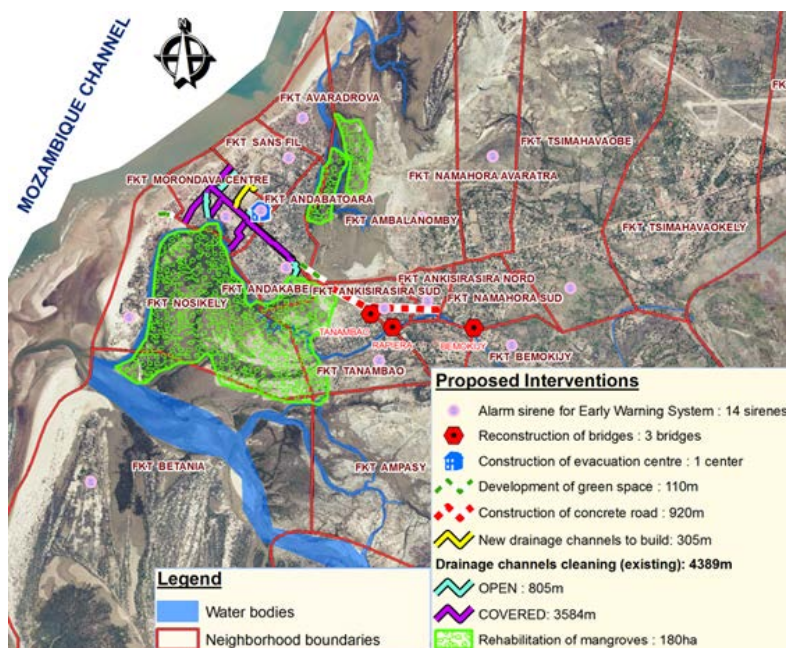


Figure 26: Map of Interventions in Morondava

➤ Morondava, Madagascar

As described in Part I, the city of Morondava is affected by multiple risks (see Figures 6 and 7 in Part I). During the screening and assessment of potential sub-projects to be implemented, it was concluded that greater structural interventions such as large flood/erosion protection measures (e.g. sea walls, stabilisation of the dune system, etc.) may lead to uncertain results and involve high costs. In addition, considering that early warning mechanisms, building codes and basic preparedness capacities concerning strong winds linked to cyclonic events already exist in Morondava, the approach

adopted for packaging the priority sub-projects and contributing to enhancing the urban climate resilience of the city is to focus on creating local capacities and conditions for “living with floods” and lowering the levels of flood disaster risk. Therefore, eight (8) sub-projects were selected focusing mainly on the neighbourhoods most at risk, namely: Andabatoara, Ambalanomby, Andakabe, Ankisirasira Nord, Ankisirasira Sud, Avaradrova, Bemokijy, Morondava Centre, Nosikely, Sans Fil and Tanambao. Table 2 presents demographic and socioeconomic data from these neighbourhoods.

Neighbourhood (or Fokontany)	Population (2017)	Older persons	% of poor
Andabatoara	5,705	301	75%
Ambalanomby	778	41	68%
Andakabe	4,667	246	61%
Ankisirasira Nord	3,319	175	72%
Ankisirasira Sud	2,697	142	78%
Avaradrova	4,253	224	79%
Bemokijy	897	47	75%
Morondava Centre	4,771	252	60%
Nosikely	3,630	191	50%
Sans Fil	3,112	164	70%
Tanambao	5,186	274	85%

Table 2: Demographic and socioeconomic characteristics of the targeted neighbourhoods in Morondava⁴¹

⁴¹ NB: unfortunately, no disaggregated data by sex and by age (e.g. youth) exist at the neighbourhood level; however, the city's population of 50.73% or women and 49.27% of men.

The selected sub-projects are (see **Annex 5.1**):

Priority sub-projects	Target neighbourhoods / Fokontany	Estimated nr of direct beneficiaries	Estimated cost (USD)	Cost per beneficiary (USD)
5.1.1. Rehabilitation of 180 ha of mangroves	Nosikely, Tanambao, Andakabe and Avaradrova	27,782	560,000	20.16
5.1.2. Urban greening interventions in high risk areas	Nosikely, Andakabe, Andabatoara, Ambalanomby, Ankisirasira Sud and Tanambao	22,663	120,000	5.29
5.1.3. Establishment of a city-wide early warning system for floods	City-wide	63,000	85,000	1.35
5.1.4. Construction of a resilient and multi-purpose safe-haven	Morondava Centre and adjacent neighbourhoods located in the western part of the city	26,138	201,000	7.69
5.1.5. Construction of a flood-proof elevated road with improved drainage capacity	Ankisirasira Sud, Ankisirasira Nord and Tanambao neighbourhoods	18,929	425,000	22.45
5.1.6. Reconstruction of 3 bridges connecting different neighbourhoods in a resilient manner	Tanambao, Ankisirasira Sud and Bemokijy	10,943	250,000	22.85
5.1.7. Enhancing the drainage capacity in the city centre	Morondava Centre, Sans Fil, Andakabe and Andabatoara neighbourhoods	18,255	170,000	9.31
5.1.8. Improving solid waste management	Morondava Centre, Sans Fil, Andakabe and Andabatoara neighbourhoods	18,255	190,000	10.41

Table 3: Overview of sub-projects for Morondava

These eight interventions are closely inter-related. In order to preserve ecosystems and protect infrastructure and communities against the adverse impacts of floods, the project will carry out interventions to improve buffer areas and soil stabilisation in critical areas of the city that are prone to flooding. Therefore 180 ha of mangroves will be rehabilitated and green buffer areas developed along a crucial avenue linking the two sides of the city, also used as the principal evacuation route in case of floods.

The project plans to establish a city-wide early-warning system for floods including the identification and marking of escape routes to hospitals and the multi-purpose safe-haven. As the existing network of city infrastructure does not allow for a safe evacuation of the population when floods occur, attention will be given to improving a critical road and key bridges to get out of isolation the south-eastern part of the city. In fact, by elevating and paving an important escape road and rehabilitating three bridges, the evacuation of the population from these neighbourhoods, where poor and marginalized and vulnerable groups are living, will be facilitated in case of an emergency. For this purpose, a surveillance centre will be equipped in the multi-purpose safe-haven to be built in the city centre, which can also provide shelter to the population.

Lastly, the drainage system will be improved in the city centre and adjacent areas by cleaning and rehabilitating the existing network of drainage ditches. It will expand the drainage system at reasonable cost in an area particularly at risk with the aim of facilitating the evacuation of rain/flood waters. Importantly, these drainage interventions will be complemented through the improvement of solid waste management to ensure the proper functioning of the rehabilitated/improved drainage system.

➤ Zomba, Malawi

In order to reduce the impacts of floods on people, assets and livelihoods and to ensure that vulnerable people are safe with regard to floods, interventions in Zomba will be packaged into seven sub-projects that will benefit eight among the most vulnerable wards. The target wards present high percentages of informal settlements (e.g. 100% in Likangala Ward, 90% in Chinamwali Ward, 98% in Mpira Ward, 70% in Mbedza Ward and 50% in Mtiya Ward, just to cite a few)⁴². Demographic information on the selected neighbourhoods can be found in Table 4 below.

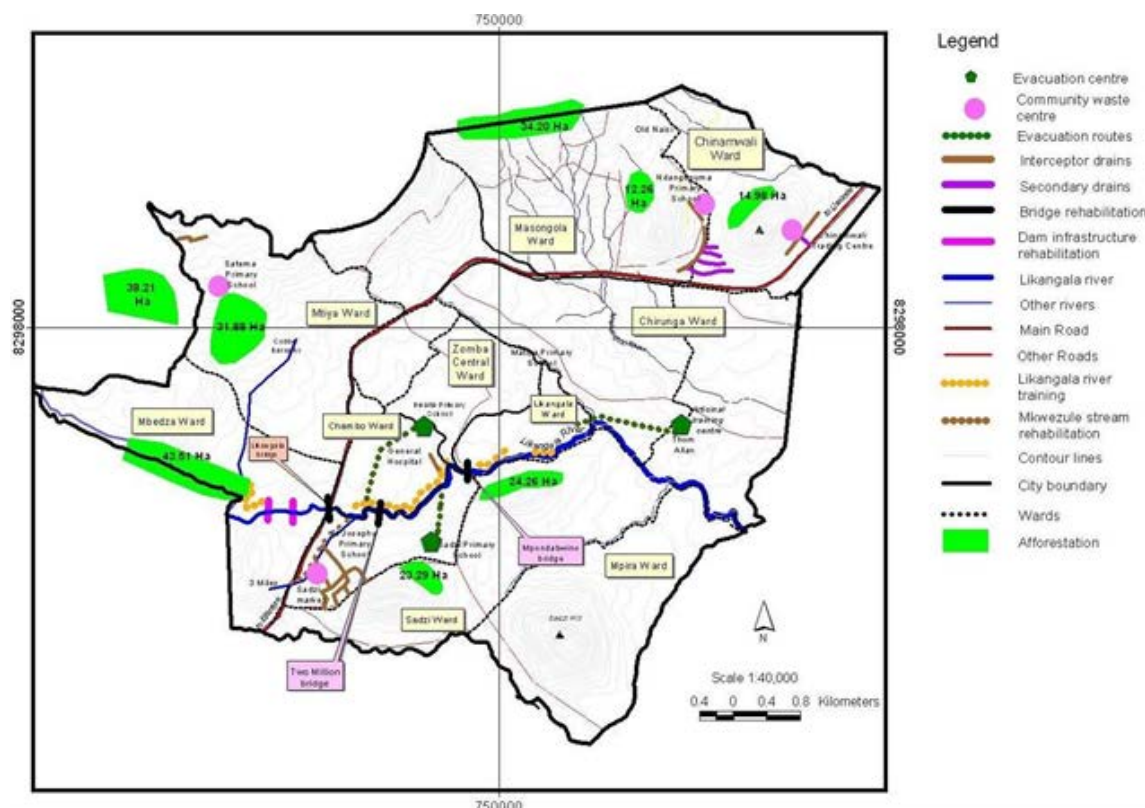


Figure 27: Map of Interventions in Zomba

Communities / ward	Population / beneficiaries ⁴³
Masongola	9,284 (4,549 female; 3,853 youth; 250 disabled)
Sadzi	20,271 (9,933 female; 8,412 youth; 520 disabled)
Mtiya	12,466 (6,108 female; 5,173 youth; 412 disabled)
Chambo	11,558 (5,663 female; 4,797 youth; 390 disabled)
Chinamwali	21,739 (10,652 female; 9,022 youth; 545 disabled)
Mbedza	12,082 (5,920 female; 5,014 youth; 417 disabled)
Mpira	12,128 (5,920 female; 5,014 youth; 400 disabled)
Likangala	22,711 (11,128 female; 9,425 youth; data on disabled not available)

Table 4: Demographic characteristics of the targeted wards in Zomba

⁴² Zomba City Council estimations

⁴³ Updated data on population and beneficiaries: Malawi National Statistics Office (NSO), 2017. Data on disabled could not be updated and stems from NSO, 2010.

The selected sub-projects in Zomba are (see **Annex 5.2**):

Sub-project	Target communities / wards	Estimated nr of beneficiaries	Estimated cost (USD)	Cost per beneficiary (USD)
5.2.1. Establishment of a city-wide early warning system for floods	All wards	156,022	140,000	0.90
5.2.2. Construction of multi-purpose evacuation centres	Chambo, Sadzi and Likangala	30,871	275,000	8.91
5.2.3. Rehabilitation of existing drainage channels and construction of new drainage channels	Chinamwali, Masongola, Mtiya, Sadzi	63,760	313,000	4.91
5.2.4. Improving solid waste management	Chinamwali, Masongola, Mtiya, Sadzi	36,060	184,700	5.12
5.2.5. River-focused interventions to prevent erosion and flooding	Mbedza, Sadzi, Chambo and Likangala (along the Likangala River banks)	20,000 (approx.)	450,000	22.5
5.2.6. Construction and rehabilitation of bridges and dams on Likangala River	Likangala, Sadzi and Chambo wards	156,022	160,000	1.02
5.2.7. Sustainable urban forest management	Chinamwali, Masongola, Mtiya, Mbedza, Chambo, Sadzi and Mpira	77,789	350,000	4.50

Table 5: Overview of sub-projects for Zomba

Similarly, as for Morondava, these sub-projects form an integrated package of inter-related interventions to reduce the impact of flooding and increase the level of climatic adaptation of Zomba. Importantly, this integrated approach takes into account the wider catchment system of which Zomba is a part of. As part of an overall logical approach, up-hill areas were targeted with afforestation and drainage interventions to address soil erosion, landslides, flash floods and uncontrolled water flow. These interventions are located where people and assets are most at risk, i.e. close to schools and in densely populated areas, identified as a result of repeated consultations with the local population (especially women and the most vulnerable) and the municipal authorities. To sustainably address drainage needs and ensure a fully operational drainage system in the longer-term, a community-based solid waste management system is introduced to avoid ditches becoming clogged with waste.

Meanwhile, focusing on the Likangala River that crosses the city and its surrounding flood-prone areas, interventions that are complementary to the afforestation efforts will tackle river bank erosion, gully building/growth and soil degradation through river-focused interventions at identified hotspot areas (see map of interventions in Zomba in Figure 27). This includes the rehabilitation or reconstruction of main bridges to cross the river, which are currently at risk of collapse as no repair has been undertaken since the 2015 floods. These bridges are crucial to ensure proper connectivity and circulation of people and goods within the city, which is especially important for evacuation purposes when a disaster strikes. The same sub-project also includes the rehabilitation of two dams along the Likangala River, with the functions of slowing down the flow of waters in case of river floods and of irrigating peri-urban agricultural areas during the dry season.

Finally, areas of the city most at risk of floods will be equipped with community-managed safe-havens built according to gender-sensitive standards, also catering for the needs of the older persons and persons with disability, connected by improved evacuation routes. In case of an imminent flood, evacuation will be triggered by the city-wide early warning system that will be put in place.

➤ Chokwe, Mozambique

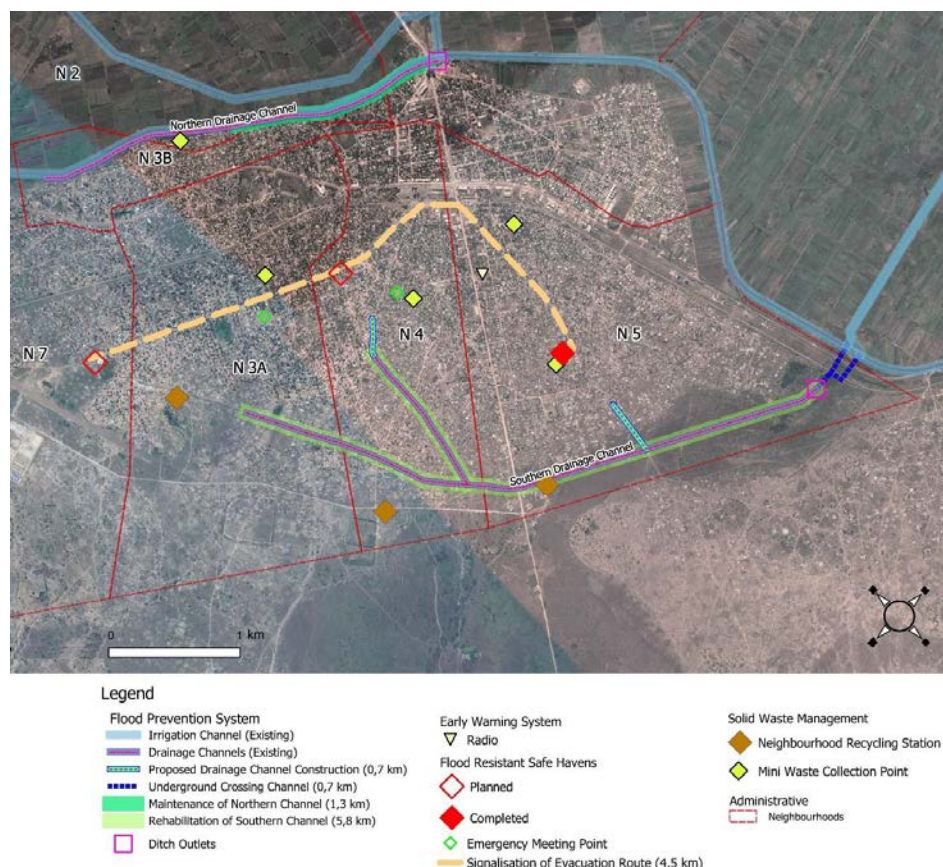


Figure 28: Map of proposed project interventions in Chokwe

Considering its chronic vulnerability, the main approach in Chokwe will be “living with floods”, which has been successfully promoted by UN-Habitat in Mozambique since 2002.

Specifically, the project in Chokwe will concentrate its activities in four neighbourhoods, which are considered to be the most exposed to natural hazards and where the poorest and the most vulnerable are living, namely:

neighbourhoods n. 3, n. 4, n. 5 and, marginally, n. 7. Demographic data from these neighbourhoods is provided in Table 6.

Neighbourhoods	Population / beneficiaries ⁴⁴
Neighbourhood n. 3	10,623 (5,596 female; 2,550 youth; 80 disabled)
Neighbourhood n. 4	24,000 (13,500 female; 8,000 youth; 100 disabled)
Neighbourhood n. 5	11,250 (6,500 female; 2,750 youth; 150 disabled)

Table 6: Demographic characteristics of the targeted neighbourhoods in Chokwe

The selected sub-projects in Chokwe are (see **Annex 5.3**):

Sub-project	Target neighbourhoods	Estimated nr of beneficiaries	Estimated Cost (USD)	Cost per beneficiary (USD)
5.3.1. Improving the overall drainage capacity of the city	Neighbourhoods 3B, 4 and 5	68,000	1,000,000	14.71
5.3.2. Construction of safe-havens	Neighbourhoods 3A, 3B, 5 and 7	41,626	200,000	4.80
5.3.3. Improving solid waste management	Neighbourhoods 3B, 4 and 5	35,000	265,000	7.57
5.3.4. Establish early warning for floods at community level	City-wide	68,000	100,000	1.47

Table 7: Overview of sub-projects for Chokwe

⁴⁴ Based on projections from the official 2007 Census, since the final results of the 2017 Census are not yet available.

Once again, these four interventions are integrated and will be implemented in a complementary way. Drainage capacity at the city level will be improved to allow a faster evacuation of flood waters caused by excessive rain or river flooding. This intervention will be reinforced by enhancing solid waste management in the areas surrounding/near the rehabilitated/constructed drainage ditches, so that they can keep working efficiently and avoid being clogged with waste. This will also prevent stagnating and dirty waters and reduce health-related hazards, especially the outbreak of water-borne diseases.

Three elevated safe-havens will be built/used during higher floods, serving as shelter for the most vulnerable and reducing loss of lives, assets and livelihoods during a flood emergency. Their use will be triggered by improved early warning systems at the community-level (thanks to the delivery of tailored training and capacity building activities) and well-signalled evacuation routes. These last two initiatives will be duly coordinated with the stakeholders at the different levels, i.e. municipal, district, regional and central authorities involved in disaster risk management.

➤ Moroni, Comoros

The La Coulée neighbourhood, is a steep slope area suffering from flash floods as it is part of a large catchment area and lacking a proper drainage system with subsequent problems of erosion, compounded by uncontrolled dumping of waste and lack of access to drinking water. The



Figure 29: Map of proposed interventions in Moroni

neighbourhood concentrates a large proportion of poor households and marginalized and vulnerable groups and is densely populated. It represents the main target area of this project in Moroni. During extreme rain events (which have become more and more frequent in recent years) the water flows through altered paths upstream and hits La Coulée with increased strength in an area densely occupied by urban poor, putting the lives, assets and livelihoods of an already vulnerable population at risk.

La Médina neighbourhood is centrally located, represents the historic city centre and suffers from severe waste management problems that are totally blocking the underground drainage system, provoking heavy runoff or flash floods even during a moderate rainfall event. As this is the economic heart of the city, it is important to improve its climate adaptation characteristics to prevent major negative consequences when it rains heavily on both formal and informal business activities, as these constitute the main livelihoods of many citizens.

Neighbourhoods	Population / beneficiaries
La Coulée Neighbourhood	17,496 (10,200 female; 11,600 youth; 46 disabled)
Medina (Badjanani Mtsangani)	2,249 (1,003 female; 1,345 youth)

Table 8: Demographic characteristics of the targeted neighbourhoods in Moroni

In total four sub-projects were selected after extensive consultations with the local population and assessment by experts on feasibility and potential social and environmental impacts, namely (see **Annex 5.4**):

Sub-project	Target communities / neighbourhoods	Estimated nr of beneficiaries	Estimated cost (USD)	Cost per beneficiary (USD)
5.4.1. Reinforcing the drainage capacity in La Coulée neighbourhood	La Coulée	18,000	1,936,300	107.57
5.4.2. Establishment of community-managed rainwater harvesting systems in La Coulée neighbourhood	La Coulée	4,000 (poorest and most vulnerable)	170,000	42.5
5.4.3. Improving solid waste management in La Coulée and Médina neighbourhoods	La Coulée, Medina	20,000	120,000	6.0
5.4.4. Setting up a flood early warning system in La Coulée neighbourhood	La Coulée	18,000	85,000	4.72

Table 9: Overview of sub-projects for Moroni

These four sub-projects complement each other as they mainly focus on strengthening the climate resilience of La Coulée in an integrated manner. A new and much needed drainage intervention will be carried out to reduce the impacts of flash floods resulting from heavy rains, directing part of the water flow towards the sea. This will reduce loss of assets and livelihoods while also improving sanitary conditions in the area, thus minimising the spread of water-borne diseases.

This intervention will be complemented by the setting up of an early warning system for floods in the same neighbourhood, which will allow the local population to evacuate safely in case of a flash flood. Additionally, (and importantly) a solid waste management initiative will be implemented in La Coulée to avoid waste hampering the efficiency of the planned drainage system. The latter intervention will also be carried out in La Medina.

Finally, community-based rainwater harvesting systems will contribute to the further improvement of hygienic conditions and alleviate the harsh living conditions of the most vulnerable people, especially targeting women, older persons and the disabled in La Coulée, thus responding to one of the main needs voiced several times by the local community during consultations.

Under **Component 2**, project activities will occur at the national and local levels to reach the following *Expected Outputs*:

- 2.1. National tools, guidelines, policies and/or legislation for promoting urban climate adaptation developed;
- 2.2. National and local officers trained in urban climate adaptation techniques and approaches.

National guidelines, policies, legislation or strategies will be derived from the activities carried out within Component 1 with aim to promote urban climate adaptation at a larger scale in each country concerned by the project (*Expected Output 2.1*). Based on these guidelines, training and institutional capacity development activities of government and municipal officials will be delivered, especially through the organisation of national and sub-national workshops and training sessions (*Expected Output 2.2*). Existing academic/training institutions and networks (e.g. associations of municipalities) will be used for such a purpose, and partnerships/synergies established with on-going initiatives at the national level.

