REQUEST FOR PROJECT/PROGRAMME FUNDING FROM ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to

The Adaptation Fund Board Secretariat
1818 H Street NW
MSN G6-602
Washington, DC. 20433
U.S.A
Fax: +1 (202) 522-3240/5
Email: secretariat@adaptation-fund.org

ADAPTATION FUND

DATE OF RECEIPT:
ADAPTATION FUND PROJECT ID:
(For Adaptation Fund Board Secretariat Use Only)

PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

PROJECT/PROGRAMME CATEGORY:	REGULAR PROJECT
COUNTRY/IES:	REPUBLIC OF TANZANIA
TITLE OF PROJECT/PROGRAMME:	**IMPLEMENTATION OF CONCRETE ADAPTATION MEASURES TO REDUCE VULNERABILITY OF LIVELHOOD AND ECONOMY OF COASTAL AND LAKESHORE COMUNITIES IN TANZANIA**
TYPE OF IMPLEMENTING ENTITY:	**MIE**
IMPLEMENTING ENTITY:	**UNEP**
EXECUTING ENTITY/IES:	**VICE PRESIDENT'S OFFICE (DIVISION OF ENVIRONMENT)**
AMOUNT OF FINANCING REQUESTED:	**9,814,517** (IN U.S Dollars Equivalent)

PROJECT / PROGRAMME BACKGROUND AND CONTEXT:

Provide brief information on the problem the proposed project/programme is aiming to solve. Outline the economic social, development and environmental context in which the project would operate.

Project summary

As a large Least Developed Country where most of the population depends on natural resources and the environment for their livelihoods, Tanzania is already vulnerable to the impacts of climate hazards such as floods, droughts and tropical storms which are becoming more frequent and intense. Natural ecosystems, infrastructure and agriculture, mainly those within the coastal zone are presently threatened by those climate hazards. Agriculture and human livelihoods are also under severe constraints in rural areas, particularly in the Lake region. Droughts and floods have already resulted in a significant number of considerable economic losses. For example, Tanzania has experienced six major droughts over the past 30 years, with the most recent one in 2006 having ravaged agricultural production leading to an estimated cut in GDP growth by one percent. Exacerbating these climate change impacts are poverty, population density, dependence on rain-fed agriculture and climate and environmental degradation and inefficient implementation of existing plans and policies.

Under climate change, existing climate hazards such as droughts, floods and tropical storms are likely to become more frequent and intense. They are likely to adversely affect the natural ecosystems, infrastructure, and agriculture and community livelihoods throughout the country, with differing impacts according to the region. Sea level rise, which according to some

projections could reach 1m by 2100[1] in some areas, will have implications on socio- economic development and will increase the physical vulnerability of Tanzania's 800km coastline.[2] In addition, changes in precipitation patterns across the country's eco-climatic zones are also expected to have major impacts on agricultural productivity, infrastructure and property and social conditions. Expected climate change is likely to undermine any progress in poverty alleviation by affecting agricultural productivity and to lead to continued degradation of the environment. This situation will become even worse unless timely adaptation interventions are implemented.

This project seeks to respond to the impacts of sea level rise and modified precipitation patterns induced by climate change, with a specific focus on agriculture, water, coastal zone and lakes management, which have been prioritized by the national policy documents of Tanzania as well as Tanzania's NAPA and National Communication to the UNFCCC. The main objective of the project is to reduce vulnerability of livelihoods, infrastructure and economy in Tanzania through the implementation of concrete and urgent adaptation measures. The Coastal and Lakeshore regions have been selected for priority implementation of adaptation measures due to their high socio-economic vulnerability as well as to the presence of major development investments whose deterioration due to climate change could have deep-felt and rippling impacts on local populations as well as throughout the country's economy.

In order to achieve this objective, the project will be delineated into the following six specific outcomes which will be implemented in 5 priority sites, of which three are in the coastal zone (Mtwara district, Ilala district and Muheza district), and two are in the Lake Victoria zone (Magu and Muleba districts):

1. Adverse impacts of sea level rise on coastal infrastructures and settlements.
2. Adverse impacts of floods averted
3. Adverse impacts of climate change on water supply and quality averted
4. Livelihoods are sustainable, diversified and resilient
5. Coastal and shoreline ecosystems are rehabilitated and ICAM is implemented
6. Knowledge of climate impacts and adaptation measures is increased

The project will be implemented by the United Nations Environment Programme and executed by the Vice President's Office (Division of Environment) of Tanzania.

[1] 3AR IPCC, 2003
[2] 4AR IPCC, 2007

1. Background and context

1.1 Geography

The country's total area is 945,000 square kms with the mainland covering 939,702 square kilometers. The land area of the mainland is 881,289 square kilometers while 58,413 square kilometers are inland lakes. The coastline extends 800 kilometers from 4°S to 10°S. Forests and woodland occupy 50 percent of the total area and 25 percent is wildlife reserves and national parks. Except for the coastal belt most of the country is part of the Central African plateau lying between 1,000 to 3,000 meters above sea level. The coast of Tanzania is hot and humid; it contains Tanzania's largest city, Dar es Salaam, and is home to areas of East African mangroves, and mangrove swamps that are an important habitat for wildlife.

With its 69,490 square Kms, Lake Victoria is the largest lake in Africa and the second largest in the world. The waters of Lake Victoria and its shoreline are shared between 3 countries; Kenya (6%), Uganda (43%), and Tanzania (51%) (Fig. 1). The majority of lake inlet draining basins are also located in Tanzania[3].

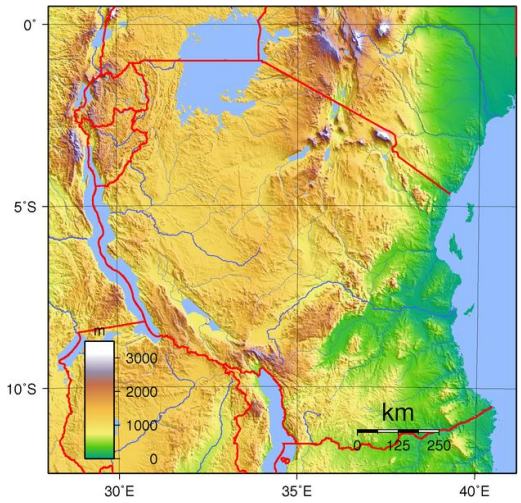


Figure 1: Topographical map of Tanzania

1.2 General climate

Tanzania's climate ranges from tropical to temperate in the highlands. Country-wide, the mean annual rainfall varies from 500 millimeters to 2,500 millimeters. The average duration of the dry season is 5 to 6 months. Average annual precipitation over the entire nation is 1,042 mm. Average temperatures range between 24°C and 34°C, depending on location. Within the plateau, mean daily temperatures range between 21°C - 24°C. Natural hazards include both flooding and drought.

Within the country, altitude plays a large role in determining rainfall pattern, with higher elevations receiving more precipitation. Generally speaking, the total amount of rainfall is not very great. Only about half the country receives more than 762 mm annually (Mwandosya et al., 1998). Tanzania's precipitation is governed by two rainfall regimes. Bimodal rainfall, comprised of the long rains of Masika between March-May and short rains of Vuli between October-December, is the pattern for much of the northeastern, northwestern (Lake Victoria basin) and the northern parts of the coastal belt. A unimodal rainfall pattern, with most of the rainfall during December-April, is more typical of most of the southern, central, western, and southeastern parts of the country. (see Fig 1 below)

[3] Eric O. Odada, Daniel O. Olago, Kassim Kulindwa, Micheni Ntiba and Shem Wandiga, Mitigation of Environmental Problems in Lake Victoria, East Africa: Causal Chain and Policy Options Analyses

The country can be roughly divided into four main climatic/topological zones:

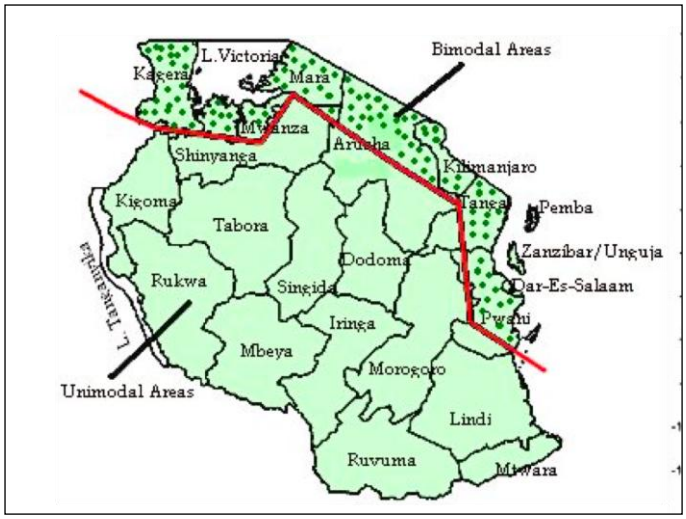


Figure 2: Rainfall patterns

(a) ***The Lowland Coastal Zone*** This zone can further be divided into three sub-zones: the wet sub-zone, between 0 to 500 meters of elevation, with 1,800 millimetres of annual rainfall on average; humid sub-zone, elevation ranging from 500 metres to 1000 metres with an annual rainfall of between 1000 and 1,800 millimetres; and the drier zone, about 1,000 metres in altitude, with less than 1,000 millimetres of rainfall per annum.

(b) ***The Highlands Zone*** **-** This comprises of the Northeastern Highlands, which include the Usambara Mountains, Mt. Kilimanjaro and Mt. Meru; the Southern Highlands, which include Mt. Rungwe, Livingstone ranges, and Mt. Mbeya. As catchment areas, these are generally areas of high precipitation

(c*) The Plateau Zone* **-** Found around Lake Victoria and much of western Tanzania, this zone is occupied by what are generally referred to as *miombo* woodlands. These are, in the main, dry areas with an average rainfall of up to 1,000 millimetres.

(d*) The Semi-desert Zone* Mainly found in central and North Eastern Tanzania around Dodoma, Shinyanga, Arusha, Mwanza and Mara. The zone has a rainfall of less than 600 millimeters per annum.

The Tanzania NAPA and National Communication further categorized the country into 7 agro-ecological zones, as represented in the table below.

Table 1: Agro-ecological zones

Zone	Sub-Zone and areas	Soils and Topography	Altitude	Rainfall (mm/yr)	Growing season
1. COAST	North: Tanga (except Lushoto), Coast and Dares Salaam South: Eastern Lindi and Mtwara (except Makonde Plateau	Infertile sands on gently rolling uplands Alluvial soils in Rufuji Sand and infertile soils Fertile clays on uplands and river flood plains	Under 3000m	North: Bimodal, 750-1200mm South: Unimodal, 800-1200mm	North: October-December and March-June South: December- April
2.ARID LANDS	North: Serengeti, Ngorogoro Parks, Part of Masailand Masai Steppe, Tarangire Park, Mkomazi Reserve, Pangani and Eastern Dodoma	North: Volcanic ash and sediments. Soils variable in texture and very susceptible to water erosion South: Rolling plains of low fertility. Susceptible to water erosion. Pangani river flood plain with saline, alkaline soil	North: 1300-1800m South 500-1500m	North: Unimodal, unreliable , 500-600mm South: Unimodal and Unreliable, 400-600mm	March- May
3. SEMI-ARID LANDS	Central Dodoma, Singida, Northern Iringa, some of Arusha, Shinyanga Southern: Morogoro (except Kiliombero and Wami Basins and Uluguru Mts). Also Lindi and Southwest Mtwara	Central: Undulating plains with rocky hills and low scarps. Well drained soils with low fertility. Alluvial hardpan and saline soils in Eastern Rift Valley and lake Eyasi. Black cracking soils in Shinyanga. Southern: Flat or undulating plains with rocky hills, moderate fertile loams and clays in South (Morogoro), infertile sand soils in center	Central: 1000-1500m Southeastern 200-600m	Central: unimodal and unreliable: 500-800mm Southeastern: Unimodal 600-800mm	December - March
4. PLATEAUX	Western: Tabora, Rukwa (North and Center), Mbeya North: Kigoma, Part of Mara Southern: Ruvuma and Southern Morogoro	Western: Wide sandy plains and Rift Valley scarps Flooded swamps of Malagarasi and Ugalla rivers have clay soil with high fertility Southern: upland plains with rock hills. Clay soils of low to moderate fertility in south, infertile sands in North.	800-1500m	Western: unimodal, 800-1000mm Southern: unimodal, very reliable, 900-1300mm	November- April
5. SOUTHERN AND WESTERN HIGHLANDS	Southern: A broad ridge of from N. Morogoro to N. Lake Nyasa, covering part of Iringa, Mbeya Southwestern: Ufipa plateau in Sumbawanga Western: Along the shore of Lake Tanganyika in Kigoma and Kagera	Southern: Undulating plains to dissected hills and mountains. Moderately fertile clay soils with volcanic soils in Mbeya Southwestern: Undulating plateau above Rift Valleys and sand soils of low fertility Western: North-south ridges separated by swampy valleys, loam and clay soils of low fertility in hills, with alluvium and ponded clays in the valleys	Southern: 1200-1500m Southwestern: 1400-2300m Western: 100-1800m	Southern: unimodal, reliable, local rain shadows, 800-1400mm Southern: unimodal, reliable, 800-1000mm Western: bimodal, 1000-2000mm	Northern: December – April Southwestern: November- April Western: October-December and February-May
6.NOTHERN HIGHLANDS	Northern: foot of mt Kilimanjaro and Mt. Meru. Eastern Rift Valley to . Eyasi Granite Mts Uluguru in Morogoro, Pare Mts in Kilimanjaro and Usambara Mts in Tanga, Tarime highlands in Mara	Northern: Volcanic uplands, volcanic soils from lavas and ash. Deep fertile loams. Soils in dry areas prone to water erosion. Granite steep Mountain side to highland plateaux. Soils are deep, arable and moderately fertile on upper slopes, shallow and stony on steep slopes	Northern: 1000-2500m Granitic Mts: 1000-2000m	Northern: Bimodal, varies widely 1000-2000mm Granitic mts. Bimodal and very reliable 1000-2000m	Northern: November-January and March-June Granitic Mts. October-December and March-June
7. ALLUVIAL PLAINS	K-kilomberao (Morogoro) R- Rufuji (Coast) U- Usangu (Mbeya) W- Wami(Morogoro)	K-Cental clay plain with alluvial fans east and west R- Wide mangrove swamp delta, alluvial soils, sandy upstream, loamy down steam in floodplain U-Seasonally Flooded clay soils in North, alluvial fans in South W- Moderately alkaline black soils in East, alluvial fans with well drained black loam in West		K—Unimodal, very reliable, 900-1300mm R-Unimodal, often inadequate 800-1200mm U-Unimodal, 500-800mm W-Unimodal, 600-1800mm	K-November-April R- December-April U-December-March W-December-March

This project is focused on two distinct areas: the Coast area, which is further divisible into Northern Coast (bimodal rains) and Southern Coast (unimodal rains) and the Lake region, which for the most part can be categorized as humid and dry sub-humid zones (bimodal rains), as per Figure 2 above. Within these two regions, the project will focus on 5 priority districts located along the Coast and around the shores of Lake Victoria (see section on project objectives for more information on the project sites).

1.3 The Coast

The Coast of Tanzania is tropical as Tanzania lies just south of the equator, between longitude 29°21'E and 40°25'E, and latitude 1°S and 11°45'S. Tanzania has a long mainland coastline of

about 800 km excluding near shore islands, bays, lagoons and estuaries. About 10 rivers drain into the Indian Ocean, of which Pangani in the north, Rufiji in the middle and Ruvuma in the south are the main rivers. The smaller rivers include Zigi, Wami, Ruvu, Matandu, Mavuji, Mbwemkuru and Lukuledi. These rivers influence the coastal environment through the creation of productive brackish water environments in estuaries, maintenance of deltas, tidal flats and shorelines, and nourishment of mangroves and seagrass beds.

The coastal and marine environments include major estuaries, mangrove forests, coral reefs, sandy beaches, cliffs, seagrass beds and muddy tidal flats. Sandy-muddy flats or rocky reef platforms are found in the intertidal zone, while the sublittoral zone consists of extensive seagrass beds and coral reefs. These coastal ecosystems interact with each other and together sustain a tremendous diversity of marine life, which is an important source of sustenance for coastal communities. For instance, a wide range of important and valued species are found, including an estimated 150 species of coral in 13 families, 8,000 species of invertebrates, 1,000 species of fish, 5 species of marine turtles, and many seabirds.[4]

Coral reefs: Due to the narrowness of the continental shelf of most of Tanzania, coral reefs are typically situated close to land. Coral reefs are common along much of the Tanzanian coastline, and well-developed barrier reefs occur along most of the ocean-facing eastern coastline of the islands. There are also extensive coral reefs and coral outcrops on the leeward side of the islands, and these vary in species diversity. Coral reefs provide a range of ecosystem services, including food, shelter and breeding grounds for fish and crustaceans, sediment input for beach formation, shoreline protection against wave action and storms, and natural carbon sinks. Coral reefs are subject to anthropogenic pressures (unsustainable use, dynamite fishing) as well as to the effects of climate change (temperature rises and precipitation change that lead to coral bleaching). Coral reefs are particularly sensitive to changes in water clarity and temperature and even a slight increase in temperature and/or decline in clarity are likely to have significant impact on their health. Endangered species associated with these ecosystems, including manatees and marine turtles, could also be at risk, along with migratory birds. The 1997-1998 coral bleaching observed in the Indian Ocean and Red Sea was coupled to a strong ENSO (an indication of the potential impact of climate-change induced ocean warming on coral reefs). In the western Indian Ocean region, a 30% loss of corals reduced tourism in Mombasa and Zanzibar and resulted in financial losses of about US$ 12-18 million[5].