For these two project outputs, the national counterparts in each country were consulted and the following detailed activities were identified.

Country	Output 2.1. National tools, guidelines, policies and/or legislation for promoting urban climate adaptation developed	Output 2.2. National and local officers trained in urban climate adaptation techniques and approaches
Proposed detailed activities in Madagascar	<ul style="list-style-type: none"> Develop, validate and disseminate a climate risk assessment guide for urban areas based on the CityRAP methodology, to be tested in Morondava, and to be integrated in the national directives for promoting urban climate resilience in Madagascar; Further develop the National Strategy for Climate Change Adaptation for Urban Areas, with a focus on reinforcing community resilience, and including a communication plan for its dissemination. 	<ul style="list-style-type: none"> Development of academic curricula and training resources and mechanisms (e.g. in the form of training of trainers) for promoting climate change adaptation in urban areas at the national level; Deliver training for adapting to climate change in urban areas to local and regional authorities.
Proposed detailed activities in Malawi	<ul style="list-style-type: none"> Develop national guidelines for assessing climate change impacts and for climate proofing infrastructure in urban areas in Malawi; Develop policy documents for building urban resilience, with focus on climate-related risk; Develop guidelines for promoting the green cities concept, with emphasis on climate adaptation; Integrate climate-related building codes/standards in the Revised Safer Housing Construction Guidelines and facilitate their dissemination and application. 	<ul style="list-style-type: none"> Training of municipal and national officers in climate change and urban resilience, including risk mapping and zoning techniques; Organise trainings for disseminating the green cities concept at the national level; Establish and build the capacity of urban disaster risk management committees, starting with Zomba as a pilot city.
Proposed detailed activities in Mozambique	<ul style="list-style-type: none"> Study the possibility to transform the CityRAP Tool into a legal instrument to scale it up at the national level; Carry out studies and organise specialised workshops and consultations to further integrate climate change adaptation and urban resilience into existing legislation and strategies, such as the Disaster Management Regulations, the Resettlement Law (resettlement caused by climate change impact), the National Strategy for Resilient Infrastructure, the National Strategy for Climate Change Adaptation (integrate urban issues), the Territorial Planning Law, etc. 	<ul style="list-style-type: none"> Organise additional National Urban Resilience Dialogues in coordination with the World Bank, with focus on climate change adaptation; Develop training materials on urban resilience and climate change adaptation tailored for different target groups such as: local/central authorities, technicians and community members, and organise training and dissemination mechanisms at the national level.
Proposed detailed activities in Comoros	<ul style="list-style-type: none"> Based on the CityRAP experience, improve existing guidelines with regards to urban resilience and adaptation to climate change; Review existing policy and legislation to introduce concepts of urban resilience/climate change adaptation, something rather new for Comoros. 	<ul style="list-style-type: none"> Organise training of trainers for government officials and local authorities in all the islands of the archipelago using the CityRAP Tool and other relevant guidelines; Support the implementation of the CityRAP Tool in at least 2 or 3 cities in every island.

Table 10: Proposed detailed activities for Expected Outputs 2.1 and 2.2

The importance of this national component needs to be re-emphasised. It will allow increasing the project's impact from the city scale to the national scale. The scaling-up of an integrated climate adaptation approach, which has not yet been implemented as such in any city in these four target countries, is critical. Without this component, the project will limit itself to improving the climate adaptation capacities and resiliency as well as the living conditions of marginalized and vulnerable groups in the four targeted cities, thus missing a great opportunity for replication, influencing national policies and practices, and establishing multiplier effects mechanisms.

Therefore, while implementing this component, it will be important to produce quality training materials and systematise the newly produced knowledge through existing training institutions. In this sense, as mentioned before, some partnerships with academic institutions were already established through DiMSUR in all four countries. This project will allow operationalizing them at a greater scale, since adequate financial resources to do so were missing up to now. The fact that the project lasts for four years is fundamental, as time is needed so that knowledge can effectively permeate through training institutions to target young professionals, practitioners and government officials, so that urban climate adaptation practices can effectively be mainstreamed in urban management within the medium term.

For this purpose, it will be crucial, of course, to set up partnerships with on-going initiatives (see Section G, Part II) and existing institutions, something UN-Habitat is already working on. This said, again, there are currently few climate adaptation projects targeting cities and towns in these four countries, while the negative impact provoked by more intensive rain and more frequent cyclones on urban centres is providing a sense of urgency on the need to address this situation.

Component 3 will focus on three *Expected Outputs*: (3.1) capturing and disseminating the lessons learned and best practices from the implementation of the project activities at the community, city and national levels, using the SADC DRR Unit in partnership with DiMSUR as regional knowledge management platform; (3.2) discussing and preparing cross-fertilisation activities among the participating countries; and (3.3) organising regional workshops for experience sharing among the different countries, as well as participating to global events; these regional events will target not just the four countries involved in the project, but also other countries in southern Africa interested in promoting the concept of climate urban resilience.

This project component highlights the added-value of adopting a regional approach compared to implementing projects in individual countries separately. As already explained at the beginning of this section, learning from each other and sharing best practices in a region affected by similar/transboundary threats and where knowledge and capacity for urban climate adaptation is still much limited, is of essential importance. Lessons learned will focus on best practices regarding the different adopted approaches in the four cities concerned by the project. A range of diverse technical solutions will be extracted from these local experiences, to be systematised and disseminated further.

Expected Outputs 3.1, 3.2 and 3.3 of this component will be managed by the SADC DRR Unit in cooperation with DiMSUR. These two institutions will play a strong role at the regional level as they already embody credible institutions with complementary roles of sharing experiences, promoting knowledge and delivering trainings. As mentioned above, the upcoming formalisation of the relation between these two institutions will facilitate this process. SADC is interested in using the expected results of this project to influence regional policies and strategies. From this perspective, the Government of Mozambique while being consulted for preparing this project has expressed strong interest in playing a leading role within SADC to promote a dialogue with other member States regarding these important issues.

Therefore, this component will open the project beyond the participating countries and include further SADC countries through inter-country cooperation. For this purpose, the role of DiMSUR will be crucial and thanks to this project and other initiatives this centre will be strengthened by establishing its physical presence in Maputo and recruiting the DiMSUR's staff Secretariat. DiMSUR will also be able, being part of an international network of centres of excellence, to bring in high level expertise from other regions.

Some more detail is provided below regarding the specific planned activities under each expected output of this component, thus strengthening the rationale of this regional outcome of the proposal:

Under Expected Output 3.1: “Capturing and disseminating the lessons learned and best practices”

- Preparation of specific publications on lessons learned and best practices implemented in the 4 target cities that will inform/be useful to the 4 concerned countries and other countries within the SADC region, to be disseminated both through SADC and DiMSUR websites and presented in regional/international events; documenting best practices and lessons learned and making them available through proper knowledge platforms is critical considering that there are currently no appropriate examples of *integrated climate adaptation in urban settings* in this region (NB: this activity will contribute to Output 4 of the SADC DRR Programme Work Plan 2017-2021 – see “Mainstreaming of Disaster Risk Reduction in development plans and strategies enhanced”: <http://dimsur.org/sadc-drr-work-plan-2017-2021/>).
- Based on the deliverables under Expected Output 2.1 (national tools, guidelines, policies and/or legislation), derive some *common/harmonised guidelines on urban climate adaptation* for the SADC region that can be followed by other member States and positively influence their own policies, legislation and approaches (NB: this activity will contribute to Output 2 of the SADC DRR Programme Work Plan 2017-2021 – see “National and Regional DRR Information and Knowledge Management Systems operationalized”: <http://dimsur.org/sadc-drr-work-plan-2017-2021/>).
- Disseminate these guidelines through regional training sessions to SADC government officials through partners of the SADC DRR Academic Network and/or DiMSUR academic partners (NB: this activity will contribute to Output 3 of the SADC DRR Programme Work Plan 2017-2021 – see “Regional Disaster Risk Reduction policy advocacy and capacity development programme enhanced”, as well as Output 4 of the same Work Plan: <http://dimsur.org/sadc-drr-work-plan-2017-2021/>).

Under Expected Output 3.2: “cross-fertilisation activities among countries”

- Facilitate national peer reviews among the four participating countries regarding lessons learned and best practices under Component 1 (at city level) and Component 2 (at national level) in order to identify cross-fertilisation activities (NB: this activity will contribute to Output 3 of the SADC DRR Programme Work Plan 2017-2021 – see: <http://dimsur.org/sadc-drr-work-plan-2017-2021/>).
- Based on the identified potential cross-fertilisation activities, government officials from each of the four countries will carry out exploratory missions to another country within the four to learn from the best practices implemented there and replicate them in their own country.
- Each country government will be responsible, with the technical support from DiMSUR/SADC DRR Unit, to develop specific terms of reference or proposals to operationalize the identified cross-fertilisation activities/best practices, and mobilise funds consequently for such a purpose.

Under Expected Output 3.3: “experience sharing and participating to global events”

- Organise four regional workshops for experience sharing among the four participating countries, one per year, during which on the side steering project committee meetings will take place and annual work plans discussed and approved. The regional workshops will focus on issues related to gender and on identifying best practices implemented at the city and national level, which will also support the planned activities under Expected Outputs 3.1 and 3.2. In addition to the four countries concerned by the project, government representatives from other SADC Member States will be invited, as well as regional actors from academia, the civil society and bi/multi-lateral donors, with the idea to promote climate urban resilience in the region and identify opportunities for resource mobilisation and scaling-up. These workshops will be important platforms to reflect on the project results obtained so

far among all stakeholders, and agree on the way forward.

- Project partners will participate to relevant international events related to climate change adaptation, urban resilience and risk reduction, as needed for promoting and disseminating the initiative, and for learning from other similar projects and approaches on-going in other African countries or in other regions.

Importantly, under Component 3, a performance framework will be defined with key monitoring indicators (see also Section E, Part III) to better assess the efficiency and effectiveness of the proposed approach to work through (sub-)regional platforms such as DiMSUR and SADC, based on the Expected Outputs.

B. Promotion of new and innovative solutions

Innovation in this project can be considered both as creating something new, but will also be produced by mainstreaming initiatives, approaches, processes, techniques and concepts which are new *vis-à-vis* the local context they are applied in. Even though some specific interventions of this proposal do not literally represent approaches that are globally innovative, in the countries involved in this project they certainly have a strong innovation component as they are not yet sufficiently diffused and applied. This project will introduce and pilot them, adapting them to the specificities of each city, making sure to reach the largest number of beneficiaries, especially the poorest and most vulnerable.

As part of its new approach to climate disaster risk management involving actively states (in particular at sub-national levels) and communities, the project will promote the following absolute innovations:

- It promotes innovative approaches to climate change adaptation involving and strengthening DiMSUR. It focuses on themes which still need much development in Africa and are not yet institutionalised, such as urban risk reduction, urban climate adaptation and resilience (for more information, please consult www.dimsur.org)⁴⁵.

The involvement of DiMSUR represents a powerful means for the project to mainstream innovative solutions for two main reasons. First, DiMSUR is an innovative institution in and of itself, since it brings together different stakeholders and enhances partnership and networking by focusing on complementarities and collaboration around the implementation of concrete initiatives, whose results inform the development of national policies and local rules and regulations. DiMSUR brings innovation in how it is structured as it facilitates and fosters opportunities for dialogue and work between Governmental institutions, civil society organisations and communities. Second, DiMSUR represents a vector for mainstreaming innovation by mandate, as it focuses on the implementation of innovative solutions for climate change adaptation, to be specifically applied in urban areas. Through a “learning by doing” approach, it aims to help officials to take a distance from highly theoretical approaches and promote a new paradigm: inform policy formulation from lessons learned from practical implementation and experience.

Lastly, the Centre works towards filling the gaps of national programmes related to urban resilience and disaster risk reduction. The need for increased coordination and collaboration between neighbouring countries threatened by similar climatic hazards to exchange information, knowledge and mutual capacity reinforcement in the area of disaster risk reduction is clearly expressed in key regional and international agreements and strategies.

- The project promotes the application of the CityRAP tool and bases its design on the outcomes derived from the application of the tool in the four targeted cities.

⁴⁵ NB: The 10-Years Strategic Plan of DiMSUR approved by the Executive Board can be provided upon request.

CityRAP proposes a new and distinct approach on how municipalities conceive and address disaster risk management (DRM) by considering not just the multi-dimensional vulnerabilities/exposure to risks, but the root causes of these vulnerabilities. It introduces a new municipal model of DRM and resilience governance where each municipal department is accountable for reducing the root causes of climate related hazards (and urban shocks and stresses in general), and for implementing concrete measures to address the specific threats harming the city in the short, medium and long-term. It promotes a “common language” across the different sectoral departments around climate change, risks and disasters. It combines municipal data around a same reference framework of indicators, based on community knowledge and risks’ perceptions of those living and working in the city.

CityRAP has been designed by UN-Habitat in partnership with DiMSUR as a response to existing urban governance challenges in sub-Saharan Africa. This tool is axed on the following pillars: i) targeting specifically small and medium-sized African cities with low institutional capacity; ii) focusing on the core areas of urban governance for resilience planning; iii) promoting a process driven by the municipality or local authority throughout; iv) leveraging local knowledge; v) streamlining bottom-up planning and bringing together local communities, beneficiaries and other stakeholders with the local administration in prioritising issues that need to be addressed to build/strengthen the resilience of the respective city; vi) easiness to use and cost effectiveness if compared to other tools that require outside technical expertise and costly data collection methods.

It was design as a dedicated response to the lack of real ownership within planning processes by sub-national authorities. Cities should be the place to plan the future, by city administrations themselves as capable decentralised institutions. However, capacity constraints led many sub-Saharan African cities to resort to outside expertise and support to take key decisions and implement critically important projects. In addition, national and international funding streams often times do not reach local governments and the urban poor, as donors usually work directly with national governments⁴⁶. Good urban governance should also be based on civic participation in decision-making, but the citizenry is consistently excluded from the planning processes of local governments in African cities.⁴⁷

In general, even though a vast array of good approaches, methodologies and tools for building urban resilience exist in the international arena, many of these have in common that they are rather complex, very technical in nature and data-hungry, and thereby foster the approach of bringing in outside expertise often excluding local stakeholders, communities and civil society from participating in the planning processes. Such barriers become even stronger and compromising in small/intermediate cities, where the presence of experts is often lacking.

With a view to counter these trends, UN-Habitat and DiMSUR conceptualised CityRAP to foster a paradigm shift in resilience planning where local administrations and the civil society reclaim the decision-making power at the urban level and work together to reduce risk and build resilience to extreme weather events⁴⁸. This was clearly observed during the testing phase carried out in 2015 and 2016 and implementation in 20 cities in 9 countries in sub-Saharan Africa, and recognised in international conferences by discussants from academia

⁴⁶ Barry Smith, Donald Brown and David Dodman: Reconfiguring Urban Adaptation Finance, IIED Working Paper 2014, IIED, London;

⁴⁷ Gina Ziervogel, Mark Pelling, Anton Cartwright, Eric Chu, Tanvi Deshpande, Leila Harris, Keith Hyams, Jean Kaunda, Benjamin Klaus, Kavya Michael, Lorena Pasquini, Robyn Pharoah, Lucy Rodina, Dianne Scott and Patricia Zweig, 2017: Inserting rights and justice into urban resilience: a focus on everyday risk, in: *Environment & Urbanization*, Vol 29/1, 2017, p.123-138. Vanesa Castan Broto, Emily Boyd and Jonathan Ensor, Participatory urban planning for climate change adaptation in coastal cities: lessons from a pilot experience in Maputo, Mozambique, in: *Current Opinion in Environmental Sustainability* 2015 13:11–18.

⁴⁸ Ibidun Adelekan, Cassidy Johnson, Mtafu Manda, David Matyas, Blessing U. Mberu, Susan Parnell, Mark Pelling, David Satterthwaite and Janani Vivekananda: Disaster risk and its reduction: an agenda for urban Africa, IDPR, 37 (1) 2015.

and development practitioners with whom UN-Habitat closely collaborates (e.g. Rockefeller Foundation, UNISDR, among others).

For more detailed information on the innovative aspects of the CityRAP tool methodology, kindly see: <http://dmsur.org/cityrap-tool-briefing/>.

With respect to the introduction of elements of innovation in the target cities, the following can be highlighted:

- The project contributes to promote a systemic and structural change by introducing a new municipal “working methodology”, combining vertical and horizontal integration. Horizontal integration brings together different municipal departments for effective intra-departmental collaboration in analysing and concretely responding to the effects of the climate change (i.e. for the waste activities: Waste Department, Environmental Department, Local Development Department, among others). Vertical integration entails instead the institutionalization of collaboration between local government and communities. It represents a shift towards a meaningful participation of the citizens in public affairs. In all the initiatives, communities through community-based organizations/committees will not only benefit from the initiatives but will be actively engaged in the implementation of the activities. This will promote a sense of ownership over the sub-projects by the communities thus contributing to their sustainability. In general, the project contributes to create an integrated municipal system that can be replicated and extended to other sectors and areas, not just for urban climate resilience.

The project privileges a bottom-up approach, i.e. local experiences are mainstreamed into guidelines and strategies at the national and regional level. This allows avoiding the prescriptive and somehow “blind” nature typical of top-down initiatives, which define intervention strategies without first duly taking into account local realities and contexts. UN-Habitat’s experience in adopting this kind of approach in regional initiatives (e.g. the Global Environment Facility-funded project in the Limpopo River Basin implemented between 2004 and 2007; or the Urban Resilience Project for Lusophone Africa funded through the UN Secretariat Development Account, concluded in December 2017) shows that it creates a positive dynamic of participation of the stakeholders at the various levels (local, national, regional) for ensuring successful project implementation.

- Within the project, the gender perspective will entail a particular focus on how integrated governance system can concretely improve the access and participation of women and by axed on the recognition of women’s role as “agent of change” instead of passive recipients of aid, in line with a more right-based approach, instead if a needs-based one (see Gender Approach in **Annex 2**). This will similarly be applied to work for the inclusion of marginalized and vulnerable groups identified and already mobilised during the assessment phase.

Overall, the project considers innovation as strongly linked to knowledge management: the multi-level regional learning generated within Component 3 will be crucial to sustain and enhance the quality and the long-term effectiveness of the adaptation measures, and their scalability and replication to other neighbouring countries, by transferring the innovative approaches tested by this project.

C. Economic, social and environmental benefits

The climate impacts (especially by cyclones and floods) in the four cities of the project and the target communities cause loss of lives, affect livelihoods and damage properties, community assets, and the environment. The severity of these climatic events is projected to increase.

As a response, the project is meant to bring to communities economic, social and environmental benefits. Economic benefits can be grouped into two types: benefits caused by costs reduction

due to increased resilience of the cities to the hazards; and improved economic environments through new job opportunities and, in general, better conditions for businesses and economic activities. Social benefits are meant as benefits that are distributed within the whole communities, despite the existence of a variety of groups, and as the prevention of the most marginalised and vulnerable individuals to be negatively impacted with no chance to recover from impacts of climate change. It is all about increasing and mainstreaming resilience. Environmental benefits are lead through the protection of the environments from human and climate-related impacts, and through the restoration of degraded ecosystems.

Overall, the activities are meant to increase the capacity to adapt to the current and future impact of climate change in these urban areas, especially to the benefit of marginalised and vulnerable groups and communities, mainstreaming gender aspects (see **Annex 2**). In addition, the project also benefits indirectly broader areas and population: thus some effects, for example GHG storage or pollution mitigation, act at regional or global scale. It is important to highlight that vulnerable communities, including women and youth, have been involved throughout the project design to empower them to directly shape project activities and outcomes (see Part II, Section I – Consultation, and **Annex 4**), thus ensuring that different needs are met and the community equally benefits from the project. The projects values diversity: human wellbeing is the ultimate goal of most plans, programs and policies, but a focus on the average wellbeing, overlooking its equitable distribution among different population groups, however, may cause the missing of important opportunities in addressing the many challenges. For more information on gender specific benefits, kindly consult **Annex 2**.

The contribution of the project is structured into two main types of contribution. The first is the contribution provided through capacity building and knowledge mainstreaming (Components 2 and 3 of the project). Thus, a series of activities will be conducted at community, city, national and regional level to reinforce capacity on climate change adaptation and resilience and ensure a conducting environment (with appropriate tools, rules and necessary knowledge) for the successful implementation of the project and the capitalisation and replication of urban adaptation practices at all levels. A different and equally valuable contribution is provided by the implementation of subprojects (Component 1 of the project). The 23 sub-projects under Component 1 can be clustered into six (6) groups of interventions to strengthen urban climate resilience: (i) Improvement of drainage conditions; (ii) Establishment of early warning systems; (iii) Improvement of solid waste management; (iv) Construction of multi-purpose safe-havens; (v) Rehabilitation of critical ecosystems and sustainable use of natural resources; and (vi) Improvement of urban mobility through construction/rehabilitation of roads and bridges. The most direct and immediate economic, social and environmental benefits generated by the present project will result from the 23 priority sub-projects to be implemented in the four selected cities.

The tables presented in the following pages describe the overall benefits that each sub-project group will bring to the present and future communities of the four target cities. The selected sub-projects have been further screened for potential environmental and social impacts and, as needed, mitigation measures have been identified (see also the proposed Environmental and Social Risks Management Plan -ESMP- in **Annex 3**) as well as sustainability strategies and arrangements (see Section K) to ensure that proposed benefits are achieved. For detailed information and disaggregated data in terms of different types of beneficiaries, please consult the respective sub-project fiches indicated in the table below.

Sub-projects (see more detail in Annex 5)	Benefits			Target groups
	Economic	Social	Environmental	
5.1.7. Enhancing the drainage capacity in the city centre (Morondova)	Communities will be involved as paid labour in construction works and related maintenance and cleaning needs, thus ensuring them access to a new source of income. Soil erosion will also be reduced hence the agriculture practice, which is the main subsistence source of the local people, will not be disrupted and can continue even during rainy seasons. High economic costs of flooding caused by damage on infrastructure and assets can be mitigated; flood risk reduction increases confidence of investors in the city.	Erosion, flash floods and floods are mitigated, especially at hotspot flood areas and where people and assets (densely populated areas, schools and hospitals) are at risk. A particular focus on marginalized and vulnerable groups is kept and benefits are equally distributed through the population. Drainage is not clogged; hence there will be no breeding grounds for mosquitoes and water borne diseases, thus leading to an improvement of public health. By mitigating floods the project will help the farmers and individuals in general in avoiding the severe consequences of floods which usually disrupt their livelihood.	Reduction of soil erosion and land degradation.	People living in flood-prone areas. People living in informal areas. Urban poor. People whose economy or necessary goods/services depends on flood-prone areas.
5.2.3. Rehabilitation of existing drainage channels and construction of new drainage channels (Zomba)				
5.3.1. Improving the overall drainage capacity of the city (Chokwe)				
5.4.1 Reinforcing the drainage capacity in La Coulée neighbourhood (Moroni)				

Table 11: Economic, social and environmental benefits generated by the improvement of drainage conditions

Sub-projects (see more detail in Annex 5)	Benefits			Target groups
	Economic	Social	Environmental	
5.1.3 Establishment of a city-wide early warning system for floods (Morondova)	Local builders will be receiving trainings on resilient architecture and this will open up new livelihood opportunities to them. The integration of climate resilience in planning practice will ensure that people will start living in a safer manner and get access to basic services even during emergency periods, avoiding disruption of their income-generating activities. Risk maps and bankable projects may attract investors, including Government.	The communities will be made aware of the impacts of climate change on their lives and activities. Awareness on how to adapt will enable them to reduce their vulnerability. People will be warned of extreme weather events in advance and will be able to take measures (reaching the evacuation centres, etc.) to protect their livelihoods and lives. The needs of vulnerable people have been taken into account in the design of the sub-projects. Prevention of settlement in risky areas through zoning as well as enforcement of building codes for resilient housing will contribute to save lives. Avoiding losses and disruption of basic services thanks to EWS will also contribute to public health and poverty alleviation.	These actions will increase the community awareness regarding the linkages between the state of the environment and their well-being and safety. They will enhance the interest of local authorities and of the community to take better care of existing ecosystems.	Households (particular attention to the involvement of women because of their role within the community). Municipal staff. Schools and hospitals.
5.2.1. Establishment of a city-wide early warning system for floods (Zomba)				
5.3.4. Establish early warning for floods at community level (Chokwe)				
5.4.4. Setting up a flood early warning system in La Coulée neighbourhood (Moroni)				

Table 12: Economic, social and environmental benefits generated by the establishment of early warning systems

Sub-projects (see more detail in Annex 5)	Benefits			Target groups
	Economic	Social	Environmental	
5.1.8. Improving solid waste management (Morondava)	<p>SWM system and in particular recycling activities will create new economic opportunities for communities but also for small economic operators that can expand their business along the waste value chain.</p> <p>The introduced SWM systems will generate savings for the local authorities compared to the current models and ensure a better service.</p> <p>Women will not have their economic activities disrupted because of the local flooding due to waste blocking drainage.</p> <p>A proper SWM in the cities will diminish maintenance costs to ensure that drainage channels are free from solid waste.</p> <p>A cleaner city will become more attractive for investments.</p>	<p>Public health of local communities will improve due to the reduction of greenhouse emissions and the reduced pollution.</p> <p>New areas will be made available to citizens (for social aggregation purposes etc.), once waste will be collected and removed.</p>	<p>A better SWM will decrease the amount of pollution affecting surface and ground water, soil and air.</p> <p>This will lead to a healthier environment for people and to a better state of the ecosystems in general.</p>	<p>Communities, urban poor, municipal staff, SWM stakeholders (people that can take economic advantage out of SWM-related activities).</p>
5.2.4. Improving solid waste management (Zomba)				
5.3.3 Improving solid waste management (Chokwe)				
5.4.3. Improving solid waste management in La Coulée and Médina neighbourhoods (Moroni)				

Table 13: Economic, social and environmental benefits generated by the improvement of solid waste management

Sub-projects (see more detail in Annex 5)	Benefits			Target groups
	Economic	Social	Environmental	
5.1.4 Construction of a resilient and multi-purpose safe-haven (Morondova)	<p>As citizens will be employed as workforce, this will bring temporary a temporary income for the poor and most vulnerable.</p> <p>Local builders will be receiving trainings on resilient architecture and this will enable them both to maintain the resilient infrastructure, but also to open up new livelihood opportunities to them.</p>	<p>Community involvement as workforce will bring ownership of the intervention and confer more sustainability to these interventions.</p> <p>The construction of resilient multi-purpose centres will not only contribute to save lives, but also will have clear social benefits as a new space for aggregation, training, etc. thus positively impacting on social welfare/cohesion of local communities.</p>	<p>The creation of these structures will create opportunities for introducing new green areas in the target cities.</p> <p>These safe havens will prevent aggregation of people impacted by hazards on natural critical habitats, which could negatively affect the state of the environment.</p>	<p>Everybody in the community, with priority use ensured to the most marginalised and vulnerable groups.</p>
5.2.2 Construction of multi-purpose evacuation centres (Zomba)				
5.3.2 Construction of safe havens (Chokwe)				

Table 14: Economic, social and environmental benefits generated by the construction of multi-purpose safe havens

Sub-projects (see more detail in Annex 5)	Benefits			Target groups
	Economic	Social	Environmental	
5.1.1. Rehabilitation of 180 ha of mangroves (Morondova)	<p>Communities will be involved in nurseries and tree planting. They will learn new skills that can support them to diversify their sources of income.</p>	<p>Rehabilitated ecosystems (green spaces, river interventions) will reduce impact of floods on the vulnerable population.</p>	<p>Ecosystems will directly benefit from these interventions. The planned interventions will contribute to the restoration and creation of healthy ecosystems and increase the</p>	<p>Marginalised and vulnerable population leaving near high risk areas; municipal staff; schools and universities in</p>
5.1.2. Urban greening interventions in high risk areas				

(Morondova)	The planting of nuts and fruit trees will generate further income to households. Communities will overall benefit from new sources of livelihoods.	The presence of green spaces will provide communities with new spaces for aggregation and leisure, thus positively impacting on quality of life, social welfare and cohesion.	benefits related to the goods and services they provide.	surrounding areas; farmers and people who hamper or take advantage from these ecosystems; households
5.2.7 Sustainable urban forest management (Zomba)			In addition, these interventions will increase awareness among the communities on environmental issues and interlinkages between the state of their environment and the communities' wellbeing.	
5.2.5. River-focused interventions to prevent erosion and flooding (Zomba)	The current lack of healthy ecosystem services (crucial to human wellbeing) in the different cities implies higher costs; hence these planned interventions will reduce these costs.	Creation and restoration of green areas increase the overall production of ecosystem services within the city and enhance the well-being of the whole community.		
5.4.2. Establishing a community-managed rainwater harvesting system in La Coulée neighbourhood (Moroni)				

Table 15: Economic, social and environmental benefits generated by the rehabilitation of critical ecosystems and sustainable use of natural resources

Sub-projects (see more detail in Annex 5)	Benefits			Target groups
	Economic	Social	Environmental	
5.1.5. Construction of a flood-proof elevated road with improved drainage capacity (Morondava)	Thanks to a better road network, the connectivity in the city will improve, impacting positively on its overall economic efficiency and attractiveness.	Improved evacuation conditions during times of emergency.	Proper mobility infrastructure will avoid soil erosion occurring consequently to any flood and run-off in general.	Older persons, persons with disabilities and women, who are often in charge of reaching different points of the city for domestic tasks; municipal staff; overall city population, especially those living in informal / poor settlements.
5.1.6. Reconstruction of 3 bridges connecting different neighbourhoods in a resilient manner (Morondava)		Better road access in poor/informal urban areas will allow for installation of basic services such as water, sanitation and electricity networks, and ensure access to basic services in general.		
5.2.6. Construction and rehabilitation of bridges and dams on Likangala River (Zomba)		Better road access to poor/informal urban areas will also increase social inclusion, as the upgraded informal areas will become more accessible and part of the city.		
		The increased possibilities of participation of the residents also from poor/informal urban areas in the upgrading process will increase their self-esteem and their feeling of citizenship.		

Table 16: Economic, social and environmental benefits generated by the improvement urban mobility through construction/rehabilitation of roads and bridges

D. Cost-effectiveness

The majority of the budget will be allocated to Component 1 and as such to priority investments/activities with a focus on addressing the effects of cyclones, rainfall, floods, sea level rise/coastal erosion and drought. The priority actions will consist of the six groups of interventions as outlined in Section C. Investment into these areas can be viewed as creating greater capacity to absorb shocks and adapt to climatic impact, thus increasing urban climate resilience, which is the main objective of this proposal. It can further be seen as a prevention of future economic loss as well as the saving of livelihoods and lives. As outlined in the project background section, African cities are among the ones with the biggest financing gap for addressing climate vulnerability, and are hence severely challenged by rising economic loss, also due to the fact that most loss is uninsured and governments do not have the financial reserves or access to contingency financing that would allow them to absorb losses, recover and rebuild. This is further complicated by the fact that municipalities are legally autonomous, which limits the needed

financial support from central government. This implies that taking no action will lead to incrementally increasing costs in time associated with losses due to storms, floods and landslides as well as lower economic productivity in the affected areas.

Importantly, as outlined in Part I of this proposal, interventions under Component 1 will be implemented under the leadership of the target municipalities through community involvement and the support of local civil society organisations. This model of partnership will allow significant cost-reduction as the concerned municipalities and even the beneficiaries will be expected to provide in-kind support. At the same time, the labour-intensive physical interventions will bring economic benefits to the communities through temporary job-creation, especially targeting women and youth. Importantly, local capacity will be developed to ensure proper management/maintenance of the pilot projects' outcomes in the longer term. A detailed analysis was undertaken in order to validate costs, benefits and effectiveness of Component 1. The results of this analysis per main intervention area are the following:

Main sectors of intervention	Sub-projects (see <i>Annex 5</i> for more details)	Costs in USD and total nr. of beneficiaries	Cost effectiveness rationale
Improvement of drainage conditions	Enhancing the drainage capacity in the city centre (5.1.7 Morondava)	USD 170,000 18,255 people	Poor or lack of drainage is putting property and lives in danger during times of floods and flash floods. The improvement of drainage conditions is essentially cost-effective, since the high economic costs of floods in terms of damage on infrastructure and assets can be avoided. An alternative is to relocate all households to areas deemed safer. Such an undertaking would not only be enormously expensive due to compensation payments but would also be socially and economically disruptive to communities.
	Rehabilitation of existing drainage channels and construction of new drainage channels (5.2.3 Zomba)	USD 313,000 63,760 people	
	Improving the overall drainage capacity of the city (5.3.1 Chokwe)	USD 1,000,000 68,000 people	
	Reinforcing the drainage capacity in La Coulée neighbourhood (5.4.1 Moroni)	USD 1,936,300 18,000 people	
Establish-ment of early warning system	Establishment of a city-wide early warning system for floods (5.1.3 Morondova)	USD 85,000 63,000 people	An early warning system will enable communities to have access to timely climate risk information, thereby increasing disaster preparedness capacity. This is much more cost effective than the alternative of evacuating people from risk areas once the disaster has already struck.
	Establishment of a city-wide early warning system for floods (5.2.1 Zomba)	USD 140,000 156,022 people	
	Strengthening early warning for floods at community level (5.3.4 Chokwe)	USD 100,000 68,000 people	
	Establish a flood early warning system in La Coulée neighbourhood (5.4.4 Moroni)	USD 85,000 18,000 people	
Improvement of solid waste management	Improving solid waste management in the city centre (5.1.8 Morondova)	190,000 18,255 people	Improvement of solid waste management systems is cost-effective as it avoids the costs of a society suffering from diseases as well as potential costs of pollution and release of leachates. Different options for improving solid waste management exist, and the project privileged those related to awareness-raising for self-organised waste management at the household level, waste separation (organic from inorganic), recycling and re-use. The more costly option of constructing entire new landfills has been avoided.
	Improving solid waste management (5.2.4 Zomba)	USD 184,700 40,060 people	
	Improving solid waste management (5.3.3 Chokwe)	USD 265,000 35,000 people	
	Improving solid waste management in La Coulée and Médina neighbourhoods (5.4.3 Moroni)	USD 120,000 20,000 people	

Main sectors of intervention	Sub-projects (see <i>Annex 5</i> for more details)	Costs in USD and total nr. of beneficiaries	Cost effectiveness rationale
Construction of multi-purpose safe havens	Construction of a resilient and multi-purpose safe-haven (5.1.4 Morondova)	USD 201,000 26,138 people	Ensuring preparedness and safety during climatic hazards, especially for the most vulnerable, is very cost-effective and even life-saving. Resilient construction and/or retrofitting of public facilities as shelters in case of disaster will secure lives and livelihoods, and reduce post-disaster reconstruction costs, following the logic of 'Building Back Better' promoted by the Sendai DRR Framework. Adopting a 'coping with floods, cyclones, sea level rise or drought' strategy is also more cost-effective than the alternative of relocating the population from areas classified at risk (NB: most of the areas occupied by the targeted cities are in fact at risk).
	Construction of multi-purpose evacuation centres (5.2.2 Zomba)	USD 275,000 30,871	
	Construction of safe-havens (5.3.2 Chokwe)	USD 200,000 41,626 people	
Rehabilitation of critical ecosystems and sustainable use of natural resources	Rehabilitation of 180 ha of mangroves (5.5.1 Morondova)	USD 560,000 27,782 people	Rehabilitating mangroves as a coastal protection measure (Morondava) has been chosen as a small-scale, locally-adapted and sustainable solution, especially involving communities and labour-intensive manpower. This will contribute to protecting assets, infrastructure and investments, hence increasing value. To reduce the impacts of floods, the option of constructing seawall dykes was discussed but proved to be too costly, and with questionable sustainability based on experience by a previous pilot project financed by the French Development Agency cited as example. Alternative options of protection and restoration of ecosystems were chosen as these are less costly and will not only reduce flood impacts but also preserve biodiversity, natural resources and livelihoods of local population through regulated and sustainable exploration.
	Urban greening interventions in high risk areas (5.1.2 Morondova)	USD 120,000 22,663 people	The creation of green spaces prevents the formation of settlements in areas at risk and avoids the loss of lives and future resettlement costs. It is more effective than simply demarcating the areas at risk, and it also brings additional benefits, such as the decrease of urban heat.
	Sustainable urban forest management (5.2.7 Zomba)	USD 350,000 77,789 people	Re-/afforestation and provision of different energy sources (Zomba) will allow mitigating damages provoked by erosion, high rainwater run-off, flooding and landslides on urban infrastructure, services and livelihoods. Alternative options of natural regeneration of forests as opposed to planting would be cheaper but it would take much longer to have a beneficial impact.
	River-focused interventions to prevent erosion and flooding (5.2.5 Zomba)	USD 450,000 20,000 people	River training measures are relatively costly, but deemed cost effective as they will be undertaking in crucial pre-identified areas within the main flooding river aimed at reducing the occurrence of flash floods and mitigating the impacts by focusing on reducing slope instability, reducing the amount and velocity of runoff, and preventing erosion. An alternative, more costly option would be relocation of the population along the river banks and flood prone areas.
	Establishing community-managed rainwater harvesting systems in La Coulée neighbourhood (5.4.2 Moroni)	USD 170,000 4,000 people	Water is essential to life. As for climate change adaptation, improved access to water (Moroni) represents a key strategic element whose importance cannot be over-emphasised. Therefore, improving access to this vital resource for populations currently living in poor and informal urban settlements which were not supplied with safe drinking water before project implementation should not be questioned from a cost-

			effectiveness perspective. In addition, lack of access to water for agricultural use during the dry season, something this project will try to address, can be very detrimental in terms of food security and even livelihoods for those farmers living in some of the targeted peri-urban areas.
Improvement of urban mobility through construction/rehabilitation of roads and bridges	Construct a flood-proof elevated road (920 m) with improved drainage capacity (5.1.5 Morondava)	US\$ 425,000 18,929 people	The alternative option of constructing a new road to connect the eastern neighbourhood with the city centre that would need to circumvent the flood prone area. This would result in higher transportation costs (due to a longer travel distance), more complex work and higher costs.
	Reconstruction of 3 bridges connecting different neighbourhoods in a resilient manner (5.1.6 Morondava)	USD 250,000 10,943 people	The bridges already exist and currently present a threat to the safety of the population due to their precarious state. It would be cost-effective to rehabilitate them, increasing response/ evacuation capacity during floods and cyclones and improving the overall mobility within the city. The alternative option of constructing a new road to circumvent the channel would result in higher transportation costs, complex work and higher cost.
	Construction and rehabilitation of bridges and dams on Likangala River (5.2.6 Zomba)	USD 160,000 156,022 people	The existing main bridge in Zomba represents a threat to the safety of the population due to the erosion of its pillars. Rehabilitating it will be more cost effective than building a new one (estimated at USD 100,000).

Table 17: Overview of cost effectiveness for each main intervention area under Component 1

As for Component 2, national level planned activities are cost-effective as described in Table 18 below.

Planned Activities	Costs (in USD)	Cost-effectiveness rationale
<ul style="list-style-type: none"> Develop a climate risk assessment guide for urban areas based on the CityRAP methodology in Madagascar Further develop the National Strategy for Climate Change Adaptation for Urban Areas in Madagascar Develop national guidelines for assessing climate change impacts and for climate proofing infrastructure in urban areas in Malawi Develop policy documents for building urban resilience in Malawi Develop guidelines for promoting the green cities concept in Malawi Integrate climate-related building codes/standards in the Revised Safer Housing Construction Guidelines in Malawi Study the possibility to transform the CityRAP Tool into a legal instrument in Mozambique Carry out studies and organise specialised workshops and consultations to further integrate climate change adaptation and urban resilience into existing legislation and strategies in Mozambique Improve existing guidelines with regards to urban 	40,000 20,000 40,000 20,000 40,000 20,000 20,000 30,000 20,000	<p>Estimated costs include expertise to be hired, missions and consultations. The four target countries in general possess very few or no tools, guidelines, policies and/or legislation focusing on urban climate adaptation. Considering the increased impact of climate change effects on cities and towns in these countries, it seems crucial to make efforts to develop these guiding instruments at the national level, based on the lessons learned and best practices from the integrated urban climate adaptation approach in the 4 targeted cities, as well as from previous/other initiatives which are mentioned in Section G, Part II. Thanks to these instruments, cities will be encouraged to be better prepared, designed, conceived and develop to adapt to climate change. This requires developing these outputs in a participatory and consultative manner, then followed by training and dissemination (see Expected Output 2.2). Not doing this effort implies having city managers/leaders not having any policy, legal and technical reference document from which to base the way they plan and manage their cities/towns. This pioneering work in these countries is much needed, and the total of 270,000 USD to start it in the 4 countries is a</p>

<ul style="list-style-type: none"> resilience and adaptation to climate change in Comoros Review existing policy and legislation to introduce concepts of urban resilience/climate change adaptation in Comoros 	20,000	very reasonable amount.
<ul style="list-style-type: none"> Development of academic curricula and training resources and mechanisms for promoting climate change adaptation in urban areas in Madagascar Deliver training for adapting to climate change in urban areas to local and regional authorities in Madagascar Training of municipal and national officers in climate change and urban resilience, including risk mapping and zoning techniques in Malawi Organise trainings for disseminating the green cities concept at the national level in Malawi Establish and build the capacity of urban disaster risk management committees in Malawi Organise additional National Urban Resilience Dialogues with focus on climate change adaptation in Mozambique Develop training materials on urban resilience and climate change adaptation and organise training and dissemination in Mozambique. Organise training of trainers for government officials and local authorities in all the islands of the archipelago using the CityRAP Tool and other relevant guidelines in Comoros Support the implementation of the CityRAP Tool in at least 2 or 3 cities in every island in Comoros 	40,000 80,000 50,000 30,000 50,000 20,000 100,000 60,000 60,000	Activities under this Expect Output are meant to mainly disseminate the tools, guidelines, policies and legislations prepared under Expected Output 2.1. Therefore, it is absolutely needed otherwise all these documents will “remain in the shelves” and will not be effectively used. The overall cost (490,000 USD) for disseminating them, including through trainings, to reach cities/towns managers in the 4 countries, as well as sub-national government officers, is reasonable. It is to be noted that countries vary in size (Mozambique being the largest country) and in connectivity conditions (Comoros being an archipelago) so costs vary accordingly. Existing training/academic institutions at the national level will be involved in this process, creating conditions for sustainability as acquired knowledge/training materials will stay and may be used beyond the project’s lifetime. As Component 2 will be mainly implemented through national government entities, this will ensure ownership and institutionalisation so that these are not just project outputs, but building blocks towards building greater adaptation and resilience capacities in cities and towns to climate change effects.

Table 18: Overview of cost-effectiveness for planned activities under Component 2

The regional approach is a major element for ensuring the cost-effectiveness of the project, through the sharing of experience, knowledge and of other resources. The project will ensure cost-effectiveness by relying on the SADC DRR Unit in partnership with DiMSUR for Component 3. These two institutions will take the lead in the regional coordination of activities with UN-Habitat technical support, and make sure that the different actors at the various levels (municipal, national and regional) establish platforms of collaboration and dialogue with each other. Working with the SADC DRR Unit and DiMSUR at the regional level, and with Oxfam International as the single institution coordinating most of the local activities under Component 1 (for more information on Oxfam’s role in this project, please see Section A, Part III), will enable staff sharing costs and avoid an excessive spread of financial resources to several institutions. Building upon the experiences, data, information and coordination networks already created at the regional level will be more cost-effective than the implementation of separate new initiatives at the national level. Further, as already explained in Part I of this proposal, the four target countries are faced with similar climate-related natural threats that will be addressed during this project, thus allowing for streamlined capacity building and support processes that will create an economy of scale during (and, with DiMSUR, even after) implementation.

At the same time, the local circumstances of the target cities are varying: Moroni and Morondava are coastal cities while Chokwe and Zomba are inland. Hence the regional approach will ensure that a wealth of knowledge, experiences and climate change adaptation solutions are gained that will be valuable for future application beyond the target sites and countries.

Furthermore, as explained in Section A, Part II, without Component 3 the project would miss a great opportunity for replication and scaling up at a larger scale, beyond the four target countries, hence influencing policies and practices in the SADC region and establishing the conditions for multiplier effects mechanisms. The tripartite MoU to be signed between SADC, DiMSUR and UN-Habitat will formalise the partnership and enlarge the geographical scope of DiMSUR. Therefore, this technical centre represents a cost-effective mechanism to store, manage and disseminate knowledge. That is why the World Bank is currently interested in funding it, among other donors. DiMSUR has already received World Bank / GFDRR funding in the past, as well as from the European Union and the UN Secretariat Development Account.