Mangroves: Mangrove ecosystems play a key ecological role in the coastal environment. Mangroves are trees that flourish in salty, anaerobic and acidic soils. Mangroves grow in sheltered areas of brackish water, where freshwater mixes with seawater. These areas include estuaries, lagoons, bays, tidal creeks, and inlets. Mangroves also provide a range of ecosystem services such as habitat for marine and bird species, breeding and roosting grounds, as well as stabilization of riverbanks and shorelines, and a protection against floods and storms. Mangroves in mainland Tanzania cover 115,500ha. They are subject to man-made pressure such as deforestation (for fuelwood or construction) and clearing (for agriculture, particularly in Rufiji area, tourism or salt production). Climate change pressures on mangroves are the result of

[4] Tanzanian Coastal and Marine Resources: Some Examples Illustrating Questions of Sustainable Use, *Julius Francis and Ian Bryceson, in Lessons Learned in Sustainable Development.*
[5] 4AR IPCCC, 2007

complex interactions between changes in precipitation, drainage, and sea level rise. The largest continuous mangrove stands are found in the districts of Rufiji, Kilwa, Tanga, Muheza, and Mtwara. While a 2003 study showed that between 1990 and 2000 the geographic coverage of mangroves had showed no dramatic change, mangrove productivity and health are reputed to be in danger from changed climate patterns, which could hinder any progress resulting from previous attempts at managing mangroves in Tanzania (such as the Mangrove Management Project, launched in 1988 under the aegis of the Tanzania's department of Forestry).

See grass beds: In Tanzania, seagrass beds are found in sheltered areas of the coast around Kilwa, Rufiji, Ruvu and Moa. They are common in the vicinity of coral reefs, and are linked to them physically and in terms of energy flows. Seagrass beds are highly productive and serve many ecological functions. These include providing breeding, nursery, and feeding areas for many invertebrate and vertebrate species including commercially important species of finfish and shellfish; and shelter and refuge for resident and transient adult animals. Seagrasses are an important food source for herbivorous invertebrates, fish, dugong, and green turtles. Additional ecological functions of seagrass include the trapping of sediments, which reduces sedimentation over coral reefs and therefore protects shorelines, and the dissipation of wave energy, which also provides protection to the beaches. Because seagrass beds are mainly found in shallow water close to shore and to human activities, they are very vulnerable to pressure from those activities.

Beaches: Beaches are an interface or meeting zone between land and sea. They are dynamic features and are often under the combined influence of many factors and processes which themselves are subject to change. These include geological, climatic and oceanographic processes. Beaches provide a number of key ecological services such as breeding or nesting grounds, feeding grounds for marine and bird species, and a buffer against wave action. Beaches are extensively used by coastal communities for recreational, touristic and aesthetic value, as well as as working areas for fisheries. They are subject to manmade pressures as well as climate change pressures due to sea level rise.

The map in Figure 3 below illustrates the key ecological features of the Tanzanian Coastline.

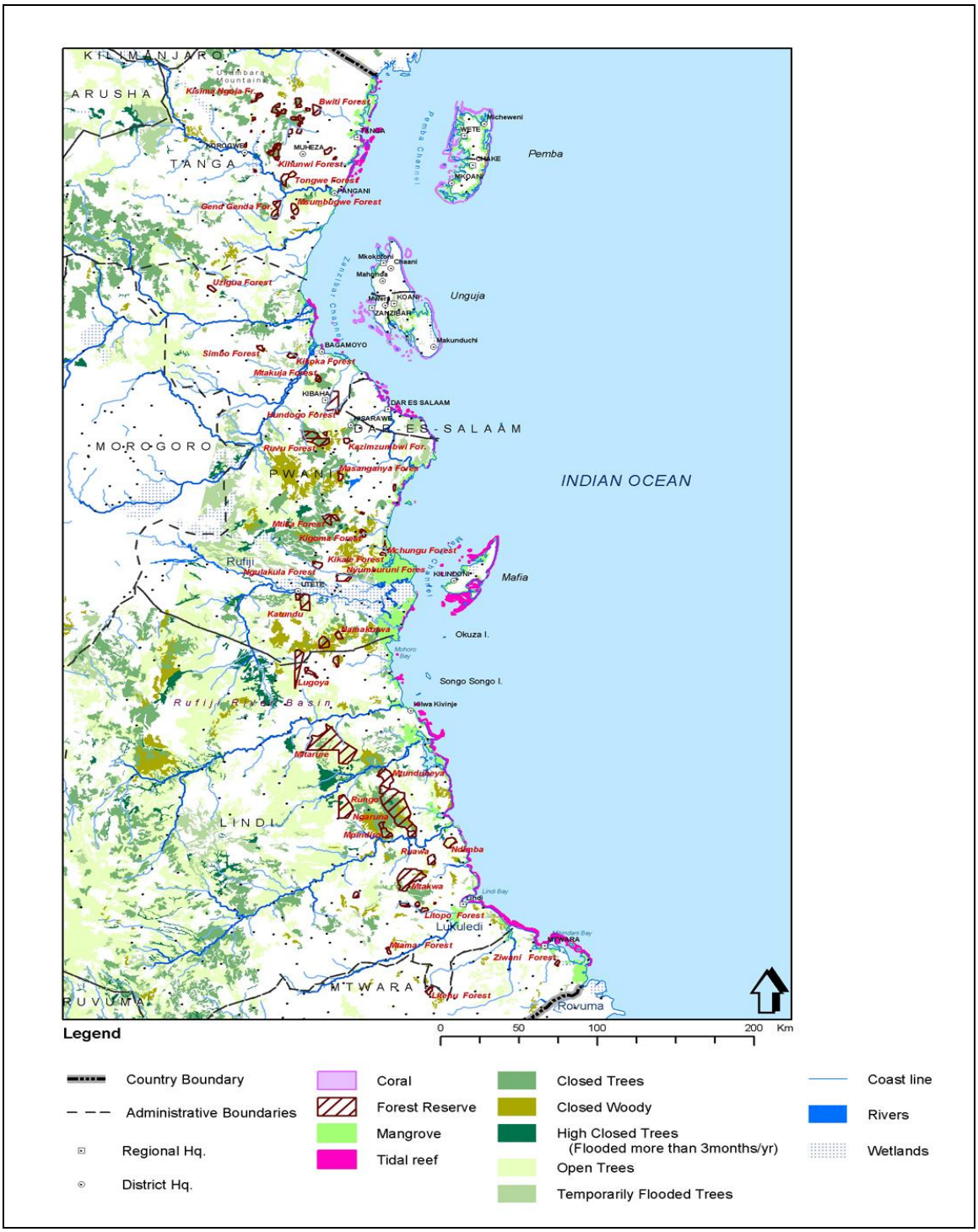


Figure 3: The Coast

1.4 The Lake region

The Lake Victoria area of Tanzania covers the administrative regions of Kagera, Mwanza and Mara in the Northwest area of the country. Lake Victoria, the largest of all African Lakes, is also the second widest freshwater body in the world. Its extensive surface belongs to the three

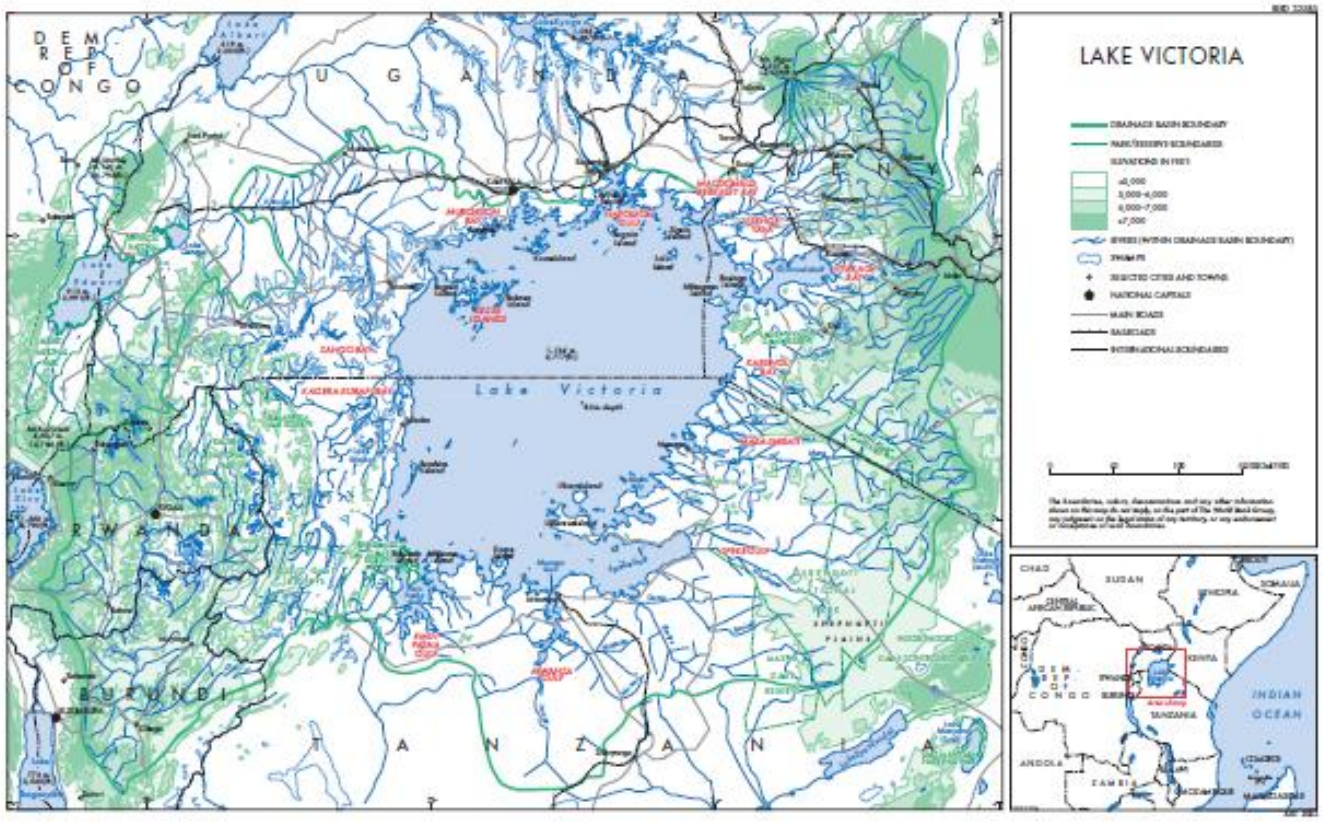
countries; the northern half to Uganda, the southern half to Tanzania, and part of the northeastern sector to Kenya. The lake occupies a wide depression near the equator, between the East and West Great Rift Valleys, but its drainage basin is relatively small, being slightly less than three times the lake's surface in area. Lake Victoria receives most of its water from direct precipitation or from thousands of small streams. The largest stream flowing into this lake is the Kagera River, the mouth of which lies on the lake's western shore. The lake water is drained into the Victoria Nile which flows northward via Lake Albert and the White Nile forming the uppermost reaches of the Nile River. Lake Victoria has numerous shallow bays and swamps, including extensive papyrus swamps. There are a number of small "satellite" lakes that connect to Lake Victoria, including lakes Kanyaboli, Sare, and Namboyo in Kenya; lakes Nabugabo, Gigati and Agu in Uganda; and, lakes Ikimba and Burigi in Tanzania.

The lake catchment provides for the livelihood of about one third of the combined populations of the three countries that share it. With the exception of Kampala, the capital of Uganda, the lake catchment economy is principally an agricultural one, with a number of cash crops (including exports of fish) and a high level of subsistence fishing and agriculture. It is estimated that Tanzania benefits from 40% of the total fish catches in the Lake. The lands surrounding Lake Victoria represent three eco-regions. The rolling hills and plateaus of the Victorian Basin Forest-Savanna Mosaic ecoregion extend from the lake north and west. It is most noted for its high species diversity and endemism resulting from the mixture of habitat types and species from both western and eastern Africa. Southern Acacia-Commiphora bushlands and thickets (mostly in Tanzania) cover the lands east and southeast of the lake with wide-sweeping grasslands and associated woodlands dominated by species of acacia and commiphora trees.

The lake basin is used as a source of food, energy, drinking and irrigation water, shelter, transport, and as a repository for human, agricultural and industrial waste. Over the past three decades or so, the lake and its surrounding basins have come under increasing and considerable pressure from a variety of interlinked factors such as overfishing, invasive species (water hyacinth, and the Nile perch to a certain extent), industrial pollution, eutrophication, and sedimentation, and has already been experiencing impacts of aridification. Its vulnerability could well increase due to the combined effects of climate change in the region, such as modification in precipitation regimes, temperature changes, and the resulting land and water use changes in the surrounding areas.

The Lake Victoria catchment has diverse forms of water bodies ranging from flood pools to small and big satellite lakes surrounded by a variety of wetland vegetation. Recent studies have ascertained that these important ecosystems such as satellite lakes (which harbour quite a number of endangered species), rivers, adjacent wetlands, ponds and dams found around Lake Victoria catchment are decreasing in size and some are drying up due to prolonged drought and catchments degradation.[6]

[6] Government of Tanzania, Vice President's Office, Climate Change Assessment 2009.



2. Population, development and economy

Tanzania is one of the poorest countries in the world with a GNI per capita of only US $ 300[7]. The total population of the country is estimated at over 43,7 million people, 35% of which are living below the poverty line[8]. About 85 per cent of the country's poor people live in rural areas and rely on agriculture as their main source of income and livelihood. The five coastal regions encompass about 15 percent of the country's land area and are home to approximately 25 percent of the country's population. Recent estimates indicate that the population of the five coastal regions has increased to about 8 million. The combined population of the three Lakeshore regions is estimated at approximately 4 million (10% of the total population).

Agriculture (including livestock) is the dominant sector in Tanzanian economy, providing livelihood, income and employment to over 80% of the overall population and accounting for roughly 56 percent of GDP and about 60 percent of export earnings[9]. Within the agriculture sector, food crop producers are generally poorer than cash crop farmers, but both operate under cyclical and structural constraints, are subject to frequent natural calamities (drought and flooding), and lack market linkages, inputs, credit and irrigation water[10]. Agricultural products include coffee, sisal, tea, cotton, pyrethrum, cashew nuts, tobacco, cloves, corn, wheat, cassava,

[7] WB, 2008
[8] World Bank Development Indicators, http://data.worldbank.org/country/tanzania
[9] Tanzania National Adaptation Programme of Action, 2006
[10] IFAD, rural poverty

bananas, and vegetables. Livestock production includes cattle, sheep, and goats. Agricultural output remains predominately based on small holder production, as opposed to estate cultivation, though the latter does account for some sisal, tea, coffee, tobacco, rice, wheat, and wattle (construction material made of tied-together poles or sticks) production. Cash crops, such as coffee, tea, cotton, cashews, sisal, cloves, and pyrethrum account for the vast majority of export earnings. Maize, paddy, wheat, and cassava are produced for domestic consumption. Most crops are under rainfed conditions.

It is now commonly recognized that the productivity of most food and cash crops could be increased from 50 per cent to 150 per cent by improved crop and animal husbandry practices, including through the dissemination of better irrigation technology in areas under drought, arid conditions or erratic rainfall patterns. As recognized in the 2005 National Strategy for Growth and Poverty Reduction, "*the constraints to rural growth are largely related to those in the agricultural sector (…) and include low productivity of land, labour and production inputs; underdeveloped irrigation potential; limited capital and access to financial services; inadequate agricultural technical support services; poor rural infrastructure hindering effective rural - urban linkages; infestations and outbreaks of crop or animal pests and diseases; erosion of natural resource base and environmental degradation*."[11]

Fisheries contribute 27% of consumed protein in the country. The most important fish stocks and other aquatic resources include Snappers, Scombrides, Mackerels, Nile perch (Lates niloticus) from Lake Victoria, sardines from lake Tanganyika (Stolothrissa tanganicae and Limnothrissa miodon), Nile tilapia (Oreochromis sp.) and pelagic sardines (Rastrineobola argentea). All artisanal fisheries in marine waters takes place within the territorial waters (12 nautical miles stretch). The catch consists mostly of fin fish and to a small extent of shrimps. It is dominated by the artisanal fishers using poor crafts and fishing methods. The marine industrial sub sector fish both the territorial waters and beyond in the Exclusive Economic Zone (EEZ). The main target species in the territorial waters are shellfish (shrimps and lobsters), cephalopods and crabs. In the EEZ industrial fisheries generally target tuna, tuna-like species, marlin, sword fish and sharks. Inland fisheries are all artisanal.