Outputs	Planned Activities	Cost (in USD)	Cost-effectiveness rationale
Output 3.1. Lessons learned and best practices captured and disseminated through the SADC DRR Unit in partnership with DiMSUR as regional knowledge management platform	Preparation and dissemination of publications on lessons learned and best practices implemented in the 4 target cities (<i>10,000 USD per country</i>)	40,000	It is crucial to document lessons learned and best practices of this project so that knowledge, methods and experience generated can be a source of inspiration and replicated in other cities in the 4 target countries and in the other countries of the SADC region. The cost to do so is reasonable vis-à-vis the importance and potential impact.
	Preparation of guidelines on urban climate adaptation for the SADC region (<i>including missions and consultations with the countries</i>)	50,000	These two activities build on the products derived under Expected Output 2.1 (national tools, guidelines, policies and legislation) and fulfil the work plan of the SADC DRR Unit, so that efforts undertaken at the national level can be up-scaled to the region and all SADC countries can benefit from them. It is believed that the total estimated cost of 130,000 USD is effective for reaching the 16 SADC countries including the regional training. In addition, the process will be embedded in the SADC DRR Unit with technical support from DiMSUR, hence conferring sustainability to the proposed activities.
	Disseminate these guidelines through regional training sessions to SADC government officials (<i>intensive 5-days course including representatives from all 16 SADC countries</i>)	80,000	
Output 3.2. Cross-fertilisation activities among the participating countries are discussed and prepared	Facilitate national peer reviews among the four participating countries and identify cross-fertilisation activities (<i>10,000 USD per country</i>)	40,000	It is important that the 4 target countries, in addition from learning from each other in terms of knowledge and theoretical approach, are also able to implement in practice what they have learned from the other countries. This is the principle of cross-fertilisation. The cost involved (120,000 USD for 4 countries) is reasonable when thinking of the potential impact and follow-up investment this may trigger in the respective countries, and with regards to reinforced inter-country cooperation on a topic (urban climate resilience) which is still under-developed as of today. DiMSUR will certainly play a crucial role in this process, beyond the life of the project.
	Government officials carry out exploratory missions to another country to learn from the best practices implemented there and replicate them in their own country (<i>10,000 USD per country</i>)	40,000	
	Develop specific terms of reference or proposals to operationalize the identified cross-fertilisation activities/best practices (<i>10,000 USD per country</i>)	40,000	
Output 3.3. Regional workshops for experience sharing among the different	Organise four regional workshops for experience sharing and project decision-making (<i>50,000 USD per workshop per year</i>)	200,000	This proposed activity is not just cost-effective but it is absolutely necessary. From the experience UN-Habitat has in organising regional workshops gathering representatives from the 4 target countries, the estimated cost is correct as countries are not well connected in terms of flights (most have to fly via Nairobi or Johannesburg, making travel quite expensive), there is need for simultaneous

countries, and participation to global events			translation in 3 languages plus over logistic costs, etc. During these workshops, in addition to experience sharing the Project Steering Committee meetings will be organised as well as other activities which require the gathering of the 4 countries. In addition, participants from other SADC member States need to be invited, so that the initiative (through DiMSUR as a catalyst) can be scaled-up, as well as participants from abroad (donors in particular, but also international experts from the academic sector or ADPC) to add/share knowledge and advocate for the initiative beyond the region.
	Participate in relevant international events for both advocacy and learning purposes (10,000 USD per year)	40,000	Ensures that key individuals are abreast of on-going discussions at the global level and can also promote the initiative internationally. Setting aside an annual budget of 10,000 USD to cover travel cost seems reasonable for this purpose.

Table 19: Overview of cost-effectiveness for planned activities under Component 3

E. Consistency with national or sub-national strategies

At the global level, the project aligns with the New Urban Agenda, the Quito Declaration on Sustainable Cities and Human Settlements for All, approved at the United Nations Habitat III conference in October 2016. It specifically refers to the vision outlined in the new Urban Agenda, being cities and human settlements that are participatory and promote civic engagement and foster social cohesion, inclusion and safety in peaceful and pluralistic societies, where the needs of all inhabitants are met, recognizing the specific needs of those in vulnerable situations; and to the vision to adopt and implement disaster risk reduction and management, reduce vulnerability, build resilience and responsiveness to natural and human-made hazards, and foster mitigation of, and adaptation to, climate change. The project will contribute to the implementation and localisation of these principles and commitments.

The project is further consistent with the Paris Agreement adopted under the United Nations Framework Convention on Climate Change, specifically Article 2 (b) with reference to the objective of increasing the ability to adapt to the adverse impacts of climate change. Importantly, it refers to Article 7.5. of the Paris Agreement, where it is outlined that “parties acknowledge that adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach, taking into consideration marginalized and vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions, where appropriate.” The project design adheres to all the outlined principles as further detailed in Part I of this proposal.

Consistency is also ensured with the Sendai Framework for Disaster Risk Reduction (DRR) for the period 2015–2030 and its four priorities for action: 1) understanding disaster risk; 2) strengthening disaster risk governance to manage disaster risk; 3) investing in disaster risk reduction for resilience; and 4) enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction.

The project further aligns with the Sustainable Development Goals (SDGs) n.11: “Make cities and human settlements inclusive, safe, resilient and sustainable”, notably target 5 (“By 2030, to significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations) and target 9 (“By 2020, to substantially increase the number of cities and

human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for DRR, holistic disaster risk management at all level); as well as SDG target 13.1: “Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries”.

At the continental level, the project is consistent with the Agenda 2063 “The Africa We Want”, in that it strengthens climate resilient communities, as called upon in aspiration 1, item 10. It is further consistent with the Mauritius Declaration on the Implementation of the Sendai Framework in Africa and its Programme of Action (PoA), which replaced the Africa Regional Strategy for Disaster Risk Reduction that expired in 2015. In line with the PoA, the project helps to achieve the set targets of increasing integration of DRR in regional and national sustainable development, and climate change adaptation frameworks, mechanisms and processes; as well as increasing the number of countries with, and periodically testing, risk-informed preparedness plans, and response, post-disaster recovery and reconstruction mechanisms.

At the southern Africa level, it takes into account the 10-year Disaster Risk Reduction Strategy of SADC, now concluding⁴⁹, which focuses on:

- Strengthening governance, legal and institutional framework at all levels of DRR;
- Facilitating the identification, assessment and monitoring of disaster risks and support enhancement of early warning systems at all levels;
- Promoting usage and management of information & knowledge, innovation & education to build a culture of safety and resilience at all levels in the SADC region;
- Ensuring that DRR becomes a national and local priority with a strong institutional basis for implementation;
- Integrating preparedness and emergency response into disaster risk reduction interventions.

With regard to the alignment to national development and climate change adaptation priorities, the project is consistent with the relevant national strategies and policies in each country.

➤ Madagascar:

The project aligns with the National Adaptation Program for Climate Change (NAPA) elaborated in 2006, which aims at strengthening the country's capacity to adapt to the effects of past and present climate variability and future climate change and empowering the country to address the causes of its vulnerability. The present project contributes to advancing all three strategic axes established by the NAPA: (1) capacity reinforcement; (2) policy reform; and (3) integration of adaptation in sectorial policies and project activities. The NAPA also identifies and ranks 15 priority projects for addressing the most urgent adaptation needs in the country. The present proposal is highly aligned with many of these, in particular with the two topics at the top of the priority ranking: (1) rehabilitation/reconstruction of dykes, walls and other water protection infrastructure; and (2) establishment and promotion of sustainable water management practices and associations.

Madagascar launched its National Adaptation Plan (NAP) process in 2012 aiming to reduce climate vulnerability in the medium- and long term, and to integrate climate-related risks and opportunities into development planning and budgeting systems. A UNDP stocktaking report⁵⁰ concludes one of the initial steps of the NAP process.

With respect to Madagascar's (Intended) Nationally Determined Contributions (INDC), the country identified adaptation sectors (agriculture, coastal zone management, human health), as well as

⁴⁹ NB: the new 10-year DRR strategy for SADC will have to align with the recently approved DRR PoA for Africa.

⁵⁰ http://www.adaptation-undp.org/sites/default/files/resources/madagascar_stocktaking_report_final.pdf

ecosystem-based adaptation approach (forests, mangroves, biodiversity, water resources) that can have significant benefits on mitigation. The INDC is conditioned on the provision of financial support from global partners. With regard to the sub-projects under Component 1 of the project, the sectors of coastal zone management and mangroves are particularly relevant.

The INDC further identifies priority actions that the proposed project aligns with:

- Strengthen climate change adaptation mainstreaming in all strategic/framework documents (Component 2)
- Multi-hazard early warning systems that mainly consider cyclones, floods, drought and public health surveillance: establishment of a city-wide early warning system for floods (Sub-Project Fiche 5.1.3);
- Effective application of existing or newly established sectoral policies: cyclone resistant buildings standards, flood-resistant terrestrial transport infrastructure standards: build resilient and multi-purpose safe-haven (Sub-Project Fiche 5.1.4), construction of a flood-proof elevated road with improved drainage capacity (Sub-Project Fiche 5.1.5); reconstruction of 3 bridges connecting different neighbourhoods in a resilient manner (Sub-Project Fiche 5.1.6), enhancing drainage capacity in the city centre (Sub-Project Fiche 5.1.7);
- Restoration of natural forests and reinforcement of habitat connectivity: rehabilitation of 180 ha of mangroves (Sub-Project Fiche 5.1.1);
- Identification and sustainable management of climate refuge areas inside and outside protected areas: urban greening interventions in high risk areas (Sub-Project Fiche 5.1.2);

Madagascar's National Strategy for Risk and Disaster Management (SNGRC), the National Strategy for Climate Change Mitigation (SNACC, currently being finalised), and the National Adaptation Policy (PAN, currently being finalised) complement the national policy framework. In alignment with the SNGRC 2016-2020 and its strategic objective 5, the project reduces risks at the local and national level and contributes to vulnerability reduction. The project also supports the implementation of the 5th pillar of the National Development Policy that focuses on building resilience to disaster risks, as well as the National Policy for Fighting Climate Change in accordance with the National Environmental Policy.

At the city level, the project will strengthen the capacity of Morondava to cope with the impacts of climate change and disaster risk as defined in the Resilience Action Plan of Morondava (2016-2026), supported by UN-Habitat in 2016.

➤ Malawi:

Malawi's National Adaptation Programme of Action (NAPA, 2006) has identified the immediate adaptation measures that are needed to reduce the risks posed by climate change and the possible impacts of increased severe weather events on Malawi. The NAPA has identified sectors that are affected by climate change and these include agriculture, human health, energy, fisheries, wildlife, water, forestry and gender. The proposed project will predominantly address the energy, water and forestry sectors of the NAPA.

Malawi commenced the National Adaptation Plan (NAP) process in September 2014 through the establishment of the Core Team which was followed by initial sector training and commissioning of the preparation of Malawi's NAP Roadmap, including a target timeline for the 17 different steps involved in the NAP process (per the UNFCCC guidelines). A recent stocktaking report⁵¹ concludes one of the initial steps of the NAP process.

⁵¹ http://www.adaptation-undp.org/sites/default/files/uploaded-images/malawi_nap_stocktaking_report_final_2016.pdf

Malawi's (Intended) Nationally Determined Contributions (INDCs) outline required adaptation measures in the following priority sectors and thematic areas: agriculture (crops, livestock, fisheries), water resources, health, infrastructure, land-use planning, transport, population and human settlements, disaster risk management, forestry, wildlife, energy and gender. For all these sectors, there will be need for multi-sectoral collaboration in the implementation of various projects and programmes. There will also be need for capacity building, research, and consideration for disaster risk management as well as the need to harmonise policies. With regard to the concrete identified actions under Component 2 of the project, the sectors water, energy, forestry and infrastructure are particularly relevant. The overview below compares relevant priority adaptation actions identified in different sectors of the INDCs with the proposed sub-projects in Zomba:

- Water - 'develop and enhance climate information and early warning systems': establishment of a city-wide early warning system for (Sub-Project Fiche 5.2.1);
- Energy - 'promote use of biomass briquettes as substitute for firewood and charcoal'; 'support an expanded programme of briquette production and use': sustainable urban forest management (Sub-Project Fiche 5.2.7);
- Forestry - 'expand afforestation and forest regeneration programmes'; 'promote growing of drought tolerant and fast rowing tree species'; "Some mitigation interventions in the forestry sector also have adaptation co-benefits elements. For example, forest regeneration could spur bee-keeping and indigenous mushroom harvesting disincentivizing forest extractive activities." (INDC p. 11): Sustainable urban forest management (Sub-Project Fiche 5.2.7);
- Infrastructure – 'construct infrastructure for flood control, transport, etc. (physical barriers for flood prevention)'; 'develop and implement climate related building codes/standards': construction of multi-purpose evacuation centres (Sub-Project Fiche 5.2.2); rehabilitation of existing drainage channels and construction of new drainage channels (Sub-Project Fiche 5.2.3); construction and rehabilitation of bridges and dams on Likangala River (Sub-Project Fiche 5.2.6);

Malawi has recently developed a National Climate Change Management Policy (NCCMP) whose overall goal is to promote climate change adaptation, mitigation, technology transfer and capacity building for sustainable livelihoods through Green Economy measures. With regard to climate change adaptation, the policy aims to:

- a. reduce vulnerabilities of populations in Malawi and promote community and ecosystem resilience to the impacts of climate change;
- b. ensure that women, girls and other marginalized and vulnerable groups are engaged and involved in planning and implementing climate change adaptation interventions; and
- c. ensure that communities are able to adapt to climate change by promoting climate change adaptive development in the long term.

The proposed project is aligned to these climate change adaptation objectives of the policy.

The National Disaster Risk Management Policy is aimed at ensuring that disaster risk management (DRM) is mainstreamed in development planning and policies of all sectors in order to reduce the impact of disasters and ensure sustainable development in the country. One of its key objectives is to promote enforcement of buildings and other infrastructure standards which will lead to a reduction in disaster losses. One of the policy priority areas is the reduction of underlying risks and includes the promotion of good land use planning and management and sound construction of infrastructure; the identification and implementation of long-lasting solutions to floods and other disasters. The proposed project will support the realisation of these policy outcomes.

Lastly, in the city of Zomba, the project responds to the identified priority actions developed in the Resilience Action Plan of Zomba (2016-2026) supported by UN-Habitat in 2015.

➤ Mozambique:

Mozambique's National Adaptation Programme of Action (NAPA) was approved by the Council of Ministers in 2007. The Government and development partners have embarked on the NAP development process in December 2016 which will involve a set of trainings to national technicians on the NAP process, stocktaking and definition of a NAP Roadmap. Currently Mozambique is aiming to develop a proposal for the Readiness Green Climate Fund to accomplish the implementation of the NAP.⁵²

Mozambique's (Intended) Nationally Determined Contributions (INDCs)⁵³ focus on increasing resilience in communities and the national economy including the reduction of climate risks and promoting low carbon development and the green economy through the integration of adaptation and mitigation in sectoral and local planning, as established in the National Climate Change Adaptation and Mitigation Strategy (NCCAMS 2013-2030). The NCCAMS identifies the following cross-cutting actions: institutional and legal reform; capacity building and knowledge transfer; and research and systematic observation.

The following adaptation actions and policies outlined in the INDC are particularly relevant to the proposed project: Capacity Building and Knowledge Transfer; Disaster Risk Management (DRM); and Disease Surveillance and Control, as can be seen in direct comparison with sub-projects in Chokwe:

- Capacity Building and Knowledge Transfer - 'develop climate resilience mechanisms for infrastructures, urban areas and other human settlements and tourist and coastal zones'; 'increase the adaptive capacity of the most vulnerable groups'; 'develop and ameliorate the level of knowledge and capacity to act on climate change': construction of safe havens (Sub-Project Fiche 5.3.2);
- Disease Surveillance and Control – 'reduce people's vulnerability to climate change related vector borne diseases or other diseases': improving the overall drainage capacity of the city (Sub-Project Fiche 5.3.1);
- Disaster Risk Management – 'reduce climate risks through the strengthening of the early warning system and of the capacity to prepare and respond to climate risks': strengthening early warning for floods at community level (Sub-Project Fiche 5.3.4).

The proposed project will also contribute directly to the implementation of the National Strategy for Climate Change Adaptation and Mitigation (2013-2025). In particular, the project will advance the defined strategic action: 'develop mechanisms for resilience in urban areas and other settlements', and its two related indicators: (1) 'number of informal settlements upgraded with sanitation'; and (2) 'number of people benefitting from urban sanitation programmes'. The action will directly contribute to achieving the following strategic actions: improve adaptive capacity of vulnerable people; improve preparedness and response capacity to climatic risks; improve capacity for managing water resources.

It also contributes to the Government's Five-Year Plan (2015-2019), specifically priority five with the strategic objective of reducing risk and adapting to climate change and reducing the vulnerability of communities, economy and infrastructures to climate risks. It further addresses the crosscutting issues outlined in the 20-Year National Development Strategy (2015-2035), being enabling capacity-building of municipal technicians and community members.

⁵² Source: UNDP presentation on launching of the NAP Process in Mozambique and direct consultations with directly involved institutions

⁵³ Ministry of Environment, Land and Rural Development, 2016

Lastly, Chokwe has made climate adaptation one of its highest municipal development priorities. The project will contribute to the implementation of the Resilience Action Plan of Chokwe (2016-2026) supported by UN-Habitat in 2015.

➤ Union of Comoros:

The National Adaptation Programme of Action (NAPA) of 2006 identified the following sectors as being most affected by climate change: agriculture, cattle breeding, infrastructure, fishing and health. The proposed project will especially address the infrastructure and health sectors of the NAPA, the latter by tackling the inadequate waste management system, which facilitates the development of malaria and presents pollution risks to ground water and shores. Regarding the infrastructure sector, the NAPA highlights its vulnerability to flooding and sea level rise, resulting in erosion and damaging roads, bridges and public infrastructure. The proposed sub-projects in Moroni to implement, design, and build a drainage system directly address these issues.

The NAP process in Comoros was officially launched in September 2014. The Government has also developed a NAP process roadmap, aiming to fully mainstream climate related risks and opportunities within medium- and long-term planning processes at national, island and sector levels, which is axed on 3 work streams: enhancing coordination mechanisms and steering the NAP process; implementing the NAP process; reporting, monitoring, review and outreach. The work streams incorporate 5 strategic intervention areas which correspond to the identified gaps, as follows: 1) strengthening the overall climate change coordination mechanism and steering the NAP process; 2) strengthening information and monitoring and evaluation systems; 3) building capacity for climate change adaptation in planning and implementation; 4) producing first generation NAP documents; 5) enhancing climate change awareness and mainstreaming climate change adaptation at the island level. The proposed project strongly contributes to the above strategic pillars, in particular, points 3 and 5.

With regard to the (Intended) National Determined Contribution (INDC) of the Union of Comoros and its National Policy, Strategy and Action Plan for Climate Change (both approved in 2015), the following priority issues are relevant to the proposed project: land management, including spatial planning, with implications for urbanisation, agriculture and forestry through city planning and informal settlement upgrading in Moroni; waste management; vulnerability reduction of the population located in areas at risk of flooding, cyclones and sea level rise; mainstreaming of climate change adaptation, mitigation and resilience in the legislation and policies; as well as institutional capacity building and community empowerment. The overview below compares proposed sub-projects with adaptation actions and policies identified in the INDC:

- Water – ‘100% of the population have access to potable water by 2030’: establishing a community-managed rainwater harvesting system in La Coulée neighbourhood (Sub-Project Fiche (5.4.2)
- Integration and sensitization – ‘an early warning system is set up to prevent extreme events and to get ready to respond across all sectors; ‘100% of vulnerable populations are sensitized about the impacts of climate change and are informed about adaptation measures; ‘central and decentralized governmental levels benefit of a process of capacity building with respect to climate change adaptation’: setting up a flood early warning system in La Coulée neighbourhood (Sub-Project Fiche 5.4.4); project Component 2.

It is worthy to note that several challenges highlighted in the INDC have been identified, such as the need to improve human capital (institutional building, planning skills, etc.), the lack of financial resources and the need for technology transfer with respect to energy, forestry, agriculture, water, health and risks prevention. Within component 2 and 3, the present proposal positively contributes to filling in the above gaps.

In the Strategy for Rapid Growth and Sustainable Development (2015-2019) the country has given priority to climate change mitigation and adaptation, natural resource management and sustainable development, biodiversity conservation and enhancement of eco-system services as well as disaster risk management. Aligned to strategic areas 3 and 4, the proposed project will strengthen local governance, build capacity and reinforce institutional coordination to enhance urban resilience. Further, in line with the overall objective of the strategy, the project will contribute to climate risk reduction and sustainable development by providing appropriate localised solutions.

The project further aligns with the National Strategy and Action Plan on Disaster Risk Reduction and its six strategic areas, namely: 1) establishing a legal and institutional framework and mechanisms for disaster risk reduction; 2) strengthening national, island and community capacity; 3) development of knowledge, information, education and communication systems on disaster risk management; 4) promotion of community resilience activities; 5) sustainable and flexible funding mechanisms; 6) promotion of regional and international cooperation and coordination. The strategy ultimately aims to substantially reduce losses and damage and to strengthen the resilience of communities (national and local) to disasters.

Lastly, the project will support Moroni city's aspirations to become more resilient to the impacts of climate change. The Resilience Framework for Action for Moroni is currently being completed with UN-Habitat support using the CityRAP Tool, and its contents have been taken into account while preparing this project proposal.

F. Relevant national technical standards

The project complies with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund. During preparation of the full proposal, a detailed risk screening and impact assessment of all project activities was been undertaken (see a summary in Part II, Section K and details in **Annexes 2 and 3**).

In addition to the above-mentioned policies of the Adaptation Fund, the project will also adhere to UN-Habitat's Environmental and Social Safeguards System (ESSS), which requires that UN-Habitat projects comply with host country laws and obligations. It serves as a framework to show UN-Habitat's commitment, capacity and procedures for assessing and managing the environmental and social risks of projects. The ESSS is fully integrated with UN-Habitat's Project Based Management Policy and is aligned with the environmental and social safeguard policies of the United Nations Secretariat and those of predominant bi/multilateral institutions.

In developing Component 1 of this project (*preparation, implementation and sustainable management of priority sub-projects at the city level*) an analysis of relevant national standard was undertaken. The findings of the analysis are summarised in the tables below and reflected in the risks screening belonging to the ESMP (see also risk screening regarding principle 1, law compliance, under Part II, Section K and **Annex 3**).

A similar analysis was undertaken in relation to Component 2 (*tools and guidelines development and training delivery at the national level*), which builds on the analysis undertaken for screening Component 1.

Component 3 (*inter-country experience sharing, cross-fertilisation and dissemination of lessons learned at the regional level*) focuses on regional activities, thus interventions do not need to comply with national standards and legislation. However, the project will take into consideration applicable regional and international frameworks such as the SADC Regional Disaster Preparedness and Response Strategy (2016) and the SADC Gender Policy (2007).

Major national standards worth highlighting due to its relevance to the overall project are labour laws, which will be complied with for all employment contracts. More specifically, no activities of

the project will be initiated without ensuring that the national legislations are applied for construction activities entailing infrastructure interventions in Component 1. Applicable laws are: (i) for Madagascar: Loi n° 2003-044 Code du Travail; (ii) for Malawi: Employment Act, 2000; (iii) for Mozambique: Lei do Trabalho n° 23/2007; and (iv) for the Union of Comoros: Loi 84-08 Code du Travail.

During the implementation of activities, the National Project Managers (see their role in Part III Section A) will ensure that all project activities comply with existing national technical standards. At the beginning of the project, when the sub-project implementation plans are fully developed with communities and municipalities, including detailed engineering studies (Expected Output 1.1.), the necessary steps to comply with these standards will be detailed in addition to what is described for each country/city below.