In Tanzania, fish is mainly consumed fresh, processed (smoked, sun-dried, and salted-sun dried). Nile perch, mostly from Lake Victoria, is the only fresh water used for filleting. However, the Government has now allowed processing of specified marine fish species. Most fish fillets and other processed fishery products including crabs, lobsters, octopus, shrimps and squids are exported. Fish that is exported in fresh or frozen form is generally processed in industrial fish processing plants.

Fishing in Lake Victoria employs many people. Over the recent period (2000 - 2007) the fishing industry has dropped due to decrease in fish catch. There are many reasons including the fact that lake levels had dropped tremendously (1-1.5m). As a result of that breeding sites were bare and destroyed. The fishery resources of Lake Victoria have been monitored since mid-1960s. In the past nine years (1992 – 2000) production in the Tanzanian waters fluctuated between 118,633 and 189,000 metric tons. Recent trends in fish catches in the Lake show signs of overfishing

[11] Government of Tanzania, National Strategy for Growth and Poverty Reduction, 2005.

which has prompted introduction of management practices such as limitation of gill net mesh sizes and banning of the use of trawls and beach seines.[12]

Water and sanitation. In population centers, sprawl and uncontrolled land use is rampant. This is made worse by unplanned settlements, both in urban and rural areas, where there is no access to potable water and sanitary systems. In some regions, 15 to 23 percent of today's households do not have toilets, leading to health problems like cholera and diarrhea. The Government of Tanzania has embarked on a major sector reform process since 2002. An ambitious National Water Sector Development Strategy that promotes integrated water resources management and the development of urban and rural water supply was adopted in 2006. Decentralisation has meant that responsibility for water and sanitation service provision has shifted to local government authorities and is carried out by 20 urban utilities and about 100 district utilities, as well as by Community Owned Water Supply Organisations in rural areas.

Water quality varies significantly within the country. In the semi-arid regions (including Dodoma, Singida, Tabora, Shinyanga, and Arusha), colour and turbidity levels become problematic during the rainy season. Rivers in the fluoride belt (including Arusha, Kilimanjaro, Singida, and Shinyanga regions of the Rift Valley, and extending to the Pangani and Internal Drainage basins) have naturally high fluoride concentrations. The waters of Lakes Tanganyika and Nyasa have overall good water quality except in the vicinity of urban areas where effluent and storm water cause local contamination, whereas the water quality of Lake Victoria is poor: high turbidity and nutrient levels lead to frequent blooms of algae and infestations of water weeds. Groundwaters from the recent sediments in the coastal plain are vulnerable to marine intrusion, particularly where groundwater-pumping rates are high. Evidence of marine intrusion has been found in the coastal aquifer of the Kigamboni Peninsula (Dar Es Salaam) with elevated chloride, sulphate and sodium concentrations and with total-dissolved solids up to 1700 mg/l (Nkotagu, 1989).[13]

Infrastructure: Currently, 75 percent of the country's industries are in coastal regions. Newly initiated activities include coastal tourism, mariculture development and natural gas exploitation. These are seen as potential resources for national economic development. Important infrastructures are located in the coastal zones and in the lakeshore areas, including key roads to and from major cities, port and fish processing infrastructures, and much of the tourism industry. Tanzania counts 6 ports, including one in Mtwara (south coast), Dar es Salaam (central coast), Tanga (Northern coast), and around Lake Victoria (2 ports in Mwanza, Nansio, Bukoba, Muzoma and a series of cluster ports).

Tourism is a growing industry in Tanzania, and one that is also dependent on natural resources and wildlife. Both in mainland Tanzania and Zanzibar, tourism has been identified as one of the main engines of economic and social development. Already, it is making a significant economic contribution – accounting for an estimated 12 percent of GDP for Tanzania as a whole and probably in excess of that for Zanzibar. Tourism is a key source of foreign exchange earnings, contributing more than 50 percent to total export earnings. The sector is estimated to directly support some 30,000 jobs on the mainland and a further 6,000 in Zanzibar, and probably as many

[12] Government of Tanzania, Vice President's Office, Climate Change Assessment, 2009.
[13] Groundwater: Tanzania, British Geological Services and WaterAid, 2001.

indirect jobs. The prime attractions are wildlife safaris (especially in the Northern Circuit) and beach tourism in Zanzibar. As well as the broad categories of wildlife viewing and resort tourism, Tanzania also offers tourism niches that appeal to more specialised market segments some of which show higher demand growth rates than in mainstream tourism. In 2004, it was estimated that some 583,000 tourists visited Tanzania and this number was expected to grow by 4.5% annually 2008 and 2017.

3. Observed climate hazards, trends and their impacts

The observed climate change, including variability in Tanznia and East Africa over the recent past includes the following:

- Warming of 0.7°C over the 20th century for Africa with 0.05°C warming per decade through the 20th century[14]
- Inter-annual rainfall variability. During the recent decades Eastern Africa has been experiencing an intensifying dipole rainfall patterns on the decadal time scale [15].
- An increase in the frequency and severity of floods, droughts and tropical storms in Tanzania. [16]Tanzania has experienced six major droughts over the past 30 years. The most recent, in 2006, ravaged agricultural production. The single event is estimated to have cut GDP growth by 1 percent[17].

The El Niño associated events of 1997-98 led to drought and flooding, and triggered a national food emergency, with severe food shortages, increased food prices, increases in power rationing, and extensive food, cattle and cash crop losses. Flooding damaged human settlements, infrastructure, property and livelihoods, and was associated with the spread of malaria, cholera and diarrhea[18]. Paradoxically, droughts, which are expected to be felt increasingly in the central regions, are known to have similar effects on health.

Current climate variability has affected the availability of water resources in Tanzania. Two of three major rivers have reduced flow due to declining regional rainfall, which has had ecological and economic impacts such as water shortages, lowered agricultural production, increased fungal and insect infestations, decreased biodiversity and variable hydropower production[19]. High temperatures and less rainfall during already dry months in the Tanzanian river catchments could affect the annual flow to the River Pangani by reductions of 6-9% and to the River Ruvu by 10%[20]. The Pangani Basin is also fed by the glaciers of Kilimanjaro, which have been melting alarmingly fast[21]. The population living around the base of Kilimanjaro use this meltwater and the fog water from the rainforests that cover the mountain's flanks for drinking, irrigation, and

[14] Hulme et al., 2001; IPCC, 2001
[15] 4AR IPCC, 2007
[16] WWF, 2006
[17] Economics of Climate Change Adaptation: "Shaping Climate Resilient Development – a framework for decision making" 2009
[18] Tanzania 's First National Communication, 2003.
[19] Orindi and Murray, 2005
[20] VPO-URT, 2003
[21] Thompson *et al*. 2002

hydropower. The Pangani Basin is one of Tanzania's most agriculturally productive areas and is an important hydropower production region. Because of this, climate change threatens the productivity and sustainability of this region's resources, which hosts an estimated 3.7 million people.

There is a strong link between climate and Tanzanian livelihoods because Tanzania depends heavily on rain-fed agriculture making rural livelihoods and food security highly vulnerable to climate variability such as shifts in growing season conditions. For example, from 1996 to 2003, there has been an observed decline in rainfall of 50-150 mm per season (March to May) and corresponding decline in long-cycle crops (e.g., slowly maturing varieties of sorghum and maize) across most of eastern Africa[22]. Long-cycle crops depend upon rain during this typically wet season and progressive moisture deficit results in low crop yields in the fall, thereby impacting the available food supply.

Increased variability (i.e., deviation from the mean) of crop production is also a major concern of farmers in eastern Africa. Inter-annual climate variability has huge impacts on the region's climate. El Niño events produce abnormally high amounts of precipitation in parts of equatorial East Africa and can result in flooding and decreased agricultural yields[23].

Climate change may also impact fisheries. Recent changes in the limnology of Lake Victoria have also negatively affected its fisheries. In the 1980's decreased turnover in the lake led to low levels and dissolved oxygen and, consequently, fish kills. Stratification in this lake now appears to be permanent[24].

4. Expected impacts of climate change

Climate change scenarios developed during the National Communications and NAPA processes indicate that the country is likely to undergo an increase in mean daily temperature as well as in the temperature of the warmest and coolest months. The results indicate that mean annual temperatures are projected to rise by 2.2 C by 2100, with somewhat higher increases (2.6 °C) over June, July and August, and lower values (1.9 °C) for December, January, February[25].

Annual precipitation over the whole country is projected to increase by 10% by 2100, although seasonal declines of 6% are projected for June, July and August, and increases of 16.7% for December, January, and February. These overall increases are nuanced regionally, with some parts of Tanzania projected to experience increases in annual rainfall, while others are expected to experience decreases. The National Vulnerability and Adaptation Assessment of Tanzania, under the National Communication, predicts increased and modified climate variability. For example, northern and southeastern sectors of the country would experience an increase in rainfall ranging from between 5% and 45%. The central, western, southwestern, southern, and eastern parts of the country might experience a decrease in rainfall of 10% to 15%. The southern highlands might similarly experience a decrease of 10%, which could alter the suitability of this area for maize cultivation. These overall average figures also mask potentially more complex

[22] Funk *et al*., 2005
[23] WWF, 2006
[24] Kaufman *et al*., 1996
[25] Climate Change and Development, OECD

seasonal variability patterns. For instance, the northeastern sector might experience an increase of 25%-60% in the short rains and an increase of 20- 45% in the long rains, and the north coastal region might get an increase of 0-20% in the short rains and a decrease of 0-10% in the long rains. Additionally, the timing of rains will become less predictable and their intensity is likely to become more volatile.

While there are no precise predictions of Sea Level rise for Tanzania, the IPCC has predicted a global average sea level rise of between 18 and 89 cm by 2100. Impacts on the Indian Ocean are expected to be highly variable, and impacts on Tanzanian Coastline and islands are also uncertain, due to variables such as currents and modifications of tidal patterns and overall regional climatic patterns. Consequently, Tanzanian government estimates are based on a conservative and a worst-case scenario of 50cm and 1m sea-level rise respectively.

Warming temperatures are projected to cause more frequent and more intense extreme weather events, such as heavy rain storms, flooding, fires, hurricanes, tropical storms and El Niño events[26]. Tropical storms can ravage coastal areas and intensive the impacts of sea-level rise by accelerating erosion in coastal areas and by removing protective natural buffer areas that absorb storm energy, such as wetlands and mangroves[27]. Extreme rainfall and subsequent heavy flooding damage will also have serious effects on agriculture including the erosion of topsoil, inundation of previously arid soils, and leaching nutrients from the soil. Regional fluctuations in lake levels are another impact of regional climate variations and are expected to worsen with projected climate change. While land use change can have a dramatic effect on lake levels, climate variability is more unpredictable and difficult to manage for.

For example, lake levels in Lake Victoria[28] have been attributed to climate variations and may become more variable in the future. In 1997, floods and high rainfall, triggered by an El Niño event in eastern Africa, resulted in a surface rise of 1.7 meters in Lake Victoria and disrupted agricultural production and pastoral systems[29]. While climate change is projected to cause more frequent and intense El Niño events , impacts are not uniform across East Africa[30]. In fact, the same year that the waters were rising in Lake Victoria, El Niño triggered a severe drought in another location in Kenya, significantly decreasing hydro-electric power output, limiting the availability of electricity to East Africans[31]. Further, a projected increase in precipitation may also have an effect on hurricanes and storms in the Atlantic[32]. In the lake basin, inadequate rainfall has already caused shortage of pastures thereby prompting considerable out migrations in search of both pastures and water.

As a result of these climate changes, all productive sectors of the Tanzanian economy and livelihoods will experience changes and, in most regions, increased vulnerability:

[26] IPCC, 2001.
[27] Magadza, 2000
[28] Birkett et al., 1999; Latif et al., 1999
[29] Lovett *et al*., 2005
[30] Wara *et al*., 2005
[31] Lovett *et al*., 2005
[32] Landsea and Gray, 1992

Agriculture: In areas where rainfall will increase, the leaching of nutrients, washing away of topsoil and water logging would affect plant development and thus affect plant growth and yield. Climate change is bound to promote the occurrence of diseases and insect pests due to both increased temperature and rainfall. For areas that will get less rainfall irrigation will be required to substitute for moisture losses due to increased evapo-transpiration and thus drought resistant varieties would be required more than at present. Crop models used for the main cash crops in preparation for the National Communication show that:

- Cotton yields are likely to increase (under improved pest management) due to the rainfall increase in certain regions (for example Mwanza);
- Increases in rainfall will also provide positive impacts on coffee production, whereas in areas under a decrease scenario, irrigation could compensate.
- Maize is likely to undergo a yield decrease of about 33 percent over the entire country, and cultivation is likely to become more difficult under more erratic conditions.

Beyond rainfall, temperature increases are also likely to have impacts on agriculture, and shifts in growing seasons are to be expected in some cases. In the case of smallholder agriculture, vulnerability is increased by improper means of production, unsustainable methods of cultivation, as well as lack of conservation and transformation technology. Opportunities for increased productivity through agriculture can only be realized under optimal and sustainable production methods. Similarly, more frequent extreme events, such as droughts or sever rainfall, could also jeopardize any potential increase realized through average rainfall increase.

Climate change is also expected to have significant impacts on land uses, specifically due to the effects of modified precipitation regimes on agriculture and on water availability, both in the coastal zone as well as in the lake area. Impacts of sea level rise on coastal waters are uncertain but evidence has already been seen of saltwater infiltration in coastal wells and boreholes, leading to unsafe water and irrigation conditions.

Fisheries are expected to be impacted directly and indirectly, through changes in habitat, potential destruction of breeding grounds and mangroves, and coral bleaching, as well as through changed patterns of consumption induced by decreased agricultural productivity during longer drought periods. An increase in mean temperature may also affect the dissolved oxygen concentrations in the layer of water below the thermocline in two ways: increased metabolism of fish and other organisms in a slightly warmer à will lead to the faster depletion of the limited oxygen supply, and lake overturn, the primary means of replenishing à dissolved oxygen, will occur less frequently[33].

Water resources: Climate change is projected to have both positive and negative consequences for Tanzania's water-resources, specifically for the three major river basins: Ruvu, Pangani, and Rufiji. The Ruvu basin, of particular importance because it is upstream of Tanzania's major population center, Dar es Salaam, could experience a 10% decrease in runoff according to the Initial National Communication. The Pangani basin which supplies water to the Tanga, Kilimanjaro, and Arusha regions, supporting a number of economically important activities there is some seasonal variation with runoff projected to increase in some months runoff and decrease

[33] Fick *et al*., 2005.

in others, with annual basin runoff decreasing by an estimated 6%. However, the Kikuletwa River, also within the Pagani Basin, is projected to decrease in all months, with annual reductions of 9%. The Rufiji basin meanwhile is a large catchment in the south of the country, focused on the Great Ruaha River, which is economically important to the nation in part because of the hydropower it generates at Mtera Dam and Kidatu Dam. Its annual runoff is expected to increase with 5% and 11% at Mtera and Kidatu, respectively, most coming in the period from November to March. All these estimates however are based on scenarios from a single GCM, and should be interpreted with some caution. Real uncertainties exist concerning present and future withdrawals for irrigation, changed land use, and urbanization. Nevertheless, decreases in runoff could potentially have serious affects on socioeconomic activities in the regions of Dar es Salaam, Morogoro, Tanga, Coast, and Kilimanjaro. Dar es Salaam might be particularly vulnerable because it is the largest industrial, commercial, and administrative city in Tanzania.

Rural communities often depend on streams and rivers for drinking water, and some of these tend to dry up during droughts and dry seasons. Recurrent droughts have already had significant impacts throughout the country. Changes in runoff in rivers feeding the lake could adversely affect water levels, and hence fisheries. In the coastal area, some saltwater intrusion in coastal aquifers and deltas can also be expected due to sea level rise and intrusion into shallow coastal rivers, as in the case of the Rufiji delta.

Energy: A mentioned above, under the climate change scenarios, the runoff of three major rivers will be altered. Reduced runoff of Pangani and Ruvu rivers, which are economically important for supplying water and hydro-electricity to major towns, where industrial activities are highest in the country, would adversely affect socio-economic activities in the country. The five regions supplied are Dar es Salaam, Coastal, Tanga, Kilimanjaro and Arusha. These changes would adversely affect water supply and socio-economic activities, and most likely lead to an increase in deforestation for fuelwood supply.