➤ Madagascar

Environmental Impact Assessments (EIAs) in Madagascar are carried out on the basis of Decree n. 99-954 of 15 December 1999, as amended by Decree n. 2004-167 of 3 February 2004 published on 10 July 2000 and 24 May 2004⁵⁴. The integration of EIAs in the project cycle is essential for providing environmental information at key stages. Early results of an EIA may indicate practical design changes that would avoid or reduce adverse environmental impacts or better benefit from environmental benefits. A screening procedure is to be carried out by the National Office of the Environment and determines if the sub-project must be subject to an EIA or not. Because of the size and type of sub-projects, no full EIAs are required, as illustrated in the table below. The Madagascar UN-Habitat office works in close collaboration with the Ministry of the Environment of Ecology and Forests, in particular the National Office for Coordination of Climate Change which is a management and coordination structure for activities on climate change within the same Ministry, as well as with the municipality of Morondava.

Sub-projects (see <i>Annex 5</i> for more details)	Relevant rules, regulations and standards	Compliance, procedure and authorising entity	Principle 1 triggered during project preparation (and mitigation measure required)
5.1.1 Rehabilitation of 180 ha of mangroves	Law n. 90-033 related to the Malagasy Environmental Chart , modified by Law n. 97-012, Law n. 2004-015, and Law n. 2015-03 which establishes the principles and regulations for environmental management Inter-ministerial Decree n. 4355/97 defining and delimitating sensitive zones , including mangroves, coral reefs, dunes, tropical forests, etc.	An environment permit needs to be obtained from the Regional Directorate for the Environment and Forests (DREF) under the National Office for the Environment (ONE), and an authorisation from the Municipality. An EIA is not necessary as the mangrove rehabilitation is part of the national priorities for climate change adaptation; a similar activity was recently conducted in Tanambao area in Morondava city.	Not triggered. No obstacles to obtain an environment permit from the Regional Directorate for the Environment and Forests (DREF) under the National Office for the Environment (ONE) as well as an authorisation from the Municipality. Proposed intervention has been discussed with and agreed by authorities.
5.1.2 Urban greening interventions in high risk areas	Law n. 2015-052 related to LUH (see above) Law n. 2008-013 related to public domain	An authorisation from CIRDOMA (Land and Domain Circumscription) and another from the municipality are needed	Not triggered. No obstacle to obtain authorisation from CIRDOMA (Land and Domain Circumscription) and another from the municipality. Proposed intervention has been discussed with and agreed by authorities.

⁵⁴ http://saiea.com/dbsa_handbook_update09/pdf/7Madagascar09.pdf

5.1.3 Establishment of a city-wide early warning system for floods	Law n. 2015-031 related to the National Policy for Disaster Risk Management. Contingency Plan for the Menabe Region. National Strategy for Disaster Risk Management (2016-2030)	No specific authorisations needed but collaboration and coordination with the disaster risk management local committees and the National Office for Disaster Risk Management (BNGRC).	Not triggered. No obstacles to collaborate and coordinate with the disaster risk management local committees and the BNGRC. Proposed intervention has been discussed with and agreed by authorities
5.1.4 Build resilient and multi-purpose safe-haven	Law n. 2015-031 related to the National Policy for Disaster Risk Management. Contingency Plan for the Menabe Region. National Strategy for Disaster Risk Management (2016-2030)	An authorisation from the municipality needs to be obtained. Collaboration and coordination with the disaster risk management local committees and the National Office for Disaster Risk Management (BNGRC)	Not triggered. No obstacles to obtain an authorisation from the municipality. No obstacles to collaborate and coordinate with the disaster risk management local committees and the BNGRC. Proposed intervention has been discussed with and agreed by authorities
5.1.5 Construction of a flood-proof elevated road with improved drainage capacity	Decree n. 2013-330 related to the publication of the Guide for Protection of Roads against Floods (GPRCIM) , which defines mandatory technical standards for all roads and related infrastructure for reducing flood impacts	An authorisation from the municipality needs to be obtained	Not triggered. No obstacles to obtain an authorisation from the municipality. Proposed intervention has been discussed with and agreed by authorities.
5.1.6 Reconstruction of 3 bridges connecting different neighbourhoods in a resilient manner	Decree n. 2013-330 related to the publication of the GPRCIM (see above)	An authorisation from the municipality needs to be obtained	Not triggered. No obstacles to obtain an authorisation from the municipality. Proposed intervention has been discussed with and agreed by authorities.
5.1.7 Enhancing the drainage capacity in the city centre	Law n. 2015-052 related to LUH (see above) Decree n. 2013-070 related to the Malagasy NIHYCRI (see above)	An authorisation from the municipality needs to be obtained	Not triggered. No obstacles to obtain an authorisation from the municipality. Proposed intervention has been discussed with and agreed by authorities.
5.1.8. Improving solid waste management in the city centre	Law n. 2011-002 related to the Health Code. Law n. 98-029 related to the Water Code. Law n. 90-033 related to the Malagasy Environmental Chart (see above) Law n. 95-035 authorising the creation of organs responsible for urban sanitation and fixing fees for urban sanitation	Authorisations from the municipality and with the prefecture need to be obtained	Not triggered. No obstacles to obtain an authorisation from the municipality. Proposed intervention has been discussed with and agreed by authorities

Table 20: Sub-projects in Morondava, Madagascar, and relevant national standards

➤ Malawi

The preparation of an EIA in Malawi is guided by the 'Guidelines for Environmental Impact Assessment' published by the Government in December 1997. Malawi's EIA process is

specifically designed to integrate EIA requirements within the project cycle. This integration is essential for an EIA study to provide timely environmental information at key stages in the project cycle. Thus, early results from an EIA may indicate practical design changes which would avoid or reduce negative environmental impacts or better capture environmental benefits. As prescribed under Section 24(1) of the Environmental Management Act (EMA), Malawi has a prescribed list of projects for which an EIA is mandatory (List A) and another list (List B) of projects for which an EIA may be necessary. The National Council for the Environment has the authority to issue an EIA certificate. The activities for Zomba City have been applied to the lists to determine if an EIA is mandatory, may be necessary or not all. The analysis results are shown in Table 21 below. Nevertheless, the proposed projects will have to be submitted to the Environmental Affairs Department for them to determine whether a proposed project is prescribed under the EMA. If not, no further action on EIA requirements needs to be undertaken. If it is prescribed, then a Project Brief must be submitted to the Director.

Sub-projects (see <i>Annex 5</i> for more details)	Relevant rules, regulations and standards	Compliance, procedure and authorising entity	Principle 1 triggered during project preparation (and mitigation measure required)
5.2.1. Establishment of a city-wide early warning system for floods	Disaster Preparedness and Relief Act of 1991 , which establishes the national disaster risk management structure	Coordination with DoDMA is required as DoDMA is responsible for coordinating the implementation of disaster risk management programmes in the country.	Not triggered. No need to conduct an EIA. Proposed intervention has been discussed with and agreed by authorities
5.2.2. Construction of multi-purpose evacuation centres	Safer House Construction Guidelines: Technical Manual , developed in 2010 and revised in 2014 to support households, communities, the Government and other partners in adaptive architecture to reduce exposure to disasters through sound construction. Physical Planning Act (2016) and Zomba city's planning standards and building by-laws apply within the city jurisdiction	An EIA is not applicable (see Section 24(1) of the Environmental Management Act). The project will prepare detailed designs and apply for town planning and building plans approvals from the Zomba City Council (ZCC) Town Planning and Building Plans Committee. The ZCC is the planning and building authority within the city jurisdiction. The ZCC Town Planning and Building Plans Committee following consultations with relevant stakeholders will issue town planning and building plans approvals for compliance with town planning and building standards as set out in the Physical Planning Act (2016) and the city building by-laws.	Not triggered. No need to conduct an EIA. Proposed intervention has been discussed with and agreed by authorities
5.2.3. Rehabilitation of existing drainage channels and construction of new drainage channels	Environment Management Act, n. 23 of 1996. Standard Specification for Road and Bridge Works of the Malawi Government (1978) with specific reference to drainage Series 2000: Drainage of the SATTC 'Standard. Specifications for Road and Bridge Works' of 1998	As described under section 24 (1) of the Environmental Management Act, drainage and irrigation projects are mentioned under its list B as projects for which an EIA may be required. EIAs may be required for projects that changes water use through drainage or for Agricultural drainage projects of more than 1 ha.	Not triggered. As the sub-project will not change water use (focus is on flood water) through drainage, EIAs are not required. The city council confirmed EIAs are not required because of the size and location
5.2.4. Improving solid waste management	Environment Management Act (EMA), No. 23 of 1996 There is no national law on	As described in Section 38 of the EMA a waste license is required to handle, store, transport, classify or	Not triggered. No need to conduct an EIA. Each facility will not

	solid waste management in Malawi. Each town is responsible for municipal waste disposal. Zomba City by-laws apply	destroy waste other than domestic waste, or operate a waste disposal site. The license is given out by the Environmental Affairs Department. As described under Section 24(1) of the EMA, an EIA is mandatory for the establishment or expansion of any of the following municipal solid waste management facilities serving a population of greater than 1,000 people: (i) Landfill site; (ii) Incineration facility; (iii) Composting facility; (iv) Recovery/recycling facility; (v) Waste depots/transfer stations; (vi) Establishment or expansion of on-site waste treatment facilities.	serve more than 1000 people. Proposed intervention has been discussed with and agreed by authorities
5.2.5. River-focused interventions to prevent erosion and flooding	Environment Management Act (EMA), No. 23 of 1996. Water Resources Act, 2013 CAP72.03	As described under section 24(1) of the Environmental Management Act, remedial flood and erosion control project river/water interventions are mentioned under its list A as projects for which an EIA is required for shoreline stabilisation projects where the shoreline involved is greater than 50 m. Water Right Permit is required to use and/or abstract water, build dams. The Water Resources Board established under the Water Resources Act is the authority for issuing relevant permits including dam rehabilitation and other related river works.	Not triggered. The length of gabions to be placed is less than 50 m per section. The city council confirmed an EIA is not required for this intervention. No obstacle to obtain Water Right Permit
5.2.6. Construction and rehabilitation of bridges and dams on Likangala River	Public Roads Act, CAP 69.02 , which provides for matters relating to public roads, including maintenance and compensation. Zomba city's planning standards and building by-laws apply within the city jurisdiction. Standard Specification for Road and Bridge Works of the Malawi Government (1978)	As described under section 24(1) of the Environmental Management Act, remedial flood and erosion control project are mentioned under its list A as projects for which an EIA is required for the construction of dams or weirs with a height of greater than 2 m, or which divert more than 20 m ³ per second, or any bypass channels or channel realignments to remedy riverine erosion or flooding. The Ministry of Public Works is the custodian of the Public Roads Act and the standard specifications. Designs will need to be approved by the City Council Public Works Committee and the Ministry to ensure compliance with technical standards.	Not triggered. No need to conduct an EIA. The intervention focused on rehabilitation of small sections of the dam. The dam itself is less than 2 meters high. Proposed intervention has been discussed with and agreed by authorities. There are no obstacles to obtain permits from the ministry and city council.
5.2.7 Sustainable urban forest management	Environment Management Act, No. 23 of 1996. National Forestry Act , specifically the ' Standards and Guidelines for Participatory Forestry in Malawi ', 2005, which provide the basis for all	As described under Section 24(1) of the Environmental Management Act, an EIA is mandatory for the establishment of forest plantations greater than 50 ha	Not triggered. All target areas for afforestation are smaller than 50 ha (see details in the corresponding sub-project sheet). No need to conduct EIAs. Proposed intervention

	<p>community level forestry interventions from tree planting through to co-management of state forest reserves/plantations</p> <p>National Forestry Policy (1996) and Forestry Act, CAP 63.01 (1997), related to the control and regulation of forest products; the declaration of forest reserves; the protection, control and management of forest products; tree planting and other enterprises.</p> <p>Forest Rules contain regulations on reforestation, tree felling, etc.</p>		has been discussed with and agreed by authorities
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Table 21: Sub-projects in Zomba, Malawi, and relevant national standards

➤ Mozambique

In Mozambique, the Environmental Law defines the legal basis for the use and management of the environment as a means of guaranteeing the country's sustainable development. According to this law, the EIA is an instrument that supports decision-making on the allocation of the environmental license. Environmental licensing shall precede any other legally required license in all public and private activities that may be directly or indirectly affected by the environment. The process of EIA is regulated by Decree n. 45/2004, while environmental auditing and environmental inspection are regulated, respectively, by Decree n. 32/2003 and n. 11/2006. The Proponent is responsible for the assessment process. The EIA is guided by the approved ToR that is established during the scoping stage. The methods of the assessment undertaken in the EIA have to be specified in the ToR. The EIA and simplified reports have to be submitted to MITADER. The EIA Process Rules define all stages of the EIA process - screening, definition of scope, content of studies, public participation process, review and approval by the environmental authority. Hence, the first step is the screening, which defines the type and level of detail of the environmental and social assessment study. The EIA Mozambican Regulation considers three categories:

Category A: comprises of projects that are of such complexity, magnitude, and likely to produce irreversible impacts, that they require strict monitoring with involvement of independent experts. They may involve economic and physical displacement that cannot be addressed under the specific Regulation on Resettlement Resulting from Economic Activities (Decree No. 31/2012, of 8 August), or they are positioned in areas characterized by highly valued biodiversity and habitats, animal and plants species on the edge of extinction, or may involve projects producing dangerous toxins (carcinogens), pesticides, and extraction and processing of minerals. Category A are projects with significant impacts, for example large scale infrastructures (airports, highways), large-scale agriculture, forestry, fisheries and related industries.

Category B: projects involve projects that have no significant impact and are not undertaken in sensitive areas, such as transmission lines, education complexes, and factories involving the production of various types of goods such as construction materials. Projects of Category B require the simplified EIA process including the formulation of ToR and of a Simplified Environmental Report (SER).

Category C: projects may create minimal negative impacts and have to comply with General Procedures of Good Practice in Environmental Management.

The project activities were pre-screened during the full proposal development with regard to the EIA requirements, of which the results are shown in Table 22. The process of Environmental Impact Assessment is managed at both national and provincial levels. Both levels have to ensure that the information of the Environmental Licenses is available to the public and that public consultation and hearings are held. Both levels are also competent to involve legal mechanisms to stop EIA activities, or suspend certificates of environmental consultants.

At the Central level, the Ministry of Land, Environment and Rural Development (MITADER) has to guide, review and decide regarding the reports of Categories A+ and A projects which include pre-feasibility studies, Terms of Reference and environmental impact assessment reports. The Ministry issues Environmental Licenses for Categories A+ and A projects and manages the involvement of independent review specialists. At the Provincial level, the Provincial Directorate of Land, Environment and Rural Development is responsible for guiding, reviewing and deciding on the Terms of Reference for simplified environmental impact assessment studies, as well as the General Procedures of Good Practice in Environmental Management for Category C projects.

National Guidelines and Norms for Safe Construction of Public Buildings developed in 2015 under the Safer School Project (2012-2015) supported by UN-Habitat, were endorsed by the Government in 2016, and are currently being applied by the Ministry of Public Works and Water Resources (MOPHR) and the Ministry of Education and Human Development (MINEDH). The guidelines are being disseminated to all public sectors throughout the country through on-the-job trainings and technical assistance by UN-Habitat.

Sub-projects (see <i>Annex 5</i> for more details)	Relevant rules, regulations and standards	Compliance, procedure and authorising entity	Principle 1 triggered during project preparation (and mitigation measure required)
5.3.1. Improving the overall drainage capacity of the city	Environmental Law 20/97 (under review); the potential risks associated with this kind of infrastructure are reduced, so the project is to be assigned to environmental Category B which requires a Simplified Environmental Study (SES); this classification is also because of the length of the main drainage channel to be improved, which is less than 10 km.	Ministry of Land, Environment and Rural Development (MITADER); Municipality of Chokwe A Simplified Environmental Study (SES) will be prepared for these interventions, including an Environmental Management Plan (EMP); the SES has to be submitted for Government review and publicly disclosed to the affected communities prior to appraisal. Decisions regarding EIAs for category B projects can also be taken at the provincial level, within the Provincial Directorates of MITADER.	Not triggered. No obstacle to prepare and submit a Simplified Environmental Study (SES). Proposed intervention has been discussed with and agreed by authorities
5.3.2. Construction of safe-havens	Environmental Law 20/97 ; the potential risks associated with this kind of infrastructure development are reduced, hence this intervention is likely to fall under Category B . Category B projects involve projects that have no significant impact and are not undertaken in sensitive areas, involving the production of various types of goods such as construction materials.	National Institute of Disaster Management (INGC); Municipality of Chokwe Projects of Category B require the simplified EIA process including the formulation of ToR and of a Simplified Environmental Report (SER). Decisions regarding EIAs for category B projects can also be taken at the provincial level, within the Provincial Directorates of MITADER. A disaster contingency plan needs to be prepared and submitted to the Municipal Council in coordination with INGC, including the safe location, the evacuation routes and the improvement of the early warning system.	Not triggered. Locations have been proposed by the municipality. No obstacle to develop and submit a disaster contingency plan Proposed intervention has been discussed with and agreed by authorities

5.3.3. Improving solid waste management	Urban Solid Waste Management Regulation, Decree no. 94/2014 , of 31st December approved the Regulation for the Management of Solid Municipal Waste ("Regulation"), revoking the Regulation on Waste Management, approved by Decree no. 13/2006, of 15th June.	The Regulation establishes the rules for the management of solid municipal waste within the territory of Mozambique and applies to every individual, as well as to public and private companies that are involved in the production and management of solid municipal waste or of industrial and hospital waste similar to municipal waste. The attributions concerning the management of solid municipal waste are divided between the Ministry that supervises the Environment Sector and the Municipal Councils and District Governments, within their respective areas of jurisdiction. For the sake of the Project the authorities will be the MITADER and the Chokwe City Council. All public and/or private entities that carry out activities connected with the management of solid municipal waste must produce and implement an integrated management plan for the solid municipal waste they manage.	Not triggered. No obstacle to obtain authorisation from the municipality. Proposed intervention has been discussed with and agreed by authorities
5.3.4. Establish early warning for floods at community level	Disaster Risk Management Law 15/2014 , which addresses different aspects of disaster management including prevention, mitigation of disaster effects, relief and assistance operations as well as reconstruction and recovery of affected areas	National Institute of Disaster Management (INGC); Municipality of Chokwe A disaster contingency plan needs to be prepared and submitted to the Municipal Council in coordination with INGC, including the safe location, the evacuation routes and the improvement of the early warning system.	Not triggered. No obstacle to develop and submit a disaster contingency plan. Proposed intervention has been discussed with and agreed by authorities

Table 22: Sub-projects in Chokwe, Mozambique, and relevant national standards

➤ Union of Comoros

In Comoros, the project complies with Environmental Law n. 94-018/AF, which aims in Article 2 to: a) preserve the diversity and integrity of the environment of the Republic of the Comoros, as an integral part of the universal heritage, which is particularly vulnerable associated with insularity; b) create the conditions for a sustainable quantitative and qualitative use of natural resources for present and future generations; and c) ensure an environmentally sound and balanced living environment for all citizens. The EIA process is governed by Decree n. 01-052/EC. The EIA of proposed works and activities must involve: a) an analysis of the condition of the site and its environment; b) an assessment of the foreseeable consequences of the implementation of the project on the natural and human environment; and c) the implementation of measures to reduce or eliminate harmful effects on the environment and others non-selected options for the implementation of the project.

The Framework Environmental Law provides for mandatory impact assessment study for major coastal and other developments which have or are likely to have environmental impacts. In accordance with Article 14 of the Environmental Law, the Union of the Comoros has a prescribed list of projects for which an EIA is compulsory. The activities identified for the city of Moroni, i.e. designing and building a drainage system, improving solid waste management at the neighbourhood level, rainwater harvesting at household level, according to this list, do not require a mandatory EIA.

Additionally, relevant to the project components in Comoros are the Accelerated Growth and Sustainable Development Strategy (SACADD), as well as the Urban Development Code and the Communal Development Plans. The project further follows the objectives of the National Environmental Policy and related action plan. Concerning the protection of natural habitats, the project will be implemented in the municipality of Moroni. It will not result in unjustified conversion or degradation of critical natural habitats, including those that are: a) legally protected; b) officially recommended for protection; c) recognised by authoritative sources for their high conservation value, including as essential habitat; or d) recognised as protected by traditional or indigenous local communities.

Sub-projects (see <i>Annex 5</i> for more details)	Relevant rules, regulations and standards	Compliance, procedure and authorising entity	Principle 1 triggered during project preparation (and mitigation measure required)
5.4.1. Reinforcing the drainage capacity in La Coulée neighbourhood	<p>Law n. 86-017 related to the Urban Development Code, which defines standards and procedures for carrying out works in urban areas</p> <p>Law of town planning and housing (Law 86-017)</p> <p>Environmental Law n. 94-018/AF, which regulates water management</p>	The drainage intervention needs to comply with the Urban Development Code. For this, authorisation and a permit from the National Directorate of Territorial Planning and the Municipality of Moroni will be obtained. In the territory of municipalities, as well as in agglomerations, anyone wishing to undertake a residential or non-residential construction must first obtain a building permit or building permit. The building permit is issued by the mayor after preliminary study of the file by the Regional Directorate of Urban Planning and Housing. The decision must be notified to the applicant within two months from the date of filing of the application.	Not triggered. No obstacle to obtain authorisation and a permit from the National Directorate of Territorial Planning and the Municipality of Moroni and comply with the Urban Development Code. Proposed intervention has been discussed with the municipality and no obstacles have been identified to obtain this authorization. The municipality also confirmed no EIA is required.
5.4.2. Establishing a community-managed rainwater harvesting system in La Coulée neighbourhood	<p>Law n. 86-017 related to the Urban Development Code, which defines standards and procedures for carrying out works in urban areas</p> <p>Environmental Law n. 94-018/AF, which regulates water management</p>	Authorisation needs to be obtained from the National Directorate of Territorial Planning and the Municipality of Moroni .	Not triggered. No obstacle to obtain authorization from the National Directorate of Territorial Planning and the Municipality of Moroni. Proposed intervention has been discussed with and agreed by authorities
5.4.3. Improving solid waste management in La Coulée and Médina neighbourhoods	Environmental Law n. 94-018/AF , which regulates waste management (Articles 59-65)	<p>Authorisation needs to be obtained from the National Directorate of Territorial Planning and the Municipality of Moroni.</p> <p>All administrative authorisation requests for a development project need to be supported by an environment impact assessment. The Directorate General for the Environment is responsible for the assessment of environment impact studies including environmental licensing approval process.</p>	Not triggered. No obstacle to obtain authorization from the National Directorate of Territorial Planning and the Municipality of Moroni. Proposed intervention has been discussed with and agreed by authorities

5.4.4. Setting up a flood early warning system in La Coulée neighbourhood	National Strategy for Disaster Risk Reduction National Contingency Plan. There is no relevant law yet. The National Action Program for Adaptation to Climate Change (NAPA) is the reference for climate change.	For the establishment of EWS and resilience/DRR related issues, strict coordination needs to be established with the General Directorate for Civil Security (DGSC)	Not triggered. No obstacle to coordination with the General Directorate for Civil Security (DGSC). Proposed intervention has been discussed with and agreed by authorities
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Table 23: Sub-projects in Moroni, Comoros, and relevant national standards

G. Overlap with other funding sources

Analysis of existing similar initiatives has taken place to avoid duplication. The project is designed to complement and synergise with similar on-going projects and programmes.

Despite the existence of initiatives in the four targeted countries for climate change adaptation and/or mitigation and disaster risk reduction (e.g. by the World Bank, DFID, USAID, UNDP, UNEP, among others), to UN-Habitat's knowledge, and based on a desk review as well as consultations with local governments and development partners, none is focusing solely on urban climate adaptation in the four cities targeted by this project and is adopting the proposed bottom-up approach, from the local level to the national and regional level. Based on a mapping of the most recent initiatives on climate change adaptation in all of the four countries, it has been noted that most interventions focus on rural areas and involve relatively modest funding amounts in the areas of disaster risk management.

However, several projects were identified that provide complimentary potential. An analysis of lessons learnt from these projects took place and was duly taken into account for the planned activities at the country level and are presented per country below.

➤ Madagascar

Direct overlap or strong complimentary potential could not be established, except for the integration of climate change impacts into national and regional planning, which will be taken into account when working at the national level on project activities under Component 2. The following relevant initiatives represent lessons learnt that are taken into consideration in this project:

- Sustainable and integrated littoral planning in Morondava (on-going); Budget: EUR 933,000 financed by AFD, Reunion Island Regional Council, European Union; Executing entity: Municipality of Morondava

The project aims to protect the city of Morondava against coastal erosion and floods by stabilizing the dunes and containing the erosion on the littoral. It further focuses on the dredging of the hydrologic network in the upstream watershed to allow the sediments to settle on the coast. A third intervention is planned with regard to dredging of the Hellot Channel from the sea to the port of Morondava. In order to ensure maximum synergies, discussions were held with the AFD team and the municipality and it was jointly decided that the two projects will operate in Morondava from the same office to facilitate experience sharing, cooperation and communication. To avoid overlap, the present proposal will focus on the inland flood problem in Morondava while coastal erosion issues are being addressed by the described project. Additionally, UN-Habitat has been invited to be part of the project's steering and scientific committees. This project will be able to build on the following activities planned by the described project: capacity building efforts; awareness-raising campaign about the benefits and mechanisms of coastal protection and rehabilitation; an environmental study on the littoral.

- Capacity building for the Menabe Regional Committee Development project (2016)

This project was built on the existence of the Menabe Regional Committee Development (CRD-Menabe) institution set up in 1996 and very active until 2006, with the objective of fostering local development. The initiative was launched by volunteers at the local level with the objective of organising thematic debates, meetings and training to strengthen capacities of local stakeholders. In 2016, internal training sessions have been organised to rekindle the institution. The proposed project will use the CRD network to organise training, awareness raising campaign and sharing of information. The CRD prepared a project proposal for waste collection and recycling in Morondava to be financed by Wateraid but is yet to be approved. If successful it could complement the activities planned under the proposed AF project.

- Coastal protection project in Morondava (2010); Budget: EUR 2,000,000; Donor: AFD (French Development Cooperation)

The project realised 170 m of coastal protection with gabions in order to protect the port area and infrastructure. The high cost of this kind of intervention prevents a replication along the complete length of the city coastline. The proposed project will thus involve cost-effective activities to live with potential flood risks from the sea.

- Tree planting by the ministry of fisheries (2016); Institutions involved: Ministry of Fishery and WWF

This intervention consisted of small-scale tree planting in Tanambao. The success of the project was limited due to a wrong choice of species and planting during the wrong season as well as insufficient community involvement. These lessons learnt are reflected in the project design: communities will be involved to the maximum level to ensure sustainability of the intervention on mangroves. The sub-project will benefit from advice of WWF with regard to planting season and appropriate species.

- Achieving Sustainable Reduction of Risks through Consolidation of Multi-Hazards Architectural DRR Solutions and Physical Planning (2015); Budget: USD 70,000; Donor: European Union, DG ECHO; Executing entity: UN-Habitat, Municipality of Morondava

See Part II, Section A, Component 1 for achievements and lessons learned.

- Adapting coastal zone management to climate change considering ecosystem and livelihoods (Menabe, Boeny, Vatovavy Fitovinany and Atsinanana) (2014-2019); Budget: USD 12,050,00 financed by GEF; Executing entity: UNEP, Ministry of Environment and Forests, Regional Administrations

The project is being implemented at the regional level and aims at reducing the vulnerability of the coastal zone to climate variability and change through institutional capacity building, concrete coastal adaptation interventions and integration of climate change into policy and planning. The proposed project will build upon the regional approach to coastal management for adaptation focused on ecosystem and livelihoods.

➤ Malawi

While the focus is still on rural areas, in Malawi the attention to climate change adaptation in urban areas is increasing due to rapid urbanisation and the increased frequency and intensity of disasters affecting urban settlements in recent years. The following relevant initiatives represent lessons learnt that are taken into consideration in designing this project:

- Enhancing Communities' Resilience Programme (ECRP) 2011-Sept 2017; Budget: GBP 28,000,000; Donors: Donors: DFID, Governments of Ireland and Norway; Executing entities: Two consortia led by Christian Aid and Concern Universal

The programme aimed at increasing the resilience of vulnerable communities to climate variability

and change and was implemented in 11 disaster prone districts. It promoted a variety of interventions including disaster risk reduction and early warning systems (EWS), agroforestry, disability and youths. Relevant lessons learnt and recommendations from this project are manifold:

1. Community involvement at all stages of project cycle enhances participation and sense of ownership.
2. With the alarming deforestation rates currently prevailing, cook stoves of any type should continuously be promoted.
3. Engaging youth in disseminating weather-related forecasts has been more helpful than just using the official DRM structures.
4. Partners are advised to link up with the Department of Climate Change and Meteorological Services through the Malawi Weather Forum for weather updates.

In response to this, the project design involves i.) meaningful participation by communities by consulting them throughout detailed project design (quotas in consultations) and involving them as local labour, ii.) promotion of energy efficient cook stoves; iii.) involving youth groups in the communication strategy, trainings and drills for the EWS; iv.) linking up with recommended institutions for timely weather information.

- Integrated waste management in Zomba City (2015); Budget: USD 100,000; Donor: Sister Cities International under the Sino-African Initiatives; Executing agency: Zomba City Council

This project focused on building a waste composting centre close to the sewerage centre in Likangala ward managed by Zomba city council. Poor community engagement and participation resulted in low uptake on waste separation and composting in this project. Lack of integration with existing programmes, weak procurement and project management also affected its implementation. As a lesson learnt from this project, the sub-project on solid waste management in Zomba builds on full community level involvement

- MASAF IV project: Strengthening safety nets systems in Malawi (safety net programs on productive community driven public work, Sept 2014-Sept 2018); Budget: USD 1,019,000; Donors: Malawi Government and World Bank; Executing Agency: Local Development Fund

This annual government programme targeting the poor to build small community assets in exchange for cash has built strong foundations for community engagement in project implementation. This lesson learnt is taken into account in the proposed project in that it will involve local labour as much as possible to ensure ownerships and sustainability. The proposed project will influence the productive public works projects in Zomba by integrating climate proofing in the created community assets.

- Lake Chilwa Basin Climate Change Adaptation programme (2010-2017); Donor: Embassy of Norway in Malawi; Executing Agency: LEAD International with the Malawi Forest Research Institute (FRIM).

The programme implemented afforestation activities in the three basin districts of Machinga, Phalombe and Zomba. LEAD International explains a very high survival rate of trees raised in tree nurseries (16% higher than the national average) with ownership by the communities. Bee keeping as alternative livelihood had furthermore provided security against theft of trees. Taking up this lesson learnt, community involvement is strongly anchored in the proposed project. The appropriate techniques regarding afforestation will be chosen with direct advice from the executing entities, hence lessons learnt will directly be integrated from the source. The creation of alternative livelihood options has been included into the project design as well. The project also installed weather stations within the basin that focus on recording data for scientific purposes on water resource management, established a community radio in Zomba City, installed gauges in the upper streams of two rivers in Zomba and included a communication and outreach

component. The proposed project will make use of the two river gauges and include them in the automated early warning system. It will also build upon the existing community radio station to include it in the dissemination strategy of early warning information.

- Waste for wealth project (2009-2012); Budget: USD 500,000; Donors: UNDP and One UN Fund; Executing Agency: UNDP and UN-Habitat

The project set up a waste transfer station and trained women to make compost. These “waste entrepreneurs” collected garbage from Lilongwe’s slums, sorting it and processing organic material into compost for sale. The project has proven to be very successful and driven economic growth: it has shown that turning trash to cash enables poor slum-dwellers to make a living. Such spontaneous growth reflects the project’s potential. The project ended in 2012 and has shown to be very sustainable thereafter. Six years after the project the women have built upon the model and expanded the same. The lessons learnt have been taken up in the project design which aligns with the income generating rationale (community waste entrepreneurs, see sub-project fiche solid waste management for Zomba). The project adopted a more decentralised/ localised approach in order to avoid one community being favoured over another.

➤ **Mozambique**

The initial mapping for complimentary projects in Mozambique resulted in a list of initiatives related to water resource management, disaster risk management and climate change adaptation. A vast portfolio of projects on climate change adaptation was found, especially in rural areas. The growing demand for urban adaptation projects is still not adequately met. The following relevant initiatives represent lessons learnt that are taken into consideration:

- Regional Multi-Sectoral DRR Assistance Programme for Southern Africa (concluded in 2013); Budget: USD 200,000, financed by European Union, DG ECHO; Executing entity: UN-Habitat; Municipality of Chokwe; Samaritans

The main objective of this project was to provide national and local institutions with technical support on disaster-resistant shelter and basic infrastructure as well as on urban resilience and risk reduction, in order to feed evidence for policy making at national and regional levels. In Chokwe two flood-adapted infrastructures were built and risk maps were developed. The infrastructure built by the project will be utilised in this project: an elevated community radio will be integrated as part of the proposed early warning system. Resulting from previous experiences, security will be reinforced to avoid possible vandalism and the management of the radio station will be transferred to the municipal authorities. A key lesson from this project was the importance of building capacities at the community level for promoting adaptive architecture in housing and public buildings such as schools, and improving local construction techniques.

- Achieving Sustainable Reduction of Risks through Consolidation of Multi-Hazards Architectural DRR Solutions and Physical Planning (2015); Budget: USD 80,000, Donor European Union, DG ECHO; Executing entity: UN-Habitat and Municipality of Chokwe

See Part II, Section A, Component 1 for achievements and lessons learned.

- Coastal Cities Adaptation Project (CCAP) (2014-2017); Budget: 15 million, Donor: USAID; Executing entity: Municipalities of Pemba and Quelimane, UN-Habitat

The project promoted and developed capacities to resilient housing construction through technical training to local builders and artisans. Outcomes were the construction of elevated flood-proof housing models using local building materials, and through a set of trainings and participatory sessions the development of the skills of local master builders. This project will build on the lessons learned for building adapted/elevated critical infrastructure, applying as much as possible techniques based on local material. Local builders will be involved in a set of training sessions to build their capacity for replicating the approach and ensure sustainability.

- Cities and Climate Change Project (concluded in 2013); Budget: USD 120,000,000; Donor: World Bank

The purpose of the project was to enhance the capacity of the city to adapt to climate change impacts like floods and sea level risk in the city of Maputo. The project implemented participatory risk mapping and the prioritization of actions to mitigate climate impacts and implemented rehabilitation of drainage channels and slum upgrading of the most vulnerable neighbourhoods. It further focused on local government capacity development in CCA, which resulted in the development of a Local Adaptation Plan for Maputo city. The lessons learned from the implementation of climate change adaptation and mitigation measures at city and neighbourhood level will bring an added value to the current proposal.

➤ **Union of Comoros**

Most recent climate change adaptation related interventions in the Union of Comoros have focused on rural areas, such as the GEF project: *'Enhancing Adaptive Capacity and Resilience to Climate Change in the Agriculture Sector in Comoros'* implemented by UNDP. The following relevant initiatives represent lessons learnt that are taken into consideration in designing this project:

- Strengthening Comoros Resilience Against Climate Change and Variability Related Disaster (2018-2022); Budget: USD \$8,932,421 (GEF) USD 250,000 (UNDP); pledged co-financing by the government USD 37,930,908; Donors: GEF-LDCF, UNDP; Executing entity: Government of Comoros - General Directorate for Civil Security (DGSC), UNDP

This 5-year project has recently started implementation and has the objective of strengthening the adaptive capacity of the Comorian population to manage the current disaster risks and reduce vulnerability to climate change. This proposal is highly aligned with the objective, outcomes and output of this project. The potential for complementarity is very high, as there are many areas of convergence but geographical focus differs for each project – as the GEF project targets various settlements and villages in 3 islands of the Union of Comoros. Discussions have been held and will continue with both UNDP and the DGSC to ensure a mutually beneficial collaboration especially for the following activities:

- The GEF project includes training on the integration of CC and DRR into policies and strategies. Activities under component 2 of the present project have a similar nature but with a focus on urban areas. Close cooperation with UNDP and DGSC will ensure that training and capacity building activities are integrated as much as possible with complimentary and mutually enriching contents.
- The GEF project will improve communication systems for the transfer of information and develop a telecommunications system to increase the capacity to receive and manage emergency calls at the national level. The flood early warning system will take this new technology into account and will be developed under the supervision of the DGSC.
- The GEF project will assess solutions, design and develop community-based water management systems in targeted local communities. Related collaboration will include exchanging know-how, experiences and overall information to contribute to better community rainwater harvesting systems under both projects.
- The GEF project will assess, design and implement flood prevention interventions. Coordination will be beneficial under the activities of the present project focusing on flood risk reduction.
- Establishment of system for disposal, collection and valorisation of recyclable waste in Moroni (2018); Budget: USD 285,000; Donors: European Union, Japanese Cooperation, French Cooperation; Executing entity: ONG 2Mains

This ongoing project will build a waste sorting and recycling centre and install 12 containers to serve as Voluntary Disposal Points (PAV) for recyclable waste, and conduct various awareness raising and capacity building activities. Extensive talks with the local NGO 2mains have already been held and contributed to designing the waste management intervention in Moroni. Importantly, the PAV container model served as inspiration for the collection points to be established in La Coulée and in the Medina by this project. They will also be integrated with the sorting and recycling centre, which will be functioning by July 2018. Close relationship will be kept with 2mains and joint awareness raising and training activities will be held when possible.

- Cities and Climate Change Initiative – City Resilience Action Planning in Moroni (2017); Budget: USD 50,000; Donors: Norway; Executing agency: UN-Habitat

See Part II, Section A, Component 1 for achievements and lessons learned.

- Integration of disaster risk reduction into policies for reducing poverty in the Union of Comoros (2012-2015); Budget: 475,000 USD; Donors: GFDRR; Executing entity: Ministry of Interior, Information and Decentralization, General Directorate for Civil Security (DGSC)

This project focused on establishing a database, developing a national policy and reinforcing capacities for disaster risk management. The lessons learned report mentions important challenges to be taken into account while implementing this project, such as the difficulty of mobilising international expertise, the lack of data, and a significant turn-over among key institutions and partners. The project has achieved important outputs that will be built upon during the implementation of this project:

- The elaboration of a National Strategy for Disaster Risk Reduction: under Component 2.1 of the present project, this document elaborated under the GFDRR project will be analysed and reviewed for introduction of concepts of urban resilience/climate change adaptation.
- The National Contingency Plan: this document is particularly relevant for the establishment of an early warning system and appropriate alignment will have to be ensured. Gaps related to urban risk and specific contingency measure should be also addressed.
- The GFDRR project organised trainings and workshops at different levels on DRM and climate change. Lessons learned from conducting these trainings are taken into account.
- Institutional and community support for early warning system for volcanic eruption (2008-2010); Donors: European Union (DG ECHO); Executing entities: Comorian red crescent, COSEP, Observatory of the Karthala

The project was successful establishing an early warning system for monitoring volcanic activity at the national level. A series of lessons learnt have been taken into account for the conception of the flood early warning system sub-project under the present proposal. The need for local systems closely linked with national coordination mechanisms, and to raise awareness at community level regarding the risks they face. Local media are key actors for a functional and efficient early warning system. Use of satellite phones with subscription is efficient but problematic due to complications to maintain subscription and difficulties of use by communities. UHF/VHF radio may be a viable alternative.

H. Learning and knowledge management

Lessons learned from earlier projects in the countries that relate to climate change adaptation have systematically been taken into account and influenced the project design as outlined in section G above. For the sake of continuous learning from the proposed sub-projects and initiatives at the city, national and regional levels, as well as fostering knowledge transfer and sharing, the learning and knowledge management strategy of the proposed project is inspired by UN-Habitat's Results Based Management Framework which focuses on achieving results, improving performance, integrating lessons learned into management decisions and monitoring

and reporting on performance. The project's knowledge management system includes clear mechanisms on how to capture, analyse, learn, transfer and share lessons from the sub-projects and initiatives to be undertaken.

First, the KM system enables **capturing and analysing information and learning lessons** from knowledge related to the adaptation focused projects.

The Project Supervision Team (PST), which will include a Knowledge Management Assistant, will coordinate the overall knowledge management and project communication. It will carry out regular project monitoring at all levels in line with the arrangements for monitoring, reporting and evaluation (see Part III, section D). As such, it will be responsible for producing/facilitating (i) M&E plans; (ii) a project inception report; (iii) 6-month, annual and terminal project performance reports; (iv) the mid-term review; (v) technical reports; and (vi) the independent terminal evaluation.

A database for all information on the project will be managed by the PST, including but not limited to the reports above. It will be the central storage for all project outputs captured under project monitoring and review documents and knowledge products and will reduce time required for locating information. This will ensure retrieving and capturing lessons learnt. The database will become a knowledge base of the types of interventions that are successful, and more generally, what works, what does not, and why. In order to ensure that documents are not simply being accumulated, it will be ensured that lessons learnt are fed back to the process for continuous learning and that they influence strategy development and further implementation.

Second, the KM system integrated in the project enables **transferring the lessons learnt and fostering knowledge sharing** with all climate change stakeholders. This will be realised through Components 2 and 3 of the project. Component 2 includes systematic bottom-up dissemination of lessons learnt from local to national levels, whereby lessons learnt from the local level will be presented at the national level and translated into useful training guidelines and recommendations for evidence-based policy making. Component 2 includes the further refinement of the CityRAP tool. Under this aspect the project aims at widely disseminating the tool and making it accessible to other cities and communities at no cost. The knowledge management strategy foresees producing informative and easily accessible formats (e.g. videos and online tutorials) that guide municipalities/stakeholders to use the tool independently.

Component 3 is dedicated to inter-country experience sharing, cross-fertilisation and dissemination of lessons learned at the regional level. The component focuses on transferring knowledge from one city and country to another to improve processes, capitalizing on key lessons learned and will assist in streamlining currently scattered and sometimes duplicated efforts. It further focuses on systematically keeping track of experiences gained from the project both to enrich the local, national and global knowledge on climate change adaptation and to accelerate understanding about what kinds of interventions and processes can be seen as best practices for potential replication in the region. Knowledge exchange between the four countries is at the core of the project. Regional workshops will be organised with a view to capturing and disseminating lessons learnt from the locally implemented sub-projects.

DiMSUR will be the custodian for knowledge management and sharing, in line with its Charter's objective to "enable DRR, CCA and urban resilience knowledge, information and exchanges between member States." DiMSUR aims at compiling and disseminating technical knowledge, functioning as a service provider and performing as a partnership hub for the benefit of its members in its core areas. Key findings of the project will be published in peer-reviewed journals and presented at international conferences to enrich the global debate. DiMSUR has mechanisms for information sharing on progress, lessons, plans, and milestones through its website which is

frequently being visited (www.dimsur.org),⁵⁵ social media (Facebook and Twitter), and a regular newsletter that is distributed to a wide audience. These will be leveraged to disseminate information on the process in all four countries as well as lessons learnt throughout the project. Another relevant tool for capturing lessons learnt is the SADC web portal for sharing DRR experiences in the region. A media outreach strategy will include issuing press releases and inviting local and national media to participate at key project stages.

Overall, knowledge sharing will include webinars, workshops, conferences and a wide range of knowledge products (lessons learned, data, and information on the processes) that will be publicly accessible and widely disseminated, as well as increased capacity/knowledge among all stakeholders. An overview table is given below for each component and relevant knowledge management products.

Expected project outputs	Learning objectives (lo) & indicators (i)	Knowledge products
<i>Expected Output 1.1.</i> Sub-projects implementation plans	(lo): Improved understanding of local social and environmental risks pertaining to the sub-projects (i): Number of environmental and social risk assessment studies	Detailed plans for sub-projects, including all technical specifications and designs
<i>Expected Output 1.2.</i> Priority sub-projects implemented	Improved knowledge of concrete urban climate adaptation projects implemented locally (i): Number of best practices obtained and shared	<ul style="list-style-type: none"> • Project reports and detailed data collected in each city • Where applicable, physical demonstration sites, including innovative solutions, and training material related to adaptive architecture/infrastructure
<i>Expected Output 1.3.</i> Municipal staff and community members mobilised, trained and equipped	(lo): Improved knowledge of management/ maintenance of the priority interventions locally (i): Number of municipal staff and community members trained	<ul style="list-style-type: none"> • Training material for each city targeting communities (at both city and community level) • Reports of community-to-community learning exchanges within the target cities
<i>Expected Output 2.1</i> National tools/guidelines/policies/ legislation for promoting urban climate adaptation	(lo): Improved national guidelines/policies/legislation for promoting urban climate adaptation (i): Number of guidelines, policies, legislation developed	<p><u>Madagascar</u>: Climate risk assessment guide for urban areas, integrated in the national directives for promoting urban climate resilience; Updated National Strategy for Climate Change Adaptation for Urban Areas</p> <p><u>Malawi</u>: National guidelines for assessing climate change impacts and for climate proofing infrastructure in urban areas; policy documents for building urban resilience, with focus on climate-related risk; guidelines for promoting the green cities concept; climate-related building codes/standards integrated in the Revised Safer Housing Construction Guidelines</p> <p><u>Mozambique</u>: Report on the possibility of transforming the CityRAP tool into a legal instrument; studies to further integrate climate change adaptation and urban resilience into existing legislation and strategies</p> <p><u>Comoros</u>: Improved existing guidelines on urban resilience and adaptation to climate change; feasibility report on introducing concepts of urban resilience/climate change adaptation in existing policy and legislation</p>

⁵⁵ In the second half of 2016, the website showed a total of 225,646 visitors, with monthly visitors of up to 56,000 people, highlighting the demand and interest in the region.