Infrastructure: Studies undertaken prior to the National Communication and NAPA processes analysed vulnerability to a 50cm and 1m sea level rise, whereas IPCC estimates place global sea level rise predictions at between 9 and 88 cm by 2100. Estimates show that in Dar es Salaam and Coast region a total of 14,757 ha and 29,485 ha could be inundated for a sea level rise of 0.5m and 1.0m respectively; in Tanga the areas could cover 2,022 ha and 4,045 ha and in Mtwara and Lindi the inundated areas could reach 7,922 ha and 15,855 ha for a sea level rise of 0.5m and 1.0m respectively. Total potential land loss is estimated to be 247 square km and 494 square km for a sea level rise of 0.5 m and 1.0m, respectively. In addition, stronger storm surges, stronger winds and cyclones may also have impacts on coastal infrastructure, and increase coastal erosion. Along the Dar es Salaam coastline (approximately 100Km), the estimated loss of important structures is estimated to cost Tshs.49,83 billion and Tshs.85.97[34] billion for a sea level rise of 0.5 m and 1.0 m respectively.

This project seeks to respond to the impacts of climate-change on the vulnerable coastal zone and lakeshore areas of Tanzania. These impacts include direct effects of sea level rise, such as erosion, saltwater intrusion in aquifers, and potential losses of infrastructure and economic

[34] Tanzania's First National Communication, 2003

assets, as well as effects of coral bleaching, decreased fisheries, and predicted changes in precipitation regimes with their impacts on agriculture, livelihoods and health.

In order to respond to these threats and anticipated impacts, this project will address the direct climate drivers of vulnerability as well as the non-climate drivers that are acting as barriers to adaptive capacity throughout the country and in the targeted sectors and regions. These non-climate drivers of vulnerability include:

- **Poverty**: Tanzania is one of the poorest countries in the world with 42% of the total population and 50% of the rural population live below the poverty line and with 20% of the entire population surviving on less than US$1 per day (World Bank, 2002). It is the poor that are the most vulnerable to climate change impacts because they are particularly sensitive to, and have the least capacity to adapt to such impacts. Within the coastal zone, there are limited livelihood sources in the urban areas. As a result, the majority of the coastal population rely on rain-fed agricultural activities and/or exploitation of natural resources to generate income streams and maintain livelihoods thus creating a vicious circle of increasing vulnerability to climate change.

- **Population density,** in some regions, is also a problem that contributes to environmental degradation, and to difficult living conditions. In urban centers, illegal settlements are increasing in size while living conditions create additional factors of vulnerability (lack of access to water, energy, health, education and overall economic poverty).

- **Unsustainable uses of natural resources**: poverty has led many communities to resort to unsustainable uses of natural resources, such as forests, mangroves, fisheries, and reefs. The lack of sanitation in many parts, combined with increasing industrial development have led to pollution of waterways and to the degradation of ecosystems that previously provided sanitation services (wetlands, marshes). Deforestation for fuelwood, along with sand and coral mining are among the unsustainable practices that are increasing vulnerability of ecosystems and indirectly, the vulnerability of communities that depend on them.

- **Low or inefficient implementation of existing plans and policies and low enforcement of laws**: As recognized in Tanzania's Coastal Management Strategy, there is a need for coordination and feedback mechanisms are needed among agencies, decision-makers and implementing authorities at all levels. Enhanced management structures and capacity of relevant agencies, particularly at district and village levels and improved enforcement of existing laws are essential for effective governance of coastal resources[35]. Although plans and policies governing the use of natural resources in vulnerable areas are in force, there is limited capacity at district level for their enforcement. In some cases, codes and regulations currently in force do not take into sufficient consideration the possible impacts of climate change, such as building codes (buffer zones) or fisheries regulations (no-take zones).

[35] Government of Tanzania, National Integrated Coastal Environmental Management Strategy, 2003.

PROJECT / PROGRAMME OBJECTIVES:

This project responds to the impacts of sea level rise and changes in precipitation patterns caused by climate change and their direct or indirect effects, such as droughts, floods, infrastructure degradation and environmental degradation. **The objective of the project is to reduce vulnerability of livelihoods, infrastructure and economy in Tanzania** through implementation of concrete and urgent adaptation measures.

In order to achieve this objective, the project will be delineated into six specific outcomes:

1. Adverse impacts of sea level rise on coastal infrastructures and settlements averted.
2. Adverse impacts of floods averted
3. Adverse impacts of climate change on water supply and quality averted
4. Livelihoods are sustainable, diversified and resilient
5. Coastal and shoreline ecosystems are rehabilitated and ICAM is implemented
6. Knowledge of climate impacts and adaptation measures is increased

The project focuses on the implementation of priority concrete on the ground, practical solutions to climate impacts (current and anticipated), but some foundational activities have been included where necessary in order to facilitate project output and objective achievement.

This project is expected to be implemented alongside, and in close collaboration with the LDCF NAPA implementation project, which also focuses on coastal zones but whose activities are targeted towards enabling, facilitating and community-level pilot actions (currently under preparations). The project will also coordinate with other ongoing relevant initiatives in targeted locations and at national level.

Activities in each of the components and outcomes are designed to be mutually reinforcing: Components 1 and 3 together provide a comprehensive set of solutions to coastal and lakeshore degradation and are designed to be implemented jointly. For example, infrastructure works are also to be accompanied by ecosystem rehabilitation works in order to maximize efficiency of coastal protection systems. Component 2 is designed to remove the barriers to adaptation and resilience by promoting livelihoods that generate benefits and adaptive capacity while at the same time maintaining ecosystem services. As such, this component is a necessary element of any resilience strategy, whether in the Lake or in the Coastal area. Finally, activities in Component 4 ensure that appropriate learning is taking place and that policy linkages are in place for upscaling, mainstreaming and replicating of lessons into national development processes.

The project will implement concrete adaptation actions in 5 sites (three districts in the coastal regions and two in the Lake Victoria regions). These sites were selected according to key criteria such as: (i) geographic and socio-economic representativeness; (ii) presence of key infrastructure and economic assets; (iii) presence of fragile buffer ecosystems; (iv)

complementarity to other ongoing interventions; and (v) presence of multiple factors of vulnerability.

This project has chosen to focus on two distinct eco-zones in the country as a means to address some key aspects of vulnerability and to provide means for upscaling adaptation to the country-wide context. While the Lake and Coastal zones are very different geographically, they share some similarities in terms of vulnerability, particularly in terms of the impacts on climate change on water resources and rural livelihoods (agriculture, livestock and fisheries), impacts of changed precipitation patterns on productivity and impacts of extreme events on people, infrastructure and livelihoods. In addition, while both zones may be subject to different pressures (both climate induced and anthropogenic), vulnerable communities in both zones evolve in similar constraining environments contexts of poverty, limited means and sources of livelihoods, and climate-dependency.

On the other hand, the choice of the two zones also offers an opportunity to address two different sets of challenges, namely sea level rise and the interactions between land and water management. Both zones also have developed different coping mechanisms, and in some cases these coping mechanisms represent maladaptations that need to be addressed. For example, in the Lake zone, cultivation and grazing in wetland areas has been used as a coping strategy to compensate for crop shortages during droughts. Each zone, because of its different ecosystems characteristics also offers opportunities to promote ecosystem-based adaptation that could be replicated in other areas within the country (e.g other lake areas, or islands).

Finally the choice of the 5 sites in two different zones was also motivated by questions of political equity and the need to implement urgently a set of concrete adaptation measures addressing the needs expressed by local populations. It is estimated that the total vulnerable population in the lake zone represents 10% of the total population, while 15% live in the coastal area.

1. Mtwara Urban and Rural Districts, Mtwara Region: According to the 2002 Tanzania National Census, the population of the Mtwara Region was 1,128,523 people. Mtwara Region is administratively divided into six districts: Masasi, Nanyumbu, Newala, Tandahimba, Mtwara Urban and Mtwara Rural. Mtwara district combines growing urban settlements and port infrastructures that can handle between 400,000 and 750,000 MT of annual shipment[36], with fragile ecosystems such as mangrove forests, coastal reefs and estuaries. The district is also home to a marine national park, the Mnazy Bay Marine Reserve. Main livelihoods in this region are agriculture, although coastal lands are lower in fertility than inland areas, and fisheries. Natural Gas deposits have recently been placed under exploitation in the region.

2. Ilala District, Dar es Salaam region: Dar es Salaam is the major commercial, administrative and industrial centre of Tanzania. The total surface area of Dar es Salaam City is 1,800 square kilometers, comprising of 1,393 square kilometers of land mass with eight offshore islands, which is about 0.19% of the entire Tanzania Mainland's area. The total estimate coastline of Dar es Salaam is 100 Km. Based on the 2002 Population and Housing Census, Dar es Salaam had 2,487,288 inhabitants. The City is divided into three ecological zones, namely the upland zone

[36] Tanzania Port Authority

comprising the hilly areas to the west and north of the City, the middle plateau, and the low lands including Msimbazi valley, Jangwani, Mtoni, Africana and Ununio areas. The main natural vegetation includes coastal shrubs, Miombo woodland, coastal swamps and mangrove trees.[37].

Dar es Salaam obtains its water from three major sources, namely, Lower Ruvu near Bagamoyo, Upper Ruvu near Mlandizi and Mtoni in Temeke District. The city and its surrounding areas benefits from a varied economy in which urban agriculture, fisheries, industry, and tourism blend. Dar es Salaam city is prone to floods and shortage of water, pollution due to urbanization influx, increasing squatter settlements and lack of resources to facilitate functioning (Kazinja.V, 2001). The Ruvu river which is the main source of Dar es Salaam water supply is not well managed and lands which could have been left unused are now misused due to overpopulation. Wetland degradation, upland droughts and pollution lead to environmental impacts in the coastal area, making the area even more vulnerable to the impacts of climate change, including sea level rise and flooding, and coastal erosion[38]. Major impacts of climate change are expected to occur on key infrastructures, water infrastructure as well as on human habitations.

3. Muheza District, Tanga Region: According to the 2002 Tanzania National Census, the region has a population of 1,642,015 people. Tanga is comprised of 8 districts: Handeni, Kilindi, Korogwe, Lushoto, Muheza, Mkinga, Pangani and Tanga. In Tanga region most areas get rainfall of at least 750 mm. per year. The amount of rainfall is about 1,100 to 1,400 mm. along the coast, decreasing inland. The coastal area of Tanga region is dominated by bushland, palm gardens, village cultivations and estates (mainly sisal). Main species cultivated include: Citrus fruits, Sisal, Coconuts, Cashewnuts, Maize, Cassava, Rice and Sea Weeds[39]. Muheza district is home to mangroves and costal forests reserves also important for bird and marine species, as well as fragile estuaries.

This region is also expected to benefit from some smaller-scale pilot interventions in the district of Pangani through the LDCF Adaptation project which is currently under development for submission to the GEF in 2011.

4. Magu District, Mwanza Region: Mwanza region has a population of 2,942,148 (2002 census) in eight districts, and covers an area of 19,592km2. The districts are Ukerewe (to the north), Magu (to the east), Sengerema and Geita (to the west), Misungwi and Kwimba (to the south), and Nyamagana and Ilemela (the city). The economy in Mwanza Region is dominated by smallholder agriculture employing 85% of the region's population and complemented by an expanding fishing sector. Some large fishing companies, using modern fishing gear and vessels, carry out commercial fishing in the lake. The region has traditionally been one of Tanzania's main producing areas for cotton. For the past two decades cotton production has declined basically due to low profitability and inefficient marketing arrangements as well as climate variability and extreme events such as droughts. Magu district is one of the poorest districts in Tanzania. The annual district rainfall is about 600 to 800 mm that falls in unreliable patterns, with persistent droughts, whereas irrigation schemes are not very widespread, despite availability

[37] Government of Tanzania, Dar es Salaam City Council, Tanzania City Profile, 2004.
[38] Government of Tanzania, Dar Es Salaan Vulnerabiltiy to Climate Change, 2008.
[39] Government of Tanzania, Planning Commission, Tanga Regional Profile, 1997, http://www.tzonline.org/pdf/Tanga.pdf

of surface freshwater[40]. Another production problem in the district is declining soil fertility due to factors such as overgrazing, deforestation for fuelwood (alternative energies are not yet widespread in the area), poor farming methods, and population growth. Magu district is home to wetlands under various states of degradation from unsustainable use (grazing)[41] and pollution (lack of sanitation). Other factors of vulnerability in the region, in addition to livelihoods insecurity, include malaria and the potential climate change induced appearance of cholera, and the appearance of invasive sea weeds and algae in the lake areas, due to pollution, with impacts on fisheries. The eastern part of Magu District borders Serengeti National Park, whose management can generate significant revenue.

5. Muleba District, Kagera Region: Kagera Region is located in the northwestern corner of Tanzania. Bukoba, Kagera Region's capital, is a fast growing town situated on the shore of Lake Victoria. Kagera comprises eight administrative districts: Bukoba Urban, Bukoba Rural, Misenyi, Muleba, Karagwe, Ngara Chato,and Biharamulo. The 2002 Census places the region's population at 2,033,888, and the Muleba district population at 386,328 distributed in 31 wards. The region's climate is influenced greatly by its proximity to Lake Victoria. Prevailing winds from the east tend to bring higher rainfall to the shore strip and highlands close to the shore. The shore highlands create a rainfall shadow over the central area. The main rains come twice a year (bimodal) in March to May and during the months of October to December. The average annual rainfall for the whole regions ranges between 800 mms and 2000mms. In the western highlands of Ngara and Karagwe annual rainfall is over 1000 mms whereas in Biharamulo it ranges between 800 and 1000 mms. The dry period begins in June and ends in September. There is also a short and less dry spell during January and February.

A series of hilly ridges running north south and parallel to the lake shore are the main banana coffee growing areas in the region. Soils in these areas have high iron and clay content. However, the soils are low in phosphorus and are acidic. The nitrogen content of these soils is usually low but to some extent is boosted by intercropping with legumes, including and to a less extent by manuring. Because of damage by high rainfall regimes in areas along and near the lake shores coupled with bad soil management, soil erosion is a serious problem[42]. Most of Muleba district is located in the lake coastal region, that receives annual precipitation ranging from 1400mms to 2000mms, having soils rich in yellow –red sandy clay, with low available nutrients. The area has an altitude of 1300ms to 1400ms above sea level. Crops grown are mainly bananas, cassava, beans, coffee and tea. The region's dependence on agriculture, and more specifically coffee makes it vulnerable to both climate shocks and economic fluctuations, and recent efforts to diversify agricultural production have begun to show some moderate success in reducing poverty (through introduction of mushrooms and vanilla). Forests, woodlands and thickets in Kagera region are estimated to cover 10,148 sq kms or nearly 35% of the region's land area, and the lake shore area is dominated by grasses mainly in steep areas. The natural forests are threatened by bushfires and human development activities like opening of new farms, charcoal production and the influx of refugees. Forests reserves are under encroachment pressures due to a lack of enforcement capacity. The large majority of households in the region use fuelwood

[40] Government of Tanzania, Socio-economic profile of Mwanza region.
[41] Impact of immigrant pastoral herds to fringing wetlands of lake Victoria in Magu district Mwanza region, Tanzania, H. Hongo, and M. Masikini, Lake Victoria Environmental Management Project, 2003
[42] Government of Tanzania, http://www.tanzania.go.tz/regions/kagera/climate.html

either in the form of firewood or charcoal to do their cooking and heating. Given unlimited access, the demand for fuelwood per capita is about 2 cubic metres of roundwood per year. Given the current population in the region this demand equals some 2000 ha. of deforestation. Beyond deforestation, water pollution and invasive species such as the water hyacinth are factors of environmental degradation in this region.