<p><i>Expected Output 2.2</i></p> <p>National and local officers trained in urban climate adaptation techniques and approaches</p>	<p>lo): improved capacity in urban climate adaptation (i): number of national/local officers trained</p>	<p><u>Madagascar</u>: Improved academic curricula and training resources for promoting climate change adaptation in urban areas at the national level; training materials for adapting to climate change in urban areas targeting local and regional authorities</p> <p><u>Malawi</u>: Training materials in climate change and urban resilience targeting municipal and national officers; training materials of urban disaster risk management committees</p> <p><u>Mozambique</u>: Report on organised National Urban Resilience Dialogues with focus on climate change adaptation; training materials on urban resilience and climate change adaptation tailored to different target groups</p> <p><u>Comoros</u>: Training of trainers materials; report on implementation of CityRAP in at least 2 or 3 cities on every island</p>
<p><i>Expected Output 3.1.</i></p> <p>Lessons learnt and best practices captured and disseminated through the SADC DRR Unit in partnership with DiMSUR</p>	<p>(lo): Improved knowledge and experience exchange around urban climate adaptation in southern Africa (i): number of publicly shared knowledge products</p>	<ul style="list-style-type: none"> Articles published on the DIMSUR and SADC web portals for the general public, informing of the process of project implementation in the different countries At least one scientific article published in a peer reviewed journal capturing the lessons learnt from project implementation for the global academic audience
<p><i>Expected Output 3.2.</i></p> <p>Cross-fertilisation activities among the participating countries</p>		<ul style="list-style-type: none"> One detailed report per country on project Component 2 capturing lessons learnt and best practices One video per country on project Component 2 capturing lessons learnt and best practices Good practice guides on climate change adaptation solutions derived from local project implementation Reports of country-to-country and city-to-city learning exchanges
<p><i>Expected Output 3.3.</i></p> <p>Regional workshops for experience sharing and participation in global events</p>		<p>Reports of regional best practice workshops for project stakeholders and for global dissemination</p>

Table 24: Knowledge management objectives and indicators

I. Consultative process

This project proposal is funded by the Adaptation Fund and aims to comply with all policies with special attention to its Environmental, Social and gender Risk policies. To this end, relevant project information has been timely and regularly presented to relevant stakeholders, from the concept stage to the full proposal stage, to ensure the engagement of partners, targeted institutions and communities allowing to address comments and concerns and make the necessary changes in the project design. Public consultations considered all Parties affected by possible social and environmental risks, involving marginalised and vulnerable groups and guaranteeing a gender sensitive process.

This section provides an overview what consultations took place during project preparation. Public consultations with target communities/marginalised and vulnerable groups focused on: 1) identification of specific needs and issues regarding proposed interventions that address climate

change related issues (as identified through the CityRAP process); 2) identification and verification of potential environmental and social risks and impacts related to these interventions; and 3) identification of mitigation measures when needed. As outlined in the Part I, Section A, consultations at the regional level focused on project design with the SADC Disaster Risk Reduction Unit. At the national level, consultations focused on line ministries in order to identify national needs and concerns regarding the project, especially concerning Component 2 (see table 25 below). At the local level, consultations focused on identifying local needs and concerns regarding the project and to identify relevant technical standards and how to comply with these.

Annex 2 (Cross-cutting issues) includes information about specific groups needs and issues and how proposed interventions address these

Annex 3, in which all information demonstrating compliance with the ESP is consolidated, will be made available as a separate document for public consultation after approval from the Fund, as otherwise more expectations will be raised (which, if not fulfilled, may give place to frustration of community members already consulted several times on the same). The ESMP and this whole project proposal is the result of all the consultations held. **Annex 3** includes: Purpose, Process to comply to the AF ESP, Summary description of the project, Screening and categorisation, Environmental and social impact assessment and Environmental and Social Management Plan (ESMP).

Arrangements to implement the ESMP are described in Part III Section C and include: (i) Risks management arrangements; (ii) Risks monitoring and evaluation arrangements; (iii) Grievance mechanism; (iv) Overview of potential risks and mitigation measures; and (v) monitoring arrangements.

Annex 4 provides evidence, details and the methodological approach of all consultations held.

Stakeholders	Directly involved in project implementation	Indirectly involved in the project implementation	Minority, indigenous stakeholder and groups	Gender consideration in stakeholder identification
Madagascar				
National and Regional level	<ul style="list-style-type: none"> Ministry of Environment, Ecology, Sea and Forestry (AF Designated Authority) 	<ul style="list-style-type: none"> Menabe region representatives Regional Directorate of the Environmental Ministry Regional Directorate of the Ministry of Population, Social and Woman Protection BNGRC World Wide Fund for Nature (WWF) 	<ul style="list-style-type: none"> Association of women with disabilities Grass-roots associations (Ambohotsim arani) 	<ul style="list-style-type: none"> Morondava women association involved Gender parity have been encouraged for every consultation exercise
Municipal level	<ul style="list-style-type: none"> Morondava City Council including Mayor, deputy mayor, focal points of the CityRAP process Chiefs of relevant municipal departments and technical staff 	<ul style="list-style-type: none"> Chiefs of other municipal departments and technical staff Focal point of ongoing relevant projects Journalists Environmental local associations Local development and risk committees 	<ul style="list-style-type: none"> Morondava school district authority There is no indigenous population in Morondava 	
Community level	<ul style="list-style-type: none"> Targeted neighbourhood population: Ampasy, Avaradrova, Sans fil and Tanambao 	<ul style="list-style-type: none"> Representatives of other neighbourhoods 	<ul style="list-style-type: none"> The Red Cross 	

Malawi				
National level	<ul style="list-style-type: none"> Ministry of Finance, Economic Planning and Development (AF Designated Authority); DoDMA; Department of Environmental Management Affairs – Climate Change Section; Department of Forestry 	<ul style="list-style-type: none"> Forest research Institute of Malawi (FRIM) 	<ul style="list-style-type: none"> Marginalized and vulnerable groups (Youth, older persons, Disabled, HIV, orphans) have been consulted There is no indigenous population in Zomba 	<ul style="list-style-type: none"> Consultations with women groups have been organised in Chambo and Sadzi Gender parity have been encouraged for each consultation
Municipal level	<ul style="list-style-type: none"> Zomba City Council including Chief Executive, Chief Urban Planner; Chief Engineer and focal points of the CityRAP process 	<ul style="list-style-type: none"> Head of municipal departments and technical staff Community Mobilizer Zomba District Forest Office Relevant NGOs Representatives (LEAD international) Sub-contractors for engineers works in Zomba 		
Community level	<ul style="list-style-type: none"> Targeted neighbourhoods: Chambo, Likangala, Mbedza and Mtiya 	<ul style="list-style-type: none"> Representatives of other neighbourhoods 		
Mozambique				
National level	<ul style="list-style-type: none"> Ministry of Land, Environment and Rural Development (MITADER) (AF Designated Authority); INGC 	<ul style="list-style-type: none"> Oxfam Mozambique FIPAG (Investment fund for Water Supply Assets) ARA-Sul (Water Administration of the Southern Region) 	<ul style="list-style-type: none"> Marginalised and vulnerable groups (Youth, Older persons, Disabled) have been consulted There is no indigenous population in Chokwe The Red Cross 	<ul style="list-style-type: none"> Consultations with women groups have been conducted in the targeted neighbourhoods Gender parity have been encouraged for every consultation or working group
Municipal level	<ul style="list-style-type: none"> Chokwe City Council including the Mayor, municipal councillors of Urbanization, Environment and Social Sectors and technical staff from the urbanization sector 	<ul style="list-style-type: none"> HICEP (Chokwe Hydraulic) 		
Community level	<ul style="list-style-type: none"> Targeted neighbourhood 2, 3, 4 and 5's communities members 	<ul style="list-style-type: none"> Representatives of other neighbourhoods 		
Union of Comoros				
National level	<ul style="list-style-type: none"> General Directorate of Civil Security (DGSC) (AF Designated Authority); different ministries Directorate General of Civil Security 	<ul style="list-style-type: none"> The Karthala Volcanological Observatory Ulanga Ngazidga NGO The Comorian Red Crescent Society The Comoros University The National Agency for Civil Aviation and Meteorology The National association of Mayors National Department of Statistics Department of Environment and the Climate Change Alliance 	<ul style="list-style-type: none"> Comorian Red Crescent Elderly, people with disabilities and youth have been invited to participate in the consultations. There is no indigenous 	<ul style="list-style-type: none"> The National Network for Women and Development participated in different stages of the project proposal design Groups of women actively participated in the community consultations

		Office. • Department of Environmental and Climate Change Alliance Office	population in Moroni	• Gender parity have been encouraged for every consultation
Municipal level	• Moroni City Council	• Local NGO 2 Mains • Consultant engineer		
Community level	• Chief of communities and community representatives of La Coulée and Medina	• Chief of communities of other neighbourhoods		

Table 25: Stakeholders' map

Project information available for public disclosure

Project information has been shared with government representatives involved in the project proposal in each country (see **Annex 4**). Also, all relevant project information has been shared with each targeted municipality at the different stages of the project design, allowing them to raise concerns and make comments on the content. At the community level, due to the high level of illiteracy, the fact that communities mostly speak local languages and the complexity of the project proposal, information has been translated, simplified and presented to the communities in order to maximize the level of understanding and interaction/participation during local consultations. Response delivery has been done orally during on-site meetings due to the limited capacity of the consulted population to provide written comments and thus ensuring that everyone had the opportunity to raise their concerns.

Particular attention has been given to the timing and location of the consultations, taking into account local work habits and culture to ensure a maximum access for all to participate, including marginalized and vulnerable groups and women. Consultations in the targeted neighbourhood have been organised in community centres or open common areas to be easily accessible by participants. Groups of discussion have been organised with women due to the fact that in the targeted communities of the project, women often face difficulties to be heard in public. Also, discussions with marginalised and vulnerable groups such as HIV persons have been conducted in most private areas to ensure their freedom of expression and security. Due to the difficulty of organising groups of discussion in the Comorian context with HIV positive persons, the consultations were organised with the Comorian Crescent to ensure that the needs of this group and other marginalised and vulnerable groups are taken into account.

Stakeholder, incl. role / function	Consultation objective	Outcome	Conclusion
Madagascar			
Ministry of Environment, Ecology, Sea and Forestry (AF Designated Authority)	Identification of national needs and concerns regarding the project, (especially for Component 3) and role in project execution	Project proposal endorsed; Activities under Component 3 have been more detailed	Priority tools, guidelines and trainings identified
Malawi			
Ministry of Finance, Economic Planning and Development (AF Designated Authority); DoDMA; Department of Environmental Management Affairs – Climate Change Section; Department of Forestry	Identification of national needs and concerns regarding the project, (especially concerning Component 3) and role in project execution	Project proposal endorsed; Activities under Component 3 have been more detailed	Priority tools, guidelines and trainings identified

Mozambique			
Ministry of Land, Environment and Rural Development (MITADER) (AF Designated Authority); INGC	Identification of national needs and concerns regarding the project, (especially concerning Component 3) and role in project execution	Project proposal endorsed by MITADER and INGC, with some few recommendations to be integrated, and agreement in implementing part of Component 3	Detailing of the activities which will be under MITADER and INGC responsibility
Union of Comoros			
General Directorate of Civil Security (DGSC) (AF Designated Authority); different ministries	Identification of national needs and concerns regarding the project, (especially concerning Component 3) and role to in project execution	Project proposal endorsed Activities under Component 3 have been more detailed	Priority tools, guidelines and trainings identified

Table 26: Overview of main stakeholder groups consulted during project preparation at national level

Consultation timeline

At city and community level, as mentioned the project background, UN-Habitat has carried out preliminary work through the CityRAP Tool in the target countries. The identification of priority actions for building urban resilience has been a highly participatory and comprehensive process. In each target city, a team of municipal technicians was trained and conducted the process of data collection and analysis, prioritisation and drafting of a city resilience action plan under the lead of the municipality, with UN-Habitat providing support and strategic advice. The consultations involved local authorities, municipal technical staff and communities most affected by risks and climate change, as well as civil society organisations.

The priorities set by key stakeholders consulted in each city have formed the basis for selecting priority investments/activities, in the form of sub-projects, as outlined in Part II, Section A. The final selection of these priority interventions has been made with the target communities through in-depth local consultations between June and October 2017, as well as in March 2018 by using the following selection criteria:

- Critical resilience building needs responding to climate change impacts;
- Cost-effectiveness of the identified priority investments/activities;
- Consideration of potential environmental and social impact and risks and the required mitigation measures, as necessary;
- Envisaged positive economic, social and environmental benefits of the priority investments/activities;
- Sustainability of the priority investments/activities;
- Avoidance of possible duplication of efforts already undertaken at the city level.

It is important to note that a mapping of marginalised and vulnerable groups of the targeted communities of the project have been conduct in a participatory manner during the first step of the CityRAP process. Indeed, the selection of the most vulnerable neighbourhoods selected for the project implementation is based on multiple selection criteria. It includes the analyse of risk prone areas but also social and economic vulnerability such as unemployment rate particularly affecting woman and youth, age composition, number of people living with disabilities, presence of minorities and their integration within the communities, among others. This information has been used to prepare the consultation process together with the municipal support and knowledge to engage with relevant groups that could potentially be affected by the project implementation according to local specificities.

After the preliminary work carried out through the participative process of the CityRAP methodology to identify and select the priority activities at the community level at the concept proposal stage, detailed information of each sub-project have been duly presented to targeted communities. In-depth local consultations have been conducted including marginalized and vulnerable groups and adopting a gender-sensitive approach with priority given to all directly affected stakeholders. The process of local consultations included further collection of specific data about the communities and their specific concerns and needs. In addition, climate risks and the barriers faced by the communities to adapt and address climate risk have been discussed.

In all local consultations it was ensured that the voices of marginalized and vulnerable groups were captured and that there was appropriate gender representation. Marginalized and vulnerable groups were specifically consulted in a series of consultations in all target cities in September and October 2017 as well as in March 2018 with a view to collect more information on the revising the final selection of interventions by considering the specific needs of marginalised and vulnerable groups. Special attention had been paid to identify and involve groups with increased vulnerability to climate change. For example, fishermen of Tanambao neighbourhoods in Morondava have been very active during communities' consultations. Their livelihood activity depends on the preservation of mangroves, which play a considerable role in coastal protection and mitigate chronic disturbance events accentuated by climate change. Through community consultations they have been informed about project design allowing them to raise comments and concerns, all of which have been addressed while finalising the project proposal.

Between October and November 2018, more consultations have been conducted to develop Environmental and Social Impact Assessments (ESIA) and propose Environment and Social Management Plans (ESMP) for each targeted city. To proceed, a team of expert collected data, visit project sites and organise consultations with regional and local authorities, community representatives, CSOs and NGOs and other relevant stakeholders to produce and agree on an ESMP for the four cities. ESMPs have been structured into screening, assessment, mitigation measures and monitoring during on-site mission and presented to communities, municipal representatives and other relevant partners in Morondava, Moroni, Chokwe and Zomba (see links to attendance lists in **Annex 4**). Comments and concerns have been collected during the respective public disclosures and the proposal has been revised accordingly. In each city, the presented ESMP has been approved and a letter of support was signed by the respective Mayors (see **Annex 4**).

The consultative process for each country took place following the consultative timeline as described below:

	Consultation	Date	Participants	Results
Madagascar				
Municipal level	CityRAP prioritisation workshop	15 March 2016	26 representatives of local stakeholders, including communities and municipal staff	Priority activities to build urban resilience in Morondava identified
	CityRAP validation workshop	15-17 March 2016	23 representatives of local stakeholders, including communities and municipal staff	Validation of the priority issues and activities identified in the City Resilience Action Plan of Morondava
	Assessment of project activities	6 December 2016	20 representatives from the Menabe Region, the Morondava municipality, the fokontany (neighbourhoods) of Ampasy, Avaradrova, Sans fil and Tanambao, the technical services of the Ministry, the Morondava Women and Youth Association, journalists and the local development and risk management committees.	The participants approved the proposed activities to be carried out in the project.
	Preparation of the environmental	Between 23-26 October 2017	City council: Mayor, deputy mayor; focal points of the CityRAP process	City council fully supported the mission (with technical specialist made available for the full week).

	and social risk screening sheets and grievance mechanisms			They propose that grievance mechanism should be done through radio, based on what already exist but should be improve. The question needs also to be raised during community consultations.
Municipal level	Meetings to review the ESIA and develop the ESMP	8 -11 October 2018	City council: Mayor, deputy mayor; focal points of the CityRAP process, officers of municipal departments of social services, water and sanitation and urban planning. Representative of regional authorities: chef of the forests regional services, regional director of the Ministry of Population, representative of the school district representative, focal point of the Disaster Risk Management Unit, responsible of landscape preservation of WWF and the Red Cross.	City council fully supported the mission and facilitated requested meetings with regional authorities and other relevant partners.
	Public disclosure of the ESMP	12 October 2018	Mayor, deputy Mayor, Secretary General of the Prefecture, red cross representative, chief of communities, CityRAP focal points, 2 representatives of youth associations.	The draft ESMP has been presented, including identified risks and mitigation measures. One comment regarding the social risk link to employment rules to emphasized the specificity of the IMO (Intensité de Main d'Oeuvre) rule at the national level.
Community consultations	Local consultations to discuss proposed activities with targeted communities	Between 26-30 June 2017	Community members of Tanambao, Ampass, Avaradova and Sans Fil.	Preliminary activities selected
	Site visits and local consultations	Between 23-26 October 2017	Community members of Tanambao, Avaradova and Sans Fil	Assessment conducted of the feasibility and social and environmental risks of the planned project activities.
	Technical environmental and social assessment	March 2018	Community members and focus group discussion with women with vulnerabilities and women associations	After presentation of project content, comments, concerns and recommendation have been raised by participants
	Community consultations for the development of the ESIA and ESMP	8 -11 October 2018	Community members of Tanambao, Ampass, Avaradova and Sans Fil	A set of questions has been asked to check population composition, and existent public facilities and services, understand income generating activities, as well as discussing environmental risks.
Malawi				
Municipal level	CityRAP prioritisation workshop	27 November 2015	Representatives from the local communities of Chambo, Likangala, Mbedza and Mtiya and municipal technicians	Priority activities to build urban resilience in Zomba identified
	CityRAP validation workshop	27 November 2015	Representatives from the Zomba City Council, municipal technicians and community representatives.	Validation of the priority issues and activities identified in the City Resilience Action Plan of Zomba
	Assessment of project activities	December 2016	Zomba City Council	Validation of proposed activities at the concept note stage
	Preparation of the environmental and social risk screening sheets and grievance mechanisms	25-29 September 2017	City council: Chief Executive, Chief Urban Planner; Chief Engineer; Community Mobilizer	Environmental and social risk screening sheets filled in; Agreement reached on final interventions subsequent to project site visits and analysis of all data at the end of the week; Understanding reached regarding grievance mechanism

	Meetings to review the ESIA and develop the ESMP	23-26 October 2018	City council: Chief Executive, Chief Urban Planner; Chief Engineer; Community Mobiliser. Representative of regional authorities: Zomba District Forest Office, Forest Research Institute of Malawi, Malawi National Herbarium/ Zomba Botanical Gardens	City council fully supported the mission and facilitated requested meetings with regional authorities and other relevant partners.
	Public disclosure of the ESMP	25 October 2018	City Council members (including the CEO), community leaders and members, NGOs, local institutions and academics.	The draft ESMP was presented, including identified risks and mitigation measures. Participants raised some questions and made some comments and suggestions in particular regarding the management of afforestation and reforestation activities.
Community consultations	Local consultations to discuss proposed activities	Between 12 - 16 June and 22 - 24 July 2017	Representatives from all wards participated including representation of women, youth, older persons and disabled	Preliminary activities selected
	Project site visits and local consultations	25-29 September 2017	Ward committee members and representatives in Likangala ward (two females and five males, out of which 2 youths); marginalized and vulnerable groups (youth, older persons, disabled, HIV, orphans) and women in Chambo and Sadzi ward	Assessment conducted of the feasibility and social and environmental risks of the planned project activities based on the project presentation. Comments, concerns and recommendation have been raised by participants
	Community consultations for the development of the ESIA and ESMP	23- 26 October 2018	Representatives from the local communities of Chambo, Masangola and Mtiya and municipal technicians	A set of questions has been asked to check population composition, existent public facilities and services, understand income generating activities, as well as discussing environmental risks.
Mozambique				
Municipal level	CityRAP prioritisation workshop	1 September 2015	30 representatives of local stakeholders, including communities and municipal staff	Priority activities to build urban resilience in Chokwe identified
	CityRAP validation workshop	3 September 2015	40 participants of local stakeholders, including communities and municipal staff	Validation of the priority issues and activities identified in the City Resilience Action Plan of Chokwe
	Preparation of the environmental and social risk screening sheets and grievance mechanisms	30 October to 3 November 2017	Municipal Councillors of Urbanisation, Environment and Social Sectors staff including municipal technicians from the urbanization sector	Work plan for field visits agreed to conduct the feasibility and social environment risks assessment
	Meetings to review the ESIA and develop the ESMP	15 -17 October 2018	City council: Mayor, Responsible of the urban planning and sanitation service, municipal departments of agriculture, heritage, urban planning and sanitation as well as social services, Chokwe Hydraulics Representative of regional authorities: Water Administration for the Southern Region	City council fully supported the mission and facilitated requested meetings with regional authorities and other relevant partners.
	Public disclosure of the ESMP	19 October 2018	HICEP representative, chiefs of communities (neighbourhoods 3B, 4, 5 and 6), chiefs of municipal department for urban planning and social services, 3 municipal staff of both urban planning and social services.	The draft ESMP has been presented, including identified risks and mitigation measures; One comment regarding the risk of erosion and proposed mitigation measures: the cost of gabions will probably be too expensive.

Community consultations	Local consultations to discuss proposed activities with targeted communities	10 and 14 July 2017	Community members of targeted neighbourhoods	Preliminary activities selected
	Project site visits and local consultations to validate the selected priority interventions	30 October to 3 November, 2017	More than 200 people attended community members; Separate sessions have been undertaken in the four target neighbourhoods with marginalised and vulnerable groups, i.e. women, older persons as well as people with disabilities.	Assessment conducted of the feasibility and social and environmental risks of the planned project activities based on the project presentation. Comments, concerns and recommendation have been raised by participants
	Community consultations for the development of the ESIA and ESMP	15 -17 October 2018	Communities representatives of targeted neighbourhood, including METRAMO representatives (traditional medicine association)	A set of questions has been asked to check population composition, existent public facilities and services, understand income generating activities, as well as discussing environmental risks.
Union of Comoros				
Municipal level, including government counterparts	Preliminary stakeholder consultation	9 December 2016	Representatives from the Directorate General of Civil Security, the Karthala Volcanologic Observatory, the NGO Ulanga Ngazidja, the National Network for Women and Development, the Comorian Red Crescent Society, the Comoros University, the National Agency for Civil Aviation and Meteorology, the Association of Mayors	Activities discussed at the concept note stage
	CityRAP prioritisation workshop	August 2017	Local stakeholders, including communities and municipal staff	Priority activities to build urban resilience in Moroni identified
	Preparation of the environmental and social risk screening sheets and grievance mechanisms	20-24 November 2017	City council: General Secretary, urban planner; chief of communities, local NGOs	Assessment conducted of the feasibility and social and environmental risks of the planned project activities.
	Meetings to review the ESIA and develop the ESMP	2-5 October 2018	City council: Mayor, Deputy Mayor, General Secretary, responsible for logistics, head of urban services, Mayor's adviser. Representative of regional/ national authorities: Civil protection, national department of statistics, department of Environment and the Climate Change Alliance Office	City council fully supported the mission and facilitate requested meetings with regional authorities and other relevant partners.
	Public disclosure of the ESMP	30 November 2018	Secretary General of the Municipality, CATI representative, Deputy Mayor, community representatives, representative of the DGSC, urban planning department officer.	The draft ESMP was presented, including identified risks and mitigation measures. Some comments have been made regarding the location of waste disposal sites and the design of the drainage system construction. In addition, the municipality shared its experience with the union of association to ensure the dialogue with communities that can contribute to the implementation phase.
Community consultations	Local consultations to discuss proposed activities with	June 2017	Community members of targeted neighbourhoods	Preliminary activities discussed

	targeted communities			
	Project site visits and local consultations to validate the selected priority interventions	20 and 24 November. 2017	Community members and representatives of La Coulée, Madjadjou-Djomani, Oubodoni-Mboueni and Badjanani-Mtsangani; Among them, groups of older persons and women	Assessment conducted of the feasibility and social and environmental risks of the planned project activities
	Technical environmental and social assessment	March 2018	42 community members of La Coulée, including a women focus group (25 women)	After presentation of project content, comments, concerns and recommendation have been raised by consulted population
	Community consultations for the development of the ESIA and ESMP	2-5 October 2018	Consultation with La Medina and La coulee community leaders and members of the community including women, older persons and youth.	A set of question has been asked to check population composition, existent public facilities and services, understand income generating activities, as well as discussing environmental risks.

Table 27: Consultation timeline with municipalities and communities

J. Justification for funding request

The proposed project components, outcomes and outputs fully align with national and local government/institutional priorities/gaps identified, with identified community and marginalized and vulnerable groups needs and, as described in the project objectives, with the Adaptation Fund outcomes as stated in the Adaptation Fund Results Framework. This has resulted in the design of a comprehensive and integrated approach in which the different project components are inter-related and strengthen each other, and whose expected outputs and planned activities are meant to fill identified gaps in the South-East Africa sub-region in terms of urban climate adaptation.

In all the target countries, the need to adopt and implement urban climate adaptation policies and interventions have been widely recognized and commitments have been taken to strengthen coherence and integration between disaster risk reduction, climate change adaptation; but -given the limited capacity of the countries in term of technical expertise and financial resources- concrete urban interventions on climate resilience have hardly been planned and implemented.

The requested funding, therefore, will contribute to (i) piloting priority urban initiatives at local level (as per the 23 sub-projects) that will not only directly address adaptation needs of the most vulnerable in the four cities but also boost other similar initiatives in urban areas in the region; (ii) fostering knowledge and the establishment of institutional and legal framework for climate resilience at urban level (iii) mobilizing additional resources at national and local level (iv) promoting the discussion - among the SADC Countries - on urban resilience and the sharing of concrete good practices that can be easily replicated in other urban areas and Countries. It will indeed support SADC in implementing its mandate of regional integration and coordination and in advancing the development of the SADC regional resilience strategy (currently under development) for the urban context.

Furthermore, in line with the unique goal of the Fund, the funding will support Member States to tackle disaster risk reduction and climate change adaption when setting the Sustainable Development Goals (SDGs), particularly in light of an insufficient focus on risk reduction and resilience in the original Millennium Development Goals (MDGs).

The project targets four countries over four years for a total project cost of almost **US\$14 million**. Specifically, four cities have been targeted for climate adaptation planning and will benefit from the implementation of sub-projects under Component 1. This physical adaptation component will be allocated with over half of the direct project costs, directly benefitting the target communities.

The impact that the AF funding will have with this 23 sub-projects is detailed in the sub-project fiches in **Annex 5**. Funding allocation for 'softer' components is required:

- Under Component 1, to prepare for and support the effective, appropriate and sustainable execution of the 23 sub-projects, including local trainings for long-term capacities in maintaining and managing adequately the interventions
- Under Component 2, to institutionalise knowledge and produce adequate guidelines, policies, strategies and legislation to ensure priority on climate change adaptation in urban areas and mobilize resources;
- Under Component 3, to ensure inter-country/city knowledge exchange and to build the basis for dissemination, replication and scaling-up in the southern Africa region, thus influencing existing SADC Regional resilience initiative to strengthen the focus on the urban dimension.

The project proposal makes detailed observations in other sections with regard to the great project potential in terms of economic, social and environmental benefits of the physical interventions, the underlying climate change hazards and resilience building needs for each target city, as well as cost effectiveness and sustainability aspects, which are not repeated in this section.

The table below provides a justification for funding requested, focusing on the full cost of adaptation reasoning, by showing the impact of the requested AF financing compared to no funding (baseline) related to expected project outcomes.

Outcomes under project Components	Baseline (without AF)	Additional (with AF)	Alternative adaptation scenario
<u>Under project Component 1:</u> Municipal staff, communities and local stakeholders have successfully implemented priority sub-projects for increasing the climate resilience of their city and have acquired the required capacity to manage and maintain the realised investments	Municipal staff, communities and local stakeholders have limited understanding of climate change induced risks affecting their city and have not identified concrete strategies for adaptation planning and design. They have limited understanding on management and maintenance needs of climate change related interventions. As a result, target cities and vulnerable communities are not implementing strategic physical and ecosystem interventions focused on enhancing climate change resilience, leading to an increase in future climatic threats (e.g. floods, cyclones, sea level rise/coastal erosion, drought, etc.) victims, destruction of property, infrastructure and assets, health risks, crops failure, loss of livelihoods, etc.	Target cities have implemented strategic priority investments and activities for enhancing their climate change resilience, especially targeting the most vulnerable urban areas. The project outcomes benefit the poor and vulnerable population by protecting their lives, property, assets and livelihoods from the impact of climatic threats, and by enhancing their living conditions, especially in terms of access to basic services and resilient infrastructure. Municipal staff, communities and local stakeholders in each target city have increased understanding of their vulnerabilities and how to respond to their adaptation needs. The required knowledge and skills to effectively and sustainably implement these priority interventions has been ensured.	Alternatively, interventions could focus solely on capacity building and awareness-raising to adapt to climate change. However, the effects of climate change in these cities are predicted to be so severe that, considering the low financial capacity, the lack of skills and the poor living conditions, physical interventions are absolutely needed to protect lives, property, assets, infrastructure and livelihoods. Larger scale interventions (e.g. building protecting infrastructure, or large relocation operations of the population at risk) could also be envisaged, but the costs are prohibitive and they would not respond to the needs of the poor and most vulnerable.
<u>Under project Component 2:</u>	National institutions and local governments in the	Concerned local government authorities and the majority of	Without proper awareness of the level of climatic risks to

National governments have created enabling conditions for scaling up and replicating the same climate resilience approach in other urban settlements	target countries have limited knowledge, capacity and practice for planning and institutionalising urban climate resilience building. With lack of technical knowledge, guidelines, policies and strategies, the level of vulnerability (and subsequently of the risk) of fast-growing urban areas to climatic threats would inevitably increase dramatically.	the national institutions mandated to deal with climate change adaptation have increased their knowledge/capacity to enhance urban climate adaptation. Guidelines, rules, policies and strategies were defined to prioritise and institutionalise an urban resilience building agenda at the country level, enabling replication and scaling up of best practices.	which the growing urban population in the target countries is being exposed to, the needed guidelines, rules, policies and strategies in place to address these risks, and without proper and enhanced institutional capacity at the national and city levels, good local practices cannot be replicated and scaled up to benefit other urban settlements of these countries.
<p><u>Under project Component 3:</u></p> <p>Local and national governments of the 4 countries have learned from each other good urban climate adaptation practices and are better prepared to face common transboundary climate-related natural hazards</p>	Throughout the southern Africa region, especially the eastern part that is exposed to cyclones generated in the Indian Ocean, common transboundary climatic hazards are badly affecting cities and towns located either in the coastal areas or inland. A general lack of strategies, capacity and practice in the region is observed for planning towards urban resilience and sharing of best approaches, tools and practices to respond to common climatic threats.	Inter-country and city-to-city knowledge exchange on best practices and sharing of local experiences have been facilitated at the sub-regional level thanks to a strengthened DiMSUR and strong SADC engagement, thus establishing the conditions for designing and implementing concrete cross-fertilisation activities and enhanced inter-country cooperation programmes for addressing urban climate adaptation priorities. This will enable the replication and scaling up of the adopted project approach in the four target countries and beyond, laying the foundations for reaching out to other southern African countries thanks to improved regional policies and strategies and follow-up regional and national initiatives with an urban climate adaptation focus.	A weak regional approach would frustrate the possibility for the target countries/cities to learn from each other thanks to the innovative local initiatives for urban adaptation to common climatic threats that were implemented at the local level. In addition, without a reinforced DiMSUR and a strong SADC role the possibility to improve regional policies and strategies, by integrating the recommendations derived from the project lessons learned, will be missed. Finally, the potential for replication and scaling up to other southern African countries would also be reduced if regional exchange and dissemination mechanisms are not in place.

Table 28: Overview of impact of requested AF financing compared to no funding (baseline) related to expected project outcomes

K. Sustainability of project outcomes

The sustainability of the project is inherently embedded in its design. The project is following the principle of sustainability mainly through the aspects of capacity building, bottom-up and participatory approach, knowledge sharing, national and regional replication and scaling up.

As mentioned in Part I under Project Background and Context, local governments in the target countries lack the financial and institutional capacity to effectively plan for adapting to climate change hazards. The project's capacity building efforts will strengthen the municipalities and communities' planning and management mechanisms to reduce their fragility in the face of climatic threats, hence have 'per se' a sustainable influence on the future urban resilience of the target cities. Involvement of the respective countries' local and national governments and academic/training institutions in the implementation of Component 2 is thereby also an important element towards the sustainability of the project's outcomes. Importantly, under Component 1,

local capacity will also be developed to ensure the management/maintenance of the sub-projects' outcomes in the longer term.

As outlined in Part I of the proposal and in more detail in Part II, Section A, project activities under Component 2 will occur at the national level to create the conditions for scaling up and replicating the CityRAP approach in other urban settlements. This is a critical project component to ensure greater sustainability and a lasting impact of the project. The CityRAP tool will be improved to make it more adapted to the national/local contexts⁵⁶ and proposed activities are designed for wide dissemination and enabling replication and autonomous implementation of the tool by other cities beyond financial or technical support from UN-Habitat or the executing entities of this project. To that end, partnerships will be established with qualified academic institutions in each country, in the region and beyond for carrying out specific training modules at the bachelor or master degree level, benefiting the four target countries. In addition, the development of online tutorials of the tool will ensure its dissemination in the target countries and beyond.

At the national level, guidelines, policies, legislation or strategies will be developed or adapted, and knowledge and best practices will be shared widely, with the aim to enhance urban resilience in each country. These will be mainstreamed into the national urban resilience building efforts by serving as basis for training workshops for government and municipal officials for replication of the tool deployment in other cities/towns in the target countries. Existing national institutions and networks will be involved in organising and conducting the training workshops, and partnerships/synergies established with on-going initiatives at the national level.

Furthermore, the project is designed to achieve enhanced knowledge, communication and information exchange between cities and national governments to strengthen urban climate resilience practices under project Component 3. A multiplier effect and cross fertilisation through learning exchanges at the regional level is thus embedded in the project's design that caters for sustainable future exchange on urban climate resilience tools, information, strategies and best practices. Hereby the sustainability is directly linked to the institutional level and the involvement of the SADC DRR Unit and DiMSUR as established organisations.

Lastly, the physical interventions and capacity building components of the project will lead to long-term economic, social and environmental benefits as outlined in Sections C and D in Part II. The rationale of arrangements for sustainability and maintenance of the realised physical/hard investments in the four target cities under Component 1 are detailed in the 23 sub-project fiches presented previously.

The table below summarises the main strategies and arrangements for sustainability for each of the six main areas of intervention, which will be further detailed during the first phase of project implementation. The targeted communities, municipalities and local stakeholders (NGOs, sub-contractors, etc.) will be further consulted and agreements established to ensure economic, social and environmental sustainability, with maximum benefits for the most vulnerable groups. The project team will work hard to enhance the establishment of sound partnerships between municipality and local community, based on the mutual recognition of each one's role and responsibilities. These trustful relationships, and their formalization into formal agreements and/or the setting-up/reinforcement of local committees and/or the finalisation of community by-laws, will be accompanied as they will constitute the basis for the sustainability of the planned infrastructural investments, beyond the duration of the project.

⁵⁶ Several local governments and other government organisations have already expressed interest in adopting the CityRAP as the main tool to guide resilience building and adaptation at urban level in the target countries. In Mozambique, for example, CityRAP activities have already involved 14 different cities (Angoche, Nampula, Dondo, Chiure, Montepuez, Alto Molocue, Maganja da Costa, Cuamba, Metangula, Malema, Ribabue, Vilankulo, Mocuba and Chokwe) and all have requested further access and support to continue applying the tool, while the Ministry of Land, Environment and Rural Development (MITADER) has demonstrated interest in the tool in several occasions.

Main sectors of intervention	Sub-projects	Overall sustainability / Maintenance efforts (for more specific measures see Sub-Project Fiches in Annex 5)
Improvement of drainage conditions	Enhancing the drainage capacity in the city centre (5.1.7 Morondava)	<p><i>Social sustainability:</i> Campaigns and trainings will be carried out to raise awareness about the relation between waste dumping and flooding and diseases. In some contexts, communities will also be involved in the construction works as paid labour to increase ownership. Already identified community leaders will play a key role in monitoring the drainage efficiency and mobilising the communities for carrying out the maintenance operations. In addition, when needed, capacity building of local master builders will be ensured to enable them to maintain the resilient infrastructure.</p> <p><i>Institutional sustainability:</i> Local committees resulting from the collaboration between the community and the municipality will be set up to monitor garbage disposal and the application of sanitation and hygiene codes, and be trained in cleaning the drainage systems. Committees will be supported to draft community by-laws to ensure, inter alia, that drainage is protected from indiscriminate dumping and damage and is cleared especially before the rains.</p> <p><i>Economic sustainability:</i> The municipalities will be responsible for including funds for maintenance in their annual in budget once the project infrastructure is handed over to the city/ies. Some, like the Municipality of Zomba, already committed resources to this kind of activities in their provisional budget for next year.</p> <p><i>Environmental sustainability:</i> The improvement of drainage conditions can involve both “hard” infrastructures and an Ecosystem-based approach. Thus, green and blue areas can contribute to the proper working of the drainage system and lower the load of pressure in case of heavy rains. The two approaches have no point of conflicts and if though together (see the “Rehabilitation of existing ecosystems and reinforcement of sustainable use of natural resources” sector of intervention) can be more effective. Municipal offices in charge of ecosystems and green areas will be involved in the process with this purpose.</p>
	Rehabilitation of existing drainage channels and construction of new drainage channels (5.2.3 Zomba)	
	Improving the overall drainage capacity of the city (5.3.1 Chokwe)	
	Reinforcing the drainage capacity in La Coulée neighbourhood (5.4.1 Moroni)	
Establishment of early warning system	Establishment of a city-wide early warning system for floods (5.1.3 Morondova)	<p><i>Social sustainability:</i> A training of municipal technicians for using and maintaining early warning equipment (e.g. hydrometric and pluviometric material, weather station, water gauges for flooding early warning) will be delivered and awareness-campaigns organised.</p> <p><i>Institutional sustainability:</i> These activities will be integrated in the contingency plan of each city. The city council will assure implementation, monitoring and evaluation of the same. In particular, for sustaining the improved early warning system, the city council will work in coordination with community leaders and concerned local stakeholders. Relevant Directorate Generals of concerned Ministries will also be involved in the design, training delivery and maintenance of the EWS.</p>
	Establishment of a city-wide early warning system for floods (5.2.1 Zomba)	
	Strengthening early warning for floods at community level (5.3.4 Chokwe)	
	Establish a flood early warning system in La Coulée neighbourhood (5.4.4 Moroni)	
Improvement of solid waste management	Improving solid waste management in the city centre (5.1.8 Morondova)	<p><i>Social sustainability:</i> The population will be mobilised and sensitised through awareness raising campaigns on waste management and separation. The capacity building/training to the communities will empower people, especially women, by providing the necessary skills, knowledge and awareness that will ensure the ownership and – therefore – the continuity of the services rendered.</p>

	Improving solid waste management (5.2.4 Zomba)	<p>Importantly, to avoid tensions due to location of garbage treating centre, areas have already been pre-selected at appropriate distances with participation of the local population.</p> <p><i>Institutional sustainability:</i> The municipalities will be responsible for collecting and allocating funds for maintaining the waste treatment centre through their annual budgets. Public-private partnerships between municipalities and micro-entrepreneurs will also be encouraged to for waste management.</p> <p><i>Economic sustainability:</i> The municipalities will be responsible for including funds for sustaining operations in their annual in budget once the project infrastructure is handed over to the city/ies.</p> <p><i>Environmental sustainability:</i> It is direct interest of the community and of all the authorities in charge of the environment to make sure a proper SWM is carried out. Poor SWM can affect the quality of water and pollute both soil and air, with heavy impacts on health and economies. On the contrary, recycling activities and properly designed collection point can ensure healthy environments. There are no negative effects in the environment by improving the SWM and, on the contrary, interest of the department in charge of ecosystems and green areas to make it happen.</p>
	Improving solid waste management (5.3.3 Chokwe)	
	Improving solid waste management in La Coulée and Médina neighbourhoods (5.4.3 Moroni)	
Construction of multi- safe havens	Construction of a resilient and multi-purpose safe-haven (5.1.4 Morondova)	<p><i>Social sustainability:</i> Communities will be continuously involved in the construction of the evacuation centres and in trainings on resilient houses construction to raise awareness on the same.</p> <p><i>Institutional and Economic sustainability:</i> The evacuation centres will become critical facilities serving different tasks: training centres, social centres, etc. For this reason, the Municipalities are willing to sustain the maintenance and management-related costs of the Centres. The communities and local committees will also work closely with the Municipalities to ensure the Centres are well maintained and activities are continuously occurring, even beyond the project's end.</p> <p><i>Environmental sustainability:</i> In case the safe heavens would include some open spaces, these spaces can play a double role by being also designed to enhance climate adaptation (by mitigating run-off, regulating the climate, etc.) during the emergencies and by mitigating climate-related hazards over time. Proper design of these open spaces will imply the intervention of universities or environmental experts.</p>
	Construction of multi-purpose evacuation centres (5.2.2 Zomba)	
	Construction of safe-havens (5.3.2 Chokwe)	
Rehabilitation/ protection of critical ecosystems and sustainable use of natural resources	Rehabilitation of 180 ha of mangroves (5.5.1 Morondova)	<p><i>Social sustainability:</i> Through coordination and cooperation between the line Ministry/ies, the cities and communities the interventions will be sustained. The use of local labour will result in ownership of the intervention. The population will be mobilised and sensitised through awareness raising campaigns and to introduce a shift towards more sustainable practices for what concerns land and natural resources' use. Specific trainings will also be organized and partnerships (or establishment of) associations promoted. Key community leaders will be involved as their involvement, support and example is crucial to support this change. The drafting of community by-laws regarding forest management will also be used as a tool to enforce the change.</p> <p><i>Institutional sustainability:</i> Laws in the target countries and commitment taken by governments (INDCs, NAPs, etc. see Part II -Section E for more information) are highly favourable to the rehabilitation of ecosystems. In some countries, traditional customary rules will be used to monitor on practices such as reforestation (like the 'dina' in Madagascar, a local agreement between the city traditional leaders and community representatives based on a set of rules and fines for the breach of the same).</p> <p><i>Economic sustainability:</i> The municipality will provide maintenance of green spaces or enter into public-</p>
	Urban greening interventions in high risk areas (5.1.2 Morondova)	
	Sustainable urban forest management (5.2.7 Zomba)	
	River-focused interventions to prevent erosion and flooding (5.2.5 Zomba)	

	Establishing community-managed rainwater harvesting systems in La Coulée neighbourhood (5.4.2 Moroni)	private partnerships with a private operator for such a purpose. <i>Environmental sustainability:</i> The cooperation with academia, universities, research institutes (i.e. the Forest Research Institute and Malawi) and communities to rely on traditional knowledge will ensure selecting appropriate species for all what concern reforestation/creation of green spaces. Additionally, ecosystem restoration represents a win-win, no regret and multi-purpose solution. This implies sustainability over time of the interventions that will be undertaken and a long-term interest on their positive impacts.
Improvement of urban mobility	Construct a flood-proof elevated road (920 m) with improved drainage capacity (5.1.5 Morondava)	<i>Social sustainability:</i> A communication strategy will be developed around the new infrastructures, for raising awareness on the importance of the new infrastructures (and their location) in case of a climate change related event. <i>Economic sustainability:</i> The municipalities will be responsible for including funds for maintenance in their annual in budget. Similar to what is planned for maintaining the improved drainage system, in some contexts, contractual agreements will be signed with communities to be involved as paid labour, so to increase at the same time ownership over the new infrastructure.
	Reconstruction of 3 bridges connecting different neighbourhoods in a resilient manner (5.1.6 Morondava)	
	Construction and rehabilitation of bridges and dams on Likangala River (5.2.6 Zomba)	

Table 29: Overview of sustainability efforts for each main intervention area

L. Overview of environmental and social risks and possible impacts

The proposed project fully complies with the Adaptation Fund's Environmental and Social Policy (ESP) and its 15 safeguard areas (or principles) and the Adaptation Fund's Gender Policy (GP). To align with these policies and related guidelines, this section provides a brief summary of the risks assessment outcomes, which are shown in detail in **Annex 3**. Part III Section C gives an overview of the environmental and social management plan (ESMP). The environmental and social risk screening, assessment and ESMP are presented in **Annex 3** at two levels. The first level is general, analysing all three components of the project. The second level zooms into the activities belonging to the first component (subprojects implementation – the only level that includes physical interventions/infrastructure projects) because it needs a technical and detailed view and presents related risks and mitigation measures.

The project fully complies with all applicable national laws and regulations (see Part II, Section F), focuses on marginalised and vulnerable groups, positively discriminates in favour of women, incurs no infringement on labour rights, plans no resettlement whatsoever, and does not affect indigenous peoples (none present). With regards to the subproject implementation in Component 1, activities have been designed to minimise potential risks by selecting numerous, small scale and very localised interventions, proposed and managed by the communities themselves (where possible) who have a stake in avoiding environmental and social impacts. This means that the potential for direct impacts is small and localised, that there can be few indirect impacts, and that transboundary impacts are highly unlikely. Given this, cumulative impacts are also unlikely. In addition, even though the table below shows the presence of the majority of risks, as it can be seen in **Annex 3**, the only risk presenting a potential high impact is related to one sub-project, if