PROJECT / PROGRAMME COMPONENTS AND FINANCING:

Fill in the table presenting the relationships among project components, activities, expected concrete outputs, and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS	EXPECTED OUTCOMES	AMOUNT (US$)
Component 1 - Addressing climate change impacts on key infrastructure and settlements	Coastal engineering needs assessment and design study Report on climate change impacts on infrastructure and adaptation recommendations Sea wall raised or rehabilitated in areas showing particular damage District level administration have the capacity to adequately manage rehabilitated infrastructure	*Outcome 1 - Adverse impacts of SLR on coastal infrastructures and settlements are reduced*	2,667,663
	Effective storm and flood drainage systems in urban areas and near coastal communities	*Outcome 2 - Adverse impacts of floods averted*	633,900
	Water extraction, conservation and harvesting infrastructure rehabilitated, along with adequate monitoring at local level Boreholes and wells showing signs of salinization relocated	*Outcome 3 - Adverse impacts of climate change on water supply and quality averted*	739,550
			4,041,113
Component 2 - Resilient livelihoods	New or rehabilitated fishing docks and fish processing areas Increased numbers of sustainable tourism enterprises and resilient touristic infrastructures Agricultural tools, materials, and sustainable technologies and approaches transferred Irrigation technology and equipment transferred in areas subject to drought or erratic rains Introduction of alternative resilient crops and crop management methods Appropriate alternative energy (efficient cookstoves, small solar, solar water heaters, small hydro) technology transferred	*Outcome 4 - Livelihoods are sustainable, diversified and resilient*	**2,429,950**
3. **Component 3 - Ecosystem-Based Integrated Coastal Area Management (EBICAM)**	Mangrove rehabilitation through planting of resilient seedlings, dredging and the creation of no-take buffer zones; Coral reef rehabilitation and protection in coastal sites Beach nourishment, coastline reforestation (trees and grasses) Shoreline management and rehabilitation, using trees and grasses, replanting, stone dikes (rip rap) and no-build zones Wetland rehabilitation One EBICAM plan for the coastal region and one EBICAM plan for the Lake region approved	*Outcome 5 - Coastal and shoreline ecosystems are rehabilitated and ICAM is implemented*	**1,743,225**

4. **Component 4 - Knowledge, monitoring and evaluation and policy linkages**	Available knowledge, science and data gathered for project implementation Operational climate change coastal observatory for Tanzania for ongoing monitoring of CZM and Coastal environmental status and scientific research Assessment of the economic viability and practical feasibility of adaptation measures (i.e. through undertaking cost-benefit analyses) Policy briefs for policymakers and planners based on project outputs, lessons and challenges Awareness raising workshops based on project lessons for mainstreaming	Outcome 6 - knowledge of climate impacts and adaptation measures is increased	**633,900**
5. Project/Programme Execution cost			408,750
6. Total Project/Programme Cost			**9,045,638**
7. Project Cycle Management Fee charged by the Implementing Entity			768,879
Amount of Financing Requested			**9,814,517**

PROJECTED CALENDAR:

Indicate the dates of the following milestones for the proposed project/programme

MILESTONES	EXPECTED DATES
Start of Project/Programme Implementation	March 2011
Mid-term Review (if planned)	June 2014
Project/Programme Closing	March 2016
Terminal Evaluation	June 2016

PART II: PROJECT / PROGRAMME JUSTIFICATION

1. Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

This project is comprised of 6 inter-related outcomes grouped into 4 components designed to achieve the project's overall objective to implement concrete and urgent measures to adapt to climate variability and change in order to protect livelihoods and to promote economic resilience. It seeks to respond to both direct effects of climate change such as sea level rise and the predicted changes in precipitation regime with their indirect impacts on agriculture and health. In order to respond to these threats and impacts the activities proposed are designed to address the direct climate drivers of vulnerability as well as the non-climate drivers that are acting as barriers to adaptive capacity in the target sectors and spatial locations.

Component 1 – Addressing climate change impacts on key infrastructure and settlements.

Activities under this component are designed to achieve 3 outcomes focused on reducing climate threats on infrastructure, settlements, and key investments. They are focused on multiple climate change threats and combined impacts, including: increased flooding in areas due to receive increased precipitation, coastal and infrastructure erosion due to increased tidal activity and storm surges, and salinization of groundwater due to sea water intrusion. Activities in Component 1 are grouped together due to their common focus on physical coastal protection and infrastructure, but are to be undertaken and understood in conjunction with "softer" coastal protection and ecosystem rehabilitation works contained in Component 3.

Outcome 1: The adverse impacts of Sea Level Rise on Coastal Infrastructure and Settlements are reduced

The first set of activities (Outcome 1) are targeted towards addressing the direct impacts of Sea Level Rise (SLR) and coastal erosion on the key social, cultural and economic infrastructures of the 3 project sites located in coastal areas. Engineering assessments of the climate change impacts and adaptation measures for major coastal infrastructure will be conducted under this component, which will enable the government and the Tanzania Port Authority to initiate the implementation of long-term rehabilitation and contingency plans and which will provide the coastal engineering needs assessment for this project as well as input into district level management plans.

In order to address emergency adaptation needs, special attention will be paid to the rehabilitation and maintenance of coastal protection infrastructure around key economic assets (e.g., roads, ports, markets) and cultural or historical sites that also play a role in the touristic industry. As a matter of urgent priority, this work will be undertaken in Dar es Salaam, where the existing sea wall is showing signs of severe degradation. For example, in Kunduchi area of Dar es Salaam, headwater waves are reported to have advanced for about 200m in the last 50 years; as a result, five residential houses were washed away as well as a historic fish market and hotel infrastructures[43]. In order to protect major economic and social assets, this project will support the rehabilitation of a 1 km segment of the degraded sea-wall in Dar es Salaam-Ilala District, so that it can withstand higher sea levels (up to 1 meter), increased tidal action and stronger storm surges into consideration. Typical design and specifications for the rehabilitated portion of the seawall are shown in Annex 4.

In addition, as part of this activity, and in direct support of activities under Outcome 3, district-level infrastructure maintenance programs will be reviewed or renewed and district level administrations will be assisted in setting aside budgetary allocations so that rehabilitated infrastructures are appropriately maintained in the long term.

[43] Makota V., Sallema, R. and Mahika, C. 2004. Monitoring shoreline change using remote sensing and GIS: a case study of Kunduchi Area, Tanzania. Western Indian Ocean Journal of Marine Science, Vol.3, No.1.

Outcome 2: Adverse impacts of floods averted

The second group of activities (Outcome 2) is targeted towards addressing the adverse impacts of floods and mitigating flood risks in areas due to receive increased precipitation or stronger precipitation events. Activities will mainly consist in clearing and maintenance works on drainage channels and the rehabilitation of storm drains in selected urban areas, and on dredging of estuaries and installation of tidegates in rural areas near rivers. Activities will take place in both coastal and lake shore areas, since all areas are predicted to have an increased potential of flooding. Based on the reviews and engineering studies conducted under Outcome 1, levees, floodgates and other small dams may be constructed, repaired or upgraded to face increased flooding risks.

This set of activities will be undertaken in collaboration with – and based on knowledge from – ongoing disaster prevention initiatives in and around project sites. These activities will also benefit from the activity included above to strengthen district-level capacity to integrate infrastructure maintenance in their regular programmes.

Outcome 3: Adverse Impacts of climate change on water supply and quality averted

The project will also address the adverse impacts of climate change on water supply and quality in both coastal and lakeside sites. In areas they have been inundated due to coastal erosion and sea level rise, the project will support the relocation of shallow wells and boreholes to safer areas, taking into consideration potential sea level rise and the risk of saltwater intrusion in groundwater aquifers. The relocation of boreholes and shallow wells will be undertaken based on a comprehensive environmental and social impact assessment[44] as per national standards and regulations and appropriate hydro-geological studies that will determine recommendations for relocation based on climate scenarios, social impacts (particularly on women) and on potential environmental impacts. In order to avoid SLR impacts on health, extraction rates, that can exacerbate saltwater intrusion, will also be reduced and monitored in order to avoid groundwater depletion. This relocation and redesign of boreholes will be undertaken as per specifications in Annex 4.

In both zones, the project will also assist in the rehabilitation or upgrading of existing water extraction, transport and conservation infrastructures (e.g. underground cisterns, small retention dams, rooftop harvesting where feasible, pipes). This will be undertaken alongside activities in component 2 that aim to assist with the broader dissemination of water conservation and harvesting systems in rain-dependent areas, or crop-appropriate irrigation systems in areas where rainfall is likely to become unpredictable and where surface freshwater is available, mostly in the lake area (see component 2).

[44] The potential negative impacts of borehole relocation (e.g. from decommissioning to construction) include soil trampling if the water point is to be used by livestock, the immediate impacts of construction (for transport and surrounding structures, e.g. fountains, troughs, pumps, cisterns or pipes), increased time delays for fetching water for those located at a distance in the absence of adduction structures, and groundwater depletion in case extraction rates are not monitored. These potential impacts will be carefully weighed against the benefits of having access to potable water for targeted communities, and risk mitigating strategies will be proposed in the ESIA studies.

This component therefore contains activities related to the physical works needed to protect and rehabilitate vital infrastructure from climate change impacts; it is to be undertaken in conjunction with activities under Component 3, that provide softer protective measures based on ecosystem rehabilitation and services.

Component 1 - Indicative activities

Component 1 - Addressing climate change impacts on key infrastructure and settlements			**1-coast Mtwara**	**2- Dar es Salaam***	**3- Muheza**	**4- Magu**	**5- Muleba**
Outcome 1 - Adverse impacts of SLR on coastal infrastructures and settlements are reduced							
	Rehabilitate coastal protection facilities to protect settlements economic and cultural infrastructure	Sea wall raised or rehabilitated in areas showing particular damage		x			
		District level administration have the capacity to adequately manage rehabilitated infrastructure	x	x	x	x	x
	Perform engineering assessment of climate change impacts on infrastructure (enabling)	Report on climate change impacts on port infrastructure and adaptation recommendations (enabling)					
		Coastal engineering needs assessment and design study (enabling)					
Outcome 2 - Adverse impacts of floods averted							
	Cleaning up of the drainage channels, dredging of estuaries, installation of tidegates, rehabilitation of storm drains in selected urban centers	Effective storm and flood drainage systems in urban areas and near coastal communities		x	x	x	x
Outcome 3 - Adverse impacts of climate change on water supply and quality averted							
	Rehabilitation of water mobilization and conservation structures along with sustainable water extraction and management practices	Water extraction, conservation and harvesting infrastructure rehabilitated, along with adequate monitoring at local level	x		x	x	x
	Relocation of water extraction and conservation structures in coastal areas to avoid salinization	Boreholes and wells showing signs of salinization relocated, on the basis of ESIA studies	x		x		

Component 2 - Resilient livelihoods

Activities under this component have a dual objective. First, to provide the vulnerable communities with resilient livelihoods that take into account the constraints and opportunities of climate change in the future; second, to remove the anthropogenic pressures on the

environment that hinder its own resilience to climate change. This component will focus on agriculture, fisheries and tourism as the key productive sectors among non-urban communities in the coast as well as in the lakeshore areas. Activities will aim at providing communities with the means to achieve higher productivity based on better technology, while ensuring that challenges of climate change are taken into account and reducing environmental damage due to unsustainable natural resource use.

Outcome 4: Livelihoods are sustainable, diversified and resilient.

In Tanzania, agriculture accounts for about half of gross production, and employs about 80 percent of the labor force. Agriculture in Tanzania is primarily rain-fed, with only 2 percent of arable land having irrigation facilities – far below the potentially irrigable share (FAO, 2009). Tanzanian yields, especially of staple foods like maize, are particularly susceptible to adverse weather events. This threat has been recognized in Tanzania's National Strategy for Growth and Reduction of Poverty which identifies droughts and floods as among the primary threats to agricultural productivity. Given that climate change is likely to increase these adverse effects and variability, adaptation activities in the agriculture sector should focus on providing added resilience to productive assets in rural areas. Models developed by the World Bank indicate that "scenarios with the greatest increase in precipitation volatility and the largest changes in temperature volatility the median climate outcome in the future may lead to 24.3 to 89.7 thousand additional poor. Individual GCM results show climate-induced interannual poverty increases as high as 700,000 in some cases" [45]. Reducing vulnerability to climate change impacts in the agricultural sector therefore entails providing communities with the means of increasing productivity while shielding them from climate shocks. This is generally achieved through a combination of better technology and management of natural resources, together with the development of suitable and resilient alternative sources of livelihoods.

For agriculture, activities will focus on promoting efficient crops and cropping methods, including mechanization where it is lagging (particularly in the lakeshore areas) more particularly for maize, cassava and sorghum, in both coastal and lakeshore areas. In lakeshore areas that are already under dryland conditions, irrigation technology and systems will be further disseminated in anticipation of rainfall regime modifications[46]. Alternative crops (vanilla, fruit trees, flowers) will be further introduced in pilot locations, taking into consideration future climate conditions, in order to promote livelihoods diversification and to take advantage of any climate change opportunities[47]. In the case of key cash crops, such as cotton, coffee, bananas, or nuts, organic production technologies will be transferred, and conservation and transformation technologies that take into consideration the emerging climate conditions and pests will also be introduced, including organizing fertilization, soil fertility management and integrated pest management. These activities combined are aimed

[45] see for example *Climate Volatility and Poverty Vulnerability in Tanzania*, Syud Amer Ahmed et al., World Bank Policy Research Working Paper 5117, 2009

[46] Mtwara Socio-Economic Profile, 2000.

[47] MAKING AGRICULTURE IMPACT ON POVERTY IN TANZANIA: THE CASE ON NON-TRADITIONAL EXPORT CROPS, Prof. H.K.R. Amani, Economic and Social Research Foundation, Paper Presented at a Policy Dialogue for Accelerating Growth and Poverty Reduction in Tanzania, Held at ESRF, Dar es Salaam, 12th May 2005.

at achieving at least a 15% increase in productivity in targeted areas, that would be maintained in the face of climate change. They have been selected based on an analysis of existing and functioning coping mechanisms already under implementation in some parts of the country[48].

In order to promote better management of forests, and to reduce deforestation in all sites, therefore maintaining soil fertility, protecting shorelines and creating buffer areas, alternative energies will be promoted through the transfer of renewable energy technologies such as small solar energy, efficient cookstoves, small hydro energy where possible, with the aim of reducing dependency on fuel wood. In appropriate areas, agro-forestry will also be implemented as part of a diversification strategy.

Regarding fisheries, activities will focus on managing fishing rights and permits among the existing fishing communities, establishment of quotas and other systems in order to avoid overfishing or illegal fisheries, particularly in and around fragile systems such as mangroves. Community-based enforcement of the Fisheries Act (2005) and other fisheries regulations has shown significant signs of success, as noted in the Climate Change Assessment of 2009: "There has been a remarkable achievement in curbing illegal fishing practices through collaboration with Beach Management Units (BMUs) and other stakeholders whereby more than 3821 illegal fishing gears were confiscated, 242 culprits apprehended and 3,524 kg of fish were confiscated. Furthermore, the Government has continued to enforce a slot size of 50cm to 85cm total length for Nile perch". This system will be supported through this project to ensure livelihood sustainability and resilience in fish stocks.

In addition to these "soft" measures, fisheries productive assets will also be rehabilitated, such as fishing docks, nets and boats, whose degradation is leading to unsustainable harvesting of fish species; fish processing areas will also be rehabilitated for resilience[49]. Where they do not exist fish conservation or transformation structures will be implemented in order to ensure that fisheries remain a sustainable yet profitable activity for coastal and lakeshore communities. This will be undertaken according to specifications and plans illustrated in Annex 4. In conjunction with activities undertaken in component 3, fish breeding grounds and habitats will be placed under special protection for the maintenance of biodiversity as well as for the continued livelihoods of communities.

Finally, in order to continue to benefit from the potential of tourism as a growing sector in Tanzania, activities in this sector will include the rehabilitation of cultural infrastructures that are at risk from sea level rise, storm surges or severe rainfall events. District-level revolving funds designed to provide assistance to tourism enterprises will be created to provide targeted funds for eco-tourism promotion, retrofitting infrastructures and designing of sustainability plans. These funds will be operated as a financing facility for tourism enterprises to access concessional loans in order to develop or upgrade resilient and sustainable facilities or activities. Loan repayment would be used to continue operations on a rolling basis, based on an initial replenishment. The funds would be administered under the aegis of the Ministry of

[48] Government of Tanzania, Vice President's Office, Climate Change Assessment 2009.
[49] UN FAO, Tanzania Fishery Profile, 2007.

Tourism with the collaboration of the Tanzanian Association of Tourism Operators (TATO), but delivered at the district level[50]. Activities that will be considered eligible could include:

- The development of new eco-tourism product lines in conjunction with ecosystem rehabilitation initiatives under this project (mangroves, wetlands);
- Upgrading or retrofitting touristic facilities to cope with climate change (for example sea level rise, lakeshore rehabilitation, increased precipitation and changed run-off patterns);
- Upgrading or retrofitting energy supply (e.g. solar water heating or lighting) or waste management;
- Design of sustainability or environmental management plans.

Component 2 – Indicative activities

	Activities	**Outputs**	1. Coast - Mtwara	2-coast Dar*	3-coast Muheza	4-lake Magu	5-lake Muleba
Component 2 - Resilient livelihoods							
Outcome 4 - Livelihoods are sustainable, diversified and resilient							
	Development or rehabilitation of fishing docks and fish processing areas at community level in coastal areas	New or rehabilitated fishing docks and fish processing areas	x	x	x	x	x
	Promotion of sustainable and resilient nature-based tourism through district-level tourism assistance revolving fund	Increased numbers of sustainable tourism enterprises and resilient touristic infrastructures	x	x	x	x	x
	Promote resilient agricultural practices	Agricultural tools, materials, and sustainable technologies and approaches transferred	x	x	x	x	x
		Irrigation technology and equipment transferred in areas subject to drought or erratic rains	x	x	x	x	x
		Introduction of alternative resilient crops and crop management methods	x	x	x	x	x
	Promote alternative energy for avoided deforestation	Appropriate alternative energy (efficient cookstoves, small solar, solar water heaters, small hydro) technology transferred	x			x	x

[50] A similar model exists in Kenya, through the Kenya Tourism Development Corporation. Many countries operate similar facilities, for example Canada, the USA (Alaska and Oklahoma), and Jordan, South Africa, or Madagascar. A similar, small-scale pilot case of tourism revolving fund can be found in the Pangani district of Tanzania, supported by the World Tourism Organization's Sustainable Tourism Eliminating Poverty Project (STEP).

Component 3 – Ecosystem-based Integrated Coastal Area Management

This component comprises a set of concrete environmental rehabilitation measures designed to enhance ecological resilience as well as a set of enabling measures that form part of an integrated ecosystem-based integrated coastal area management system for the targeted regions. It is designed to be implemented as a complement to activities in Component 1, in order to form a comprehensive package of protection from climate change impacts in both coastal and lake regions. This component also comprises activities designed to achieve policy linkages and as such is closely linked to activities included in Component 4.

Outcome 5: Coastal and Shoreline ecosystems are rehabilitated and ICAM is implemented.

Environmental rehabilitation activities will be undertaken as complementary activities to the rehabilitation of infrastructures undertaken under Component 1 and the livelihoods-based measures undertaken in Component 2. They will focus on fragile buffer ecosystems, including dunes, beaches, mangroves, marshes, and coastal forests in each of the sites. Rehabilitation measures will be implemented with the direct support of district authorities, local authorities as well as local populations, through the implementation of a proposed GreenJobs program targeted towards unemployed youth (that will include vocational training). Measures will include:

- **Mangrove rehabilitation** through planting of resilient seedlings, dredging and the creation of no-take buffer zones: Mangroves act as natural buffers against tidal pressure, storm surges and coastal erosion. Because they are populated with salt tolerant tree species, they also prevent saltwater intrusion into upshore ecosystems, such as wetlands, or aquifers. Mangroves provide breeding grounds for various species of fish, crustaceans and birds that provide a livelihoods when climate shocks cause crop losses. Promoting mangrove growth inland in response to sea level rise and related inundation provides a cost effective way of protecting coastlines. Other, non climate change related benefits of mangroves include: nutrient uptake, fixation, trapping and turnover; carbon sink and sequestration; secondary production via grazing and decomposition of mangrove plants; sediment trapping that helps reduce turbidity of coastal waters; food resources for animals; occasional forest products like timber and firewood. . In addition to the above, this measure is likely to add extra value by averting losses from natural hazards not directly related to climate change such as reducing tsunami damage risk. This blend of ecosystem services makes mangrove rehabilitation and conservation a cost effective no-regrets adaptation measure.

- **Coral reef rehabilitation and protection** in coastal sites: Coral reefs provide similar services to coastal ecosystems as mangroves above. By acting as a natural barrier against wave and tidal action, reefs provide protection against erosion and storm surges. Reefs also constitute habitats for fish and marine life, and are the basis of tourism in many countries, including Tanzania. As an example, a mass coral bleaching event near Zanzibar in 1998 caused a 20% decrease in tourism revenues.

- **Beach nourishment**, **coastline reforestation** (trees and grasses): Beach nourishment or replenishment involves transporting and depositing sand from elsewhere to the depleted area. As such, it creates a buffer space between infrastructures and the sea. Broader beaches can reduce storm damage to coastal infrastructures by dissipating energy across the surf zone and beach rather than impacting upland structures and infrastructure. Beach nourishment is most effective when implemented along with erosion-reducing measures, including hard structures such as groynes (that minimize sediment transport), or reforestation (that helps stabilize shorelines and dunes). Beach nourishment is known to have economic benefits particularly for the touristic industry that depends on it. Reforestation and revegation of shorelines helps stabilize sloping areas when trees and grass roots act as sediment retainers. Roots also absorb water from the soil, allowing the trees to act as natural storage tanks of freshwater, and slowing the loss of rainwater from the ecosystem through runoff.

- **Dune stabilization** through grass barriers: Sand dunes are common features of shoreline environments. Dunes provide habitat for highly specialized plants and animals, including rare and endangered species. They can protect beaches from erosion and recruit sand to eroded beaches, while acting as buffers between beaches and settled areas. Revegetation, using trees, shrubs and grasses and fencing are among the most frequent methods of dune protection.

- **Shoreline management and rehabilitation**, using trees and grasses, replanting, stone dikes (rip rap) and no-build zones: Shoreline management refers to the combination of various physical approaches detailed above along with low-cost physical barriers such as stone dikes. It also includes policy-based approaches, such as retreat, and the institution of no-build or no-take zones. In Tanzania the mandatory no-build zone is 60m from the sea, a standards that would need to be revised in light of sea level rise. Enforcement of no-build zones is usually undertaken by city councils and district administrations, while the enforcement of no-take zones (or conservation areas) will be undertaken through a combination of community-based management systems, NGO participation and surveillance, and government-based enforcement systems.

- **Wetland rehabilitation and sustainable management**: wetlands (including mangroves and reefs) act as natural buffers against sea level rise and flooding. They provide water filtration services, as well as habitats for various fish and bird species. Wetlands also provide shoreline stabilization services, sediment and nutrient retention and export, and play a role in groundwater replenishment. Wetlands can provide additional sources of livelihoods in times of droughts or floods, and constitute carbon sinks.

The adaptation measures proposed by the project comprise a portfolio of measures taken out of a shortlist of 150 different adaptation measures found as cost – effective and most promising ones out of a total of 600 measures evaluated by UNEP in the frame of the UNEP-GEF McKinsey study[51] on economics of adaptation.

[51] Shaping Climate-Resilient Development, The McKinsey Group, 2010. http://www.mckinsey.com/App_Media/Images/Page_Images/Offices/SocialSector/PDF/ECA_Shaping_Climate%20Resilent_Development.pdf

The enabling pillar of this component will be comprised of a set of measures designed to institute changes to the management and use of natural resources in coastal zones. First and foremost, this will include the development of two Ecosystem-Based Integrated Coastal Area management (EBICAM) action plans, which will include the following elements and become supporting supplementary tools for the existing Tanzanian Coastal Zone Management Policy:

- Revised regulations on no-take and no-build zones, protected areas, fishing management and building codes that take climate change and sea level rise into consideration.
- Coastal land use plan based on the principles of marine spatial planning and using the key planning tools and technologies for coastal zones.

	Activities	**Outputs**	**Sites**				
Component 3 - Ecosystem-Based Integrated Coastal Area Management (EBICAM)			**1-coast Mtwara**	**2-coast Dar***	**3-coast Muheza**	**4-lake Magu**	**5-lake Muleba**
Outcome 5 - Coastal and shoreline ecosystems are rehabilitated and ICAM is implemented							
	Coastal and shoreline ecosystem rehabilitation for climate resilience through the implementation of a GreenJobs program	Mangrove rehabilitation through planting of resilient seedlings, dredging and the creation of no-take buffer zones;	x	x	x		
		Coral reef rehabilitation and protection in coastal sites	x	x			
		Beach nourishment, coastline reforestation (trees and grasses)	x	x	x		
		Shoreline management and rehabilitation, using trees and grasses, replanting, stone dikes (rip rap) and no-build zones				x	x
		Wetland rehabilitation				x	x
	Development of a supplementary action plan to the Integrated Coastal Management Strategy on Ecosystem-Based Integrated Coastal Area Management	One EBICAM plan for the coastal region and one EBICAM plan for the Lake region approved	x			x	

Component 4 – Knowledge development and learning

This project is intended to serve as a strong example of 'stage 2' adaptation implementation in the country and in the region. In this regard, the project will first build on existing and

available knowledge, scientific evidence and technical studies in order to ensure the implementation of state-of-the-art technologies and approaches to adaptation. This component builds on what currently exists in the country, as well as on approaches and methods that will be implemented through this project, specifically in Components 1 and 3, so as to generate policy-relevant knowledge.

Outcome 6: Knowledge of climate impacts and adaptation is increased

Knowledge generation, dissemination and management will be mainstreamed throughout the activities of the project, and will include the following functions:

- Stocktaking: at all stages of implementation, stakeholders will be called upon to perform a series of data gathering functions, baseline assessments, state-of-the art studies and feasibility studies. These will be undertaken as a means of providing best quality advice before activity implementation, particularly in the case of infrastructure and technology transfer. This function will also allow for the development of a significant database of information relevant to adaptation in Tanzania, that will be put together under the auspices of a coordinating entity (see below).

- Monitoring and evaluation: scientific and technical monitoring of key project indicators, as well as monitoring of the key indicators of vulnerability to climate change in the targeted areas, will also be performed under this project. This will include technical assessments of the viability and resilience of proposed actions under the project, as well as monitoring of the key determinants of vulnerability: water availability, precipitation patterns, sea level rise, etc… These functions are currently being undertaken in Tanzania, and the information gathered by the various participating stakeholders will also be brought together under the aegis of a coordinating entity. Assessment of the economic viability and practical feasibility of adaptation measures (i.e. through undertaking cost-benefit analyses) to identify successful adaptation measures and using this information to revise policy will be made under this component.

The key coordinating mechanism for the knowledge management component of this project will be a newly-created Climate Change Observatory for Tanzania (CCOT)[52], which will be a network institution that will bring together all relevant stakeholders and information through a clearing house function. The CCOT will be housed within the Vice President's Office, which will serve as coordinating focal point and data share-point for a network of national and international partners. Its broad mandate will be to centralize and distribute scientific and technical information related to climate change impacts. Project financing will be used to set up the institution, gather data and create databases, and institute information sharing protocols among the various partners. The initial focus, as supported by this project, will be on gathering information relevant to coastal and lakeshore areas.

[52] Although its name indicates a broad focus on all climate change issues, the project will support the initial set up of the institution focused on coastal and lakeshore regions. Future expansions of the CCOT mandate can be undertaken as part of a broader upscaling strategy for the project.

- Policy linkages: In addition to these activities, the project will support the creation of policy linkages, allowing lessons from on-the-ground activities to be elevated to the attention of policy makers and planners in various ministries, including for the reconstituted National Climate Change Steering Committee (NCCSC)[53]. This will entail a regular gathering of project successes and challenges and their translation into policy briefing materials for policy makers in order to facilitate mainstreaming, as well as the organization of periodical awareness seminars for sectoral partners and government representatives.

Component 4 - Knowledge, monitoring and evaluation **Outcome 4 -** *knowledge of coastal impacts and adaptation measures is increased*		
	Stocktaking	Available knowledge, science and data gathered for project implementation
	Monitoring and evaluation	Climate change observatory for Tanzania created for ongoing monitoring of climate impacts and information sharing and networking, with an initial focus on coastal and lake zones Assessment of the economic viability and practical feasibility of adaptation measures (i.e. through undertaking cost-benefit analyses)
	Policy linkages	Policy briefs for policymakers and planners based on project outputs, lessons and challenges Awareness raising workshops based on project lessons for mainstreaming

[53] NCCSC is a high-level officials body to coordinate climate change issues in Tanzania

2. Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities.

The project is expected to deliver a set of targeted and interlinked economic, social and environmental benefits in the 5 targeted sites, as well as serving as a model for future replication throughout the country.

Social and economic benefits: The socio-economic benefits of this project will include increased income and reduced poverty for targeted communities from increased agricultural productivity, alternative crops and crop diversification coupled with efficient conservation and transformation technologies that will provide added value. Sustainable fisheries and the conservation of fish-breeding sites are also expected to generate socio-economic benefits through the continued and increased availability of protein for fishing communities, allowing them to resist more readily to climate change and climate shocks and their impact on traditional cropping activities.

Additionally, the project will promote a set of innovations together with district administrations that will help create better living conditions. The GreenJobs program will recruit unemployed youth and provide them with technical and vocational training, as well as jobs in the rehabilitation and management of fragile ecosystems such as wetlands, shorelines, and coastal areas. The provision and rehabilitation of fisheries equipment and transformation facilities will also provide direct employment as well as indirect income generating opportunities.

Alternative energies provided in the targeted sites as means of reducing deforestation will also create productive assets for targeted communities, for cooking as well a for the maintenance of additional productive activities that may be hindered from the lack of electricity or power.

Vulnerable groups targeted by this project include:

- **Rural communities** who are among the poorest in Tanzania and whose livelihoods are highly dependent on climate. Vulnerable groups among the rural poor include women and women-headed households, unemployed youth.

- **Farmers** who depend on crop agriculture for their livelihoods. Crop cultivation is prevalent in both coastal and lakeshore areas and employs the majority of population in Tanzania, while not ensuring food security, particularly in times of climate shocks such as droughts or floods.

- **Fisherfolk** in both coastal and lake zones who, due to the degradation of fragile ecosystems such as mangroves and reefs, have seen fish stocks dwindle and have resorted to illegal fisheries to ensure food security.

- **Small Businesses** such as tourism enterprises whose investments are at risk from seal level rise and increased variability, private sector and informal enterprises who lack adequate assets for productivity and profitability.

- **Urban dwellers** in both formal and informal settlements who are at risk of losses to life and property from sea level rise and increased flooding, lack of sanitation and decreases in access to safe water.

Annex 3 contains additional socio-economic data on the various regions.

The Ecosystem Based Adaptation approach used in this project will provide multiple environmental benefits, as explained under Component 3. For example, restoration of degraded wetlands can maintain water flow and storage in the face of droughts, as well as provide protection against floods or storms. Other environmental benefits to be accrued by this project include nutrient cycling and water purification, groundwater recharge, coastal protection, habitat and nurseries, and carbon sinks. Management and restoration of ecosystems thereby offer a valuable, yet under-utilized approach for climate change adaptation, complementing other actions such as the development of infrastructure.

3. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.

Interventions in this project are of two different categories. First, a significant component of this project's budget is dedicated to concrete investments in coastal protection infrastructure and in the rehabilitation of key coastal and shoreline productive assets. Heavy infrastructure-related measures selected for this project were limited to areas where immediate and urgent action was necessary, lest productive assets would be lost in the shorter term (for example, the rehabilitation or construction of sea walls). In other cases, smaller-scale and less costly coastal protection technologies have been selected, including the use of natural barriers to sea level rise and flooding, and ecosystem-based coastal rehabilitation of buffer ecosystems. Although in some cases, one-time rehabilitation costs may seem elevated, these are expected to generate long-term benefits in terms of resilience that far outweigh their short-term costs.

The second group of interventions is comprised of technology transfer and modifications to the current natural resource uses and management practices that are factors of vulnerability. These activities, including the acquisition of productive assets, have been selected based on available studies and technical feasibility analyses and on the basis of their potential for generating multiple social, economic and environmental benefits.

Experience from adaptation projects implemented by UNEP has shown that building adaptation measures based on ecosystem management principles will deliver better returns on natural, human and economic capital investments, while at the same time maintaining resilient ecosystems, using less natural resources and reducing social disparities. [54]From an environmental perspective, this project is expected to generate significant benefits through the protection and rehabilitation of degraded and fragile ecosystems, who will then be able to continue to provide key ecosystem services, including water filtration (mangroves, wetlands), flood protection (mangroves, sea grass beds, dunes), carbon sinks (reefs and forests), as well as biodiversity that is vital to the continued livelihoods of coastal and lakeside communities.

The approach taken for the development of this project has also sought to build on linkages and synergy with other projects under implementation or/and development, which is expected to generate multiple benefits nationally. By so doing the project presents the least costly means of achieving rapid benefits.

The effectiveness of the adaptation measures implemented by the project will be tested and measured during the course of the project. This will involve undertaking an economic analysis and performing cost-benefit analyses to ascertain whether each activity is an economically viable option given climate change (under Component 4). The most successful activities will be prioritized for upscaling to neighboring communes/districts and provinces

[54] For example, redesigning adaptation measures such as flood control infrastructures in Vietnam from dykes to restored mangrove forests has delivered better returns on natural and economic capital investments than engineered measures alone. Reid, H. and Huq, S. (2005)

and details regarding their implementation will be disseminated widely through the project's knowledge mechanisms (Component 4).

Cost Benefit Analysis

For activities included in Component 1, which includes mostly works of a physical nature and targets infrastructures, costs have been distributed towards the most urgent required rehabilitation measures. It is postulated that priority infrastructure needs should be addressed as a matter of urgency, but that a comprehensive package of interventions that includes also activities in Component 3 (ecosystem-based adaptation) will be most effective in achieving adequate coastal protection.

As regards the coastal area, the Tanzania National Communication estimates potential damage from sea level rise to at least 50 billion Tanzanian shillings. It is estimated that a limited number of well-conceived and resilient sea walls can protect large stretches of shoreline, particularly when combined with ecosystem-based measures such as mangrove restoration, reef rehabilitation and shoreline revegetation. The average duration of a seawall can reach upwards of 30 years, with proper maintenance. Consequently, this project will support the rehabilitation or upgrade of existing degraded sea walls in areas at high risk of increased sea level and wave action; the area identified for priority action is centered around Dar es Salaam city, in the area of Ilala district, where many key economic, social and cultural assets are located, and are in danger of inundation in case of sea level rise (State House, Hospital, commercial buildings, foreign embassies, hotels, ferry terminal, fish market).

Activities designed to rehabilitate drainage systems are aimed at reducing damage from floods. Benefits from these activities generally include: reduced flood damage to public and private facilities, land value enhancement, Reductions in traffic delays, Reduced economic losses, clean-up and maintenance costs, Reduced emergency relief costs, increased possibilities for recreation opportunities (in or around nature-based systems), alleviation of health hazards and waterborne diseases, Reduced risk to life and improved water quality[55]. Depending on the type of drainage system (natural or engineered), costs will vary. 'engineered systems are typically used in highly urbanized areas (underground drainage and filtering systems), whereas natural systems such as ponds, biofilters or basins can be used in less urbanized areas.

As regards the proposed activities designed to rehabilitate and protect water infrastructure from climate change impacts (sea level rise as well as precipitation volatility), this project will ensure a resilient supply of safe potable water for vulnerable communities, their livestock and agriculture. The relocation of currently inundated or high-risk boreholes in the coastal area will help ensure continued health and productivity. In addition, the rehabilitation of water extraction and conservation structures, will lead to the expected added benefit of increased productivity in most cases (through provision of rainwater harvesting and irrigation structures). On the other hand, failure to address these issues in the short time could lead to accelerated migration towards urban centers, exacerbating existing pressures on land, and bringing the associated social costs of migration, including potential conflicts.

[55]Grigg, N. Benefits and costs of urban drainage and flood control projects, in Effects of Urbanization and Industrialization on the Hydrological Regime and on Water Quality, IAHS-UNESCO,1977.

Activities included in Component 2 bring costs that are related to the provision of strategic technical advice, capacity building, as well as the acquisition or upgrading of productive assets. The expected benefits of the activities that focus on livelihoods are numerous, and overall culminate in a reduction in poverty levels in all targeted locations. As mentioned above, the provision of irrigation infrastructure could bring about a 50% increase in productivity, and this combined with the dissemination of best land, water and crop management techniques, could lead to significant jumps in quality of life for targeted communities. This increase in productivity could lead to increased revenues, providing safety nets for communities in case of climate shocks, while alternative sources of economic livelihoods will also provide added resilience to targeted communities faced with erratic climate conditions. Cost-benefit analyses undertaken in the UNEP-GEF McKinsey Study[56] on the Economics of Adaptation demonstrate clearly that a country can prevent much of its expected losses through measures with relatively low cost, and that for most of the measures identified, the economic benefits – primarily in the form of growth in the value of agriculture – exceed or closely approximate the costs, including in some cases (depending on climate scenarios), the use of infrastructural measures.

The expected benefits of ecosystem rehabilitation included in Component 3 are also proportionate to the costs of such activities. Ecosystem services provided by healthy ecosystems are difficult to value; however, there is growing evidence as to the cost-effectiveness of these measures. For example, an investment of USD 1.1 million on restoring nearly 12,000 hectares of mangroves in Vietnam is estimated to have saved USD 7.3 million per year in dyke maintenance, while providing ecosystem services such as physical protection to coastal communities as well as productive fisheries. Another case study, in Jamaica, supported by UNEP[57], demonstrated that coral reefs explained or influenced 83% of the beach erosion, with the width of coral reefs playing the main role (59%) in reducing erosion. Furthermore, seagrasses explained 41% of the beach erosion, with the width of seagrasses playing the main role (47%) in reducing erosion. Ecosystem-based adaptation measures have multiple benefits for the environment and livelihoods that often exceed their costs and help prevent climate induced losses.

Adaptation options that were considered but not retained for this project for reasons of cost-effectiveness or feasibility include:

- The construction of new sea walls and the rehabilitation of all sea walls in major coastal settlements.
- The use of engineered structures alone as means of adaptation for the coastal zone
- The relocation of port infrastructure
- Construction of dams and dykes against flooding
- Construction or rehabilitation of groyne systems
- Resettlement of coastal and lakeshore populations
- Potable water transports and transfers
- Desalination
- Ex situ coral reef nurseries.
- Provision of resilient species of livestock
- Aquaculture

[56] Shaping Climate-Resilient Development, The McKinsey Group, 2010. http://www.mckinsey.com/App_Media/Images/Page_Images/Offices/SocialSector/PDF/ECA_Shaping_Climate%20Resilent_Development.pdf

[57] As illustrated in the UNEP Regional Seas programme report: Using ecosystems to address climate change –Ecosystem based adaptation, 2010.

Below is a more detailed analysis of expected social, environmental and economic benefits of this project:

Activities	**Project Benefits**		
Component 1 - Addressing climate change impacts on key infrastructure and settlements	**Economic**	**Social**	**Environmental**
Outcome 1 - Adverse impacts of SLR on coastal infrastructures and settlements are reduced			
Rehabilitate coastal protection facilities to protect settlements economic and cultural infrastructure	Increased Lifespan of the Coastal infrastructure for sustained economic development (i.e. buildings, hotels, hospitals, roads and private residences,) and increase the value of land	Maintain the socially and culturally respected areas i.e. Mosque, Churches, etc and communication systems, ensure transport and circulation of goods and people, protection of property	Reduction of the rate of coastal erosion, conservation of ecosystems
Perform engineering assessment of climate change impacts on infrastructure (enabling)	Will provide information on the CC impacts on infrastructures so as to guide the designing of the appropriate adaptation measures; provide knowledge.	Ensure continuity in provision of related services	Provide understanding of environment challenges/ options that have to be addressed
Outcome 2 - Adverse impacts of floods averted			
Cleaning up of the drainage channels, dredging of estuaries, rehabilitation of storm drains in selected urban centers	Reduce the risk of the infrastructure damage by floods; maintenance of property values; reductions in insurance costs and premiums; reduce losses in productivity.	Reduce the risk of other flood related hazards such as loss of household assets, loss of life; maintain communication and circulation channels. Reduction of waterborne diseases (i.e. malaria, cholera) and water pollution	Reduce damage to environment.
Outcome 3 - Adverse impacts of climate change on water supply and quality averted			
Rehabilitation and construction of resilient water mobilization (extraction, storage) structures along with sustainable water extraction and management practices	Improve water provision for various uses including economic activities. Increased Food security. Reduces flood risks	Improve public access to safe and clean water.	Reduction of Waterborne Diseases and Increase of Clean water
Rehabilitate or relocate water extraction and conservation structures in coastal areas to avoid salinization.	Improve the lifespan of the waterworks facilities; saving time for other economic activities	Improved availability of water for domestic, agriculture and industrial uses. Improved health and reduced morbidity, including for woman and children.	Availability of Safe and Clean water.
Component 2 - Resilient livelihoods			
Outcome 4 - Livelihoods are sustainable, diversified and resilient			

Activities		Project Benefits		
	Development or rehabilitation of fishing docks and fish processing areas at community level in coastal areas	Maintain the functioning of the docks and processing areas; increased productivity and value added in fisheries; increased income for fishery workers; job creation.	Provide Safe and Conducive working Environment. Secure the employment in the fishing sector	Reduction of outbreak of diseases i.e. Cholera, Diarrhea
	Promotion of sustainable and resilient nature-based tourism through district-level tourism assistance revolving fund	Provide alternative livelihood for communities affected by sea leval rises. Increase income from Tourism activities	Improve social conditions and increased employment opportunities including for woman	Preserve/ Rehabilitate natural environment. Reduce the stress on coastal environment
	Promote resilient agricultural practices	Enhance agriculture productivity; increased income; increased production.	Improve community food security	Promote climate change resilient agriculture along the coastal areas; maintain soil fertility; maintain water quality and quantity; maintain biodiversity.
	Promote alternative energy for avoided deforestation	Promote low carbon growth economy through the use of renewable sources of energy; increased economic productivity and income.	Reduced smoke related health hazards (i.e. Health Centres and Dispensaries)	Reduces Greenhouse Gases emissions and decreased deforestation; maintained soil fertility; carbon sinks; maintained biodiversity.
Component 3 - Ecosystem-Based Integrated Coastal Area Management (EBICAM)				
Outcome 5 - Coastal and shoreline ecosystems are rehabilitated and ICAM is implemented				
	Coastal and shoreline ecosystem rehabilitation for climate resilience through the implementation of a GreenJobs program	Enhance livelihood of coastal communities; job creation; increased income; reduced coastal losses.	Improved Social security and services; protection of infrastructure and property; avoided losses due to erosion.	Protection of coastal environmental systems and increased climate change resilience; creation of buffer ecosystems; increased ecological services (water, soil, fisheries; biodiversity).

Activities		Project Benefits		
	Development of a supplementary action plan to the Integrated Coastal Management Strategy on Ecosystem-Based Integrated Coastal Area Management	Mainstreaming Climate Change in economic development plan with view to ensure sustainability of economic activities.	Sustain provision of social services through better and Climate Change sensitive plans along the coast.	Manage Coastal Environment using development plans that has mainstreaming climate changes.

4. Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

This project has been developed in line with Tanzania's key development priorities, plans and programs, as embodied in Tanzania's Development Vision for 2025, the National Strategy for Growth and Reduction of Poverty, and sectoral policies in the areas of water, agriculture, fisheries and tourism. The NSGRP recognizes that poverty is closely related to growth in the productive and services sectors and that sector-based constraints precipitate income-poverty to the extent that they limit growth in the sector(s) and hence adversely affect the provision of services that reduce non-income poverty. Agriculture, as the lead sector, is pointed as one of the key areas for intervention towards increased productivity and interventions proposed include the development of better productive technologies alongside with the reduction of environmental degradation and stresses, including reducing deforestation and coastal degradation.

This project can be seen as a direct tool for the implementation of Tanzania's National Integrated Environmental Coastal Management Strategy (ICM)[58] objectives, which include the improvement of the wellbeing and livelihoods of all coastal resources users, the need to undertake environmental planning and management of key economic opportunities and to manage geographic areas of concern and critical habitats, while supporting local initiatives for intersectoral development.

This project is also consistent with the objectives of the Tanzania Agricultural and Livestock Policy, whose primary objectives are to increase farmers' incomes, reduce poverty, achieve food security, increase export earnings, support and promote agro-industries and environmental conservation. It is also in line with the Government with the newly adopted *Kilimo kwanza* government directive aiming at improving agriculture as the major sources of national income and livelihood.

Tanzania's Initial National Communication and National Adaptation Programme of Action both emphasize the urgent need to promote adaptation and resilience in the coastal areas.

[58] ICM Strategy, 2003.

Vulnerable sectors highlighted in the NAPA include agriculture, water and health, and energy.

The project is also consistent with the principles of aid harmonization and coordination, as embodied in the Joint Assistance Strategy and in the One UN Joint programme implemented by development partners in Tanzania.

5. Describe how the project / programme meets relevant national technical standards, where applicable.

Interventions targeting infrastructure rehabilitation, construction of new structures, or including construction works will be implemented in strict adherence with Tanzanian standards and legal provisions for environmental impact assessment (EIA – as enshrined in the Environment Management Act of 2004), as well as procurement and tender rules. Best international standards will also be respected in the development and rehabilitation of coastal protection structures.

The EIA regulations provide a clear and transparent process for evaluating impacts of projects from screening to ministerial decision and including access to information provisions. The associated regulations provide a list of projects requiring mandatory EIA, including (as relevant to this project):

- Water resources development projects (dams, water supply, flood control, irrigation, drainage)
- Biological Pest Control
- Introduction of new breeds of crops.
- Introduction of new tree species and development of forest plantation
- Dredging of bars, groynes, dykes and estuaries

A number of other smaller-scale activities included in this project are subject to registration under the EIA regulations but may not require an Assessment. The Act further provides the timing and responsibilities of the various stakeholders throughout an EIA process. Activities that are likely to be subject to EIA regulations include budgetary provisions for the process.

Interventions focused on water quality will adhere to the Tanzania Water Quality Standards (TZS 789:2008) that set threshold limits for salinity, turbidity and organic or inorganic content, along with microbiological requirement. These standards, along with the WHO standards for salinity, will be followed in assessing groundwater quality.

Interventions focused on fisheries will adhere to the Fisheries Act of 2003 and Fisheries Regulations of 2009, which, among other elements, sets up the Beach Management Units responsible for monitoring and enforcing regulations against overfishing or illegal fishing, and determines (through associated regulation) the type and location of fisheries allowed.

Building codes and other construction will also be undertaken in adherence with the Land Use Planning Act of 2007 which, among others, indicates matters to be included in land use plans.

Interventions designed to provide technology transfer, training and extension services or that will include local community participation in works will also be conducted in adherence with Tanzania labor codes.

6. Describe if there is duplication of project / programme with other funding sources, if any.

This project is designed on the basis of knowledge, studies, and analyses provided by other, ongoing related projects and programmes. As such, it benefits from a considerable body of knowledge, stakeholders and processes. A preliminary analysis of ongoing initiatives was undertaken at the start of project design, in order to determine best practices and possible areas of duplication. A list of ongoing projects can be found in the Annex. To date, no other project has tackled, to the level achieved by this proposal, coastal issues in an integrated manner. Few initiatives provide significant support for concrete investments in coastal adaptation, and fewer still promote ecosystem-based approaches to coastal resilience. Hence this project is both building on existing available knowledge and practices, and pioneering new approaches to adaptation.

This project is expected to be implemented in conjunction with the LDCF project (to be submitted) that also focuses on adaptation in coastal areas. This LDCF project is expected to pilot adaptation measures in different sites, only one of which is located in one of the targeted regions in this project (Pangani). Because they are being developed simultaneously, opportunities for synergies have been maximized, and duplications have been reduced to a minimum. Coordination among all partners in Tanzania, through exiting donor and thematic coordination fora will be actively pursued. For example, this project will be discussed through the climate change coordinating group, which includes all relevant line ministries, donors and NGOs. Coordination will be ensured through the Vice President's Office, who is acting as National Executing Agency for this project.

7. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

Component 4 of this project describes both the cross-cutting and specific knowledge management functions that will be undertaken in this project. These include stocktaking and monitoring of various project indicators, as well as the creation of a Climate Change Observatory that will function as a clearing house for information related to project themes. The promotion of policy linkages is also included in the Knowledge Management Component. In order to focus on concrete activities, however, this project focuses on the necessary elements for successful activity implementation and policy linkages, and will work with other projects and initiatives to disseminate information as cost-effectively as possible.

8. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation.

This project builds on a long history of consultation and cooperation on adaptation in Tanzania. In designing this project, all stakeholders were consulted and their inputs introduced in the various projects through discussions led by the Vice President's Office, in cooperation with other ministries. This project has been discussed at highest levels, including through reports to Parliament as well as through the Climate Change Steering Committee. Various other partners were consulted, including bilateral donors active in the regions targeted or in the country on themes relevant to this project. Further discussions on the formalization of roles and contributions are expected to take place during inception.

The Vice President's Office has undertaken consultations with key line ministries and other stakeholders who will be called upon to play a role in this project. Each ministry listed below will participate to the project through national-level contributions as well as through their decentralized offices at district and local levels.

Stakeholder	Expected participation in the project
Prime Minister's Office- (1) Regional Administration and Local Governments (PMORALG) and (2) Investment and Empowerment (PMO IE)	PMORALG will serve as key liaison between the project and local administrations. It will provide oversight and an overall policy supervision function so that activities to be delivered at district level are undertaken in accordance with policies regarding decentralization, and delivery of district budgets. PMO IE will provide policy level guidance on empowering local communities to sustain adaptation measures that will be instituted in the project areas.
Ministry of Foreign Affairs and International Co-operation	The Ministry will play an advisory role in this project, provide advice on best practices for adaptation and on linkages between national institutions and the MIE; the Ministry will also serve as relay between the project and the Adaptation Fund Board.
Ministry of Finance	The Ministry will participate in providing assistance to local authorities in mainstreaming climate change into their local development plans. The Ministry will also coordinate and oversee financial flows between national and local-level partners. The ministry will participate in activities related to assessment of cost-effectiveness, be informed of analyses related to the costs of adaptation, and will also participate in awareness raising efforts towards

	policy uptake.
Ministry of Industry, Trade and Marketing	The Ministry will provide advice on linkages with the private sector, particularly as regards tourism, labeling and codes of conduct for ecotourism, and trade development for livelihoods components of the project, specifically fisheries.
Ministry of Agriculture, Food Security and Co-operatives	The ministry will be responsible for coordinating and delivering the project components related to agriculture, particularly as regards the provision of technical inputs, enhanced crops and other technologies for agricultural productivity. The Ministry also provides support to the extension of irrigation infrastructures to the project zones.
Ministry of Natural Resources and Tourism	The Ministry will be responsible for coordinating and delivering the project components related to ecosystem rehabilitation and monitoring, and providing support to district administrations in setting up the Resilient Ecotourism revolving funds.
Ministry of Water	The Ministry will be responsible for implementing activities related to the relocation of boreholes, water quality monitoring.
Ministry of Energy and Minerals	The ministry will provide services in order to deliver the alternative energy technologies to targeted communities.
Ministry of Works	The ministry will be responsible for developing terms of reference, procurement and monitoring the delivery of all infrastructure components of this project.
Ministry of Communication, Science and Technology	The Ministry will participate in developing the Climate Change Observatory and will work with the VPO to support its operations. The ministry will also provide linkages between the project and national research facilities.
Ministry of Health and Social Welfare	The Ministry will provide services regarding monitoring of health and vectors in project areas, through district-level health officers.
Ministry of Education and Vocational Training	The Ministry of education will provide linkages to universities and will participate in the creation of the GreenJobs program.
Ministry of Labour, Employment and Youth Development	The Ministry will operate the GreenJobs program and will provide advice on climate related education in project sites.
Ministry of Lands, Housing and Human	The Ministry will provide advice at national

Settlements Development	level on the integration of climate risks into land use planning, urban planning and the revision of relevant codes. The Ministry will also provide advice on enforcement of regulations.
Ministry of Community Development, Gender and Children	The Ministry will participate in the project by providing advice and guidance on the integration of gender equity and gender sensitive activities, as well as on the monitoring of community-level resilience and well-being. The Ministry will participate in activities related to livelihoods development.
Ministry of Livestock Development and Fisheries	The Ministry will coordinate and provide oversight for activities related to the promotion of fisheries assistance and technologies, as well as in the activities related to the better management of pastures and lands for livestock production. The ministry will also participate in the revision of regulations when necessary, as well as provide monitoring and enforcement services for fisheries regulations and no-take zones in project areas.
Tanzania Meteorological Agency	The agency will provide climate related information, including early warnings in project zones, designed to feed into feasibility studies, impact assessments as well as resilience modeling.
The National Environment management Council (NEMC)	This agency is under the VPO and will provide support in areas related to information collation and dissemination within the project sites

The following district and regional-level administrations were consulted during the development of the project and are intended to be at the forefront of project implementation.

Temeke Municipal Council	Muheza district administration
Ilala Municipal Council	
Kinondoni Municipal Council	
Dar es Salaam city Council	Muleba district administration
Mwanza city Council	
Mtwara rural district administration	Magu district administration
Mtwara urban district administration	

The following para-governmental and non-governmental (NGOs, private sector) stakeholders have been invited to participate in the project development and implementation. This list is subject to expansion once contributions and roles are formalized, during project inception, and broader consultations can take place at all levels.

National Environment Management Council	Environmental Protection and Management Services
University of Dar s Salaam including the Institute of Resources Assessment and water Resources Engineering Department	Tanzania Traditional Energy Development and Environment Organization
Tanzania Association of Tourism Operators	Lake Victoria Ecological Society
Tanzania Port Authority	Tanzania Association of Fisheries & Lake Victoria Environmental Conservation (TAFLEC)
Tanzania Agency for National Parks (TANAPA)	Tanzania Natural Resource Forum (TNRF)
Dar es Salaam Water and Sewerage Authority (DAWASA)	

9. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

Funding from the Adaptation Fund is requested in order to begin immediately with the implementation of concrete adaptation activities in support of Tanzania's resilience to climate change. The project covers the full costs of adaptation in the coastal and lakeshore regions as follows:

- Through the construction or rehabilitation of protective structures along the coast, the project is covering the full costs of adapting to sea level rise, increased tidal pressures and storm surges in selected sites along the Tanzanian Coast. These costs include the costs of modifying existing infrastructure, including touristic infrastructure, as well as rehabilitating buffer ecosystems for increased resilience and natural protection.

- The project is also providing a full coverage of the costs of adaptation in the lakeshore regions, through the rehabilitation of fragile ecosystems that play a key role in resilience and that provide crucial environmental services to Lake communities, including food, fisheries, pollution control, flood control, shelter and energy. The costs of adaptation include the costs of incentives for modifying natural resource use patterns, and for promoting more sustainable and more productive uses of land, water and biomass, lifting barriers to resilience in the region.

- The project is building on existing knowledge and best practices, scientific evidence and technology, and also promotes innovative practices in the management of fragile ecosystems. The AF funds are used to promote innovative ecosystem-based adaptation practices, that have proven more to increase the effectiveness in creating resilience than other measures taken alone.

Component 1 – Addressing climate change impacts on key infrastructure and settlements

Baseline

A number of key coastal and shoreline infrastructures are under increasing pressures from human activities and coastal erosion. In general, projects that target climate change in Tanzania have yet to address the infrastructural aspects of adaptation, due to a lack of means, and because most projects were focused on Stage 1 or pilot adaptation measures. The business as usual scenario in the coastal areas would see existing infrastructure become increasingly inadequate, particularly in Dar es Salaam, whether or not climate change scenarios for Sea Level Rise are realized. Under a sea level rise scenario, these infrastructures would be ineffective in protecting economic investments and human settlements along the coast.

In addition, human settlements in both coastal and Lakeside sites would continue to suffer from the impacts of floods due to sudden heavy precipitation events. It can be expected that without intervention, lives will continuously be lost, key productive assets will degrade, including agricultural lands, and cities will be come increasingly dangerous, including from a health and sanitation perspective. Water related diseases are expected to increase under climate change if no interventions are in place to ensure proper evacuation of floodwaters, of sanitation and to ensure water quality is safe from the effects of sea level rise or drought.

Adaptation additionality

Although this project is not expected to address all of Tanzania's coastal infrastructure needs, it will help in covering the costs of making selected installations more resilient to climate change by funding their rehabilitation, retrofitting or modification in order to take into account modified coastal regimes. Under Outcome 1, costs are related to the rehabilitation or construction of coastal protection infrastructures:

- Raising and refilling existing sea walls and rehabilitated port infrastructures in three targeted coastal areas: Existing sea walls and revetments form the baseline of coastal protection in Tanzania and constitute a significant investment in and of themselves; this project seeks to ensure that this infrastructure remains adequate to deal with sea level rise, increased storm activity and tidal pressures. Additional costs of adaptation are therefore the costs to repair, elevate and/or strengthen these existing structures where they are showing signs of degradation and around key economic assets in Dar es Salaam, as a priority.

- The project will also support capacity building for district administrations to earmark budgets for ongoing maintenance after the project, to ensure maximum durability for coastal protective systems. This adaptation cost covers the required change in policy and practices due to climate change, along with other enabling activities such as engineering studies and modeling studies designed to make the activities above feasible and efficient.

Elements covered under outcome 1 should be seen in conjunction with activities foreseen in Component 3, as together these activities form a comprehensive and effective coastal protection system.

Under Outcome 2, this project will fund the costs related to avoiding the adverse impacts of increased floods in areas due to receive increased precipitation, by providing the means of increasing drainage and storm water evacuation. In areas where significant investments in infrastructures are ongoing (e.g. Mtwara, certain parts of Dar es Salaam), the project will support the additional cost of ensuring these investments are resilient (for example by providing models, studies and additional works where necessary). The additional costs are related to the costs of civil and environmental engineering works, such as installing biofilters, infiltration basins, or wet ponds in less urbanized areas, as well as works in and around estuaries (dredging to reduce siltation), or the costs of enlarging underground drain systems in urban areas (piping, connections, reservoirs). Along with the measures in Component 2, which are targeted towards buffer ecosystems, this project is expected to generate increased resilience and protection benefits in the targeted sites.

Under Outcome 3, and related to activities under Outcome 1 (relocation of boreholes) this project is also designed to cover the additional costs of adapting water extraction, conservation and transport infrastructures against the multiple effects of sea level rise and salinization, coastal erosion and modified rainfall patterns. This includes the costs of providing rainwater harvesting structures where aridity or erratic rainfall are likely to increase (and as a supplement to irrigation technologies covered under Component 2) and the costs of providing additional pipelines for the transport of safe water from non salinized sources (where relocation of wells is not possible). Relocating salinized boreholes and wells is to be undertaken in cases where boreholes and wells inundated, or showing high risk of salinization due to salt water intrusion. The additional costs of adaptation will be the costs of decommissioning existing wells and construction of new ones.

Component 2 – Resilient livelihoods

Baseline

With the exception of Dar Es Salaam city per se, livelihoods in the selected sites are considered highly vulnerable to climate variability, economic shocks and environmental degradation. The dependence of most rural communities on a single source of economic livelihoods – in most cases agriculture – means that communities have little means to cope when agriculture fails due to erratic rains, droughts or floods. At the same time, larger estates are also ill-equipped to deal with the impacts of climate change and may not be able to take advantage of opportunities provided by climate change unless additional technology is provided.

Smallholder agriculture in Tanzania, as well as fisheries, are currently undertaken with very little means, low technology and low inputs and often imply unsustainable land and water use practices. Low productivity maintains people in a cycle of poverty and environmental degradation, which then makes them more vulnerable to climate change.

Adaptation additionality

This project is therefore designed to provide targeted communities with additional, improved and when necessary, alternative means of livelihoods in order to provide a safety net of resilience in case of climate changes and increased variability. This will include the additional costs of creating sustainable enterprises, promoting sustainable and resilient agriculture practices (land, water, biomass and pest management) and the development of economic alternatives.

Alternative energies will also be provided by this project as an additional contribution to resilience at the community level, as a means of supporting household productivity as well as to reduce deforestation – which is also a cause of increased vulnerability.

Under outcome 4, the costs of adaptation covered by this project include:

- The costs of works to rehabilitate and upgrade fish processing and conservation facilities, so that fishing households and enterprises can generate higher revenue and decrease their dependency on crops and livestock. This also includes the costs of providing traditional fisherfolk with the equipment and input required to enforce resilient fishing practices, as well as enforcing no-take zones around fragile buffering ecosystems (e.g. mangroves).

- The costs of setting up the revolving fund for the promotion of sustainable and resilient tourism activities. This includes costs of the initial replenishment for the fund, as well as the costs related to setting up its financial, administrative and institutional procedures. Although this cost is not directly related to climate change, it is designed to achieve a behavior change among tourism operators as well as to rehabilitate and protect tourism investments that can provide revenues in case of climate shocks to traditional livelihoods such as crops.

- The costs of training, equipment, inputs and capacity building for the achievement of resilient agricultural productivity in targeted regions. This includes the costs of works to extend irrigation infrastructure and practices, resilient genetic material as well as extension services. This adaptation cost is directly related to the need for farmers to change their land use practices proactively in anticipation of changing temperatures, rainfall patterns, as well as to remove environmental degradation barriers to resilience.

Component 3 – Ecosystem-Based Integrated Coastal Area Management

Baseline

There is currently no ecosystem-based coastal area management framework in Tanzania, although it is increasingly recognized that the fragile ecosystems in the coast and in the Lake region play a crucial role in sustaining communities and their own resilience. Existing

coastal management frameworks are not completely implemented, and enforcement is lacking for some key aspects of natural resources management (including no-build or no-take zones).

The degradation of mangroves, reefs, sea grass beds and wetlands are all factors of coastal vulnerability and are also all factors of community vulnerability. However these fragile ecosystems are under pressures from climate as well as human activities.

Adaptation additionality

This project will therefore support the additional costs of rehabilitating the fragile ecosystems and of removing the elements of human pressures that are causing their degradation. This will ensure that the coasts and the lakeshores are resilient and can respond to climate shocks, while continuing to provide valuable ecosystem services such as protection against floods, animal habitat, water filtration and supply. Without this project, these ecosystems would gradually disappear, and the coasts and shorelines – and the communities who live there - would be starkly vulnerable to climate change impacts.

Under Outcome 5, this project will provide funding to local institutions, working with vulnerable communities and NGOs, to support the rehabilitation and sustainable management of fragile ecosystems, such as:

- Rehabilitation of mangroves, including the costs of dredging where necessary to improve water flows, replanting of resilient and appropriate species, fencing, and capacity building for local organizations to enforce no-take zones and buffer zones.
- Rehabilitation and protection of reefs, including collection of specimens, construction and operation of coral nurseries (in situ), transport, monitoring and maintenance.
- Beach nourishment: as an element of coastal zone management, and to supplement infrastructural measures in coastal areas, beach nourishment costs cover mostly the costs of equipment and transport for sediment used to replenish eroded beaches.
- Wetland rehabilitation and coastal reforestation costs include the costs of purchasing seedlings of resilient and appropriate species, costs of labour for replanting as well as capacity building for the sustainable management of rehabilitated zones and the enforcement of no-take zones.

- The project will also support the additional costs of policy measures required to ensure long-term durability of coastal rehabilitation efforts, specifically the costs of capacity building for the development of Ecosystem-Based Integrated Coastal Area Management Plans.

<u>Component 4 – Knowledge development and learning</u>

Baseline

There is a wide range of climate-related knowledge, science and evidence in Tanzania, however there remains broad areas of duplication in research and in programming, while some areas are neglected. Gaps in science and technology, as well as best practices are difficult to identify because of the multiplicity of actors, methodologies and initiatives. Efforts at coordinating have thus far focused on projects and programmes.

Adaptation additionality

This project therefore will seek to bring together all available and relevant knowledge on coastal and lakeshore impacts into a single coordinating function or clearing house, which will serve as a central coordinating mechanism for Tanzania's future initiatives in climate change adaptation. This Climate Change Observatory will be enabled to monitor key indicators of climate change in coastal and lakeshore areas and to provide best available technical advice to future activities. The additional costs of adaptation under Outcome 6 are therefore related to the costs of activities required to engage in scientific research, monitoring and evaluation of climate change and its impacts, as well as the costs of assessing resilience and cost effectiveness. They are the costs of activities designed to enable stakeholders to anticipate, analyse and adapt to climate change and to ensure this project's durability and replicability.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme implementation.

UNEP will be the Multilateral Implementing Entity[59] (MIE) for the project and will oversee and provide technical backstopping to the project . The Vice president's Office (Division of Environment) will be the Executing Agency of the project. UNEP will work closely with the VPO and the Project Steering Committee (PSC) during project implementation. Overall, the project will be implemented with the support of several national government, local government and non-government partners.

The project will be supervised by the National Climate Change Technical Committee (NCCTC), which is comprised of sector environmental coordinators, senior environmental and representatives of relevant stakeholders, and chaired by the National Climate Change Focal Point. The NCCTC is itself supervised by the National Climate Change Steering

[59] The following implementation services under the MIE modality will be provided by UNEP for this project: (1) Overall coordination and management of UNEP's MIE functions and responsibilities, and facilitate interactions with the AFB and related stakeholders; (ii) Oversight of portfolio implementation and reporting back on budget performance; (iii) Quality assurance and accountability for outputs and deliverables at the project development phase, during implementation and on completion;(iv) Receipt, management and disbursement of AF funds in accordance with the financial standards of the Adaptation Fund. (v) Information and communication management, including maintaining Management Information Systems and specific project databases to track and monitor progress (financial and substantive) of project implementation; (vi) Oversight and quality assurance of evaluation processes for project performance and ensuring that lessons learned/best practice incorporated to improve future projects; (vi) General administration and support costs including legal services, procurement and supply management, IT, and human resource management.

Committee (NCCSC), a national-level policy committee comprised of Directors and senior environmental officers from VPO-DOE and various ministries that meets quarterly. This is chaired by the Permanent Secretary-VPO responsible for environment and climate change issues.

The VPO- DOE will be the overall coordinator of the project. In support of the national administration, and where a need arises, a Senior Technical Advisor (STA) may be hired to provide technical guidance on the implementation of the project to the NPC.

The key functions of the VPO-DoE, and with the possible support of the STA will be the following: i) quality assurance and technical review of project outputs (e.g. studies and assessments); ii) assistance in drafting TORs for technical consultancies and supervision of consultants work; iii) assistance in monitoring the technical quality of project M&E systems, including annual work-plans, indicators and targets; iv) providing advice on best suitable approaches and methodologies for achieving project targets and objectives; v) provide a technical supervisory function to the work carried out by the other technical assistance consultants hired by the project; and vi) assisting in knowledge management, communications and awareness raising. The STA position will be filled following a transparent and competitive recruitment process. The STA will be employed full-time during the first year and thereafter involvement of the STA will be reduced[60]. In this way, the project will strengthen and establish in-country capacity and ensure that project activities are sustainable after the project lifetime.

Additional staff employed to provide technical and administrative support will include consultants (both national and international, as needed) and an administration/finance assistant.

The VPO-DOE as coordinating unit will undertake the following responsibilities for management of the project:

- Coordinating between key line ministries and relevant departments in implementing the various project components.
- Coordinating between regional and national institutions and donors.
- Preparing regular annual reports on its activities and outcomes of the project.
- Providing advice and guidance on coastal zone management policies.
- Mobilizing additional partnerships and support for the project as necessary

The PSC will steer the project implementation process and any problems encountered will be discussed during the regular meetings (every six months throughout the project implementation with additional meetings held as and when necessary) and/or *ad hoc* sessions. The NCCFP will serve as the secretary of the PSC. The PSC will approve annual work plans and procurement plans, and review project periodical reports as well as any deviations from the approved plans. All decisions of the PSC, such as respective responsibilities, timelines and budget will be clearly communicated to the parties concerned. PSC members will facilitate the implementation of the project activities in their respective agencies, ensure that activities are implemented in a timely

[60] The STA will be contracted full-time for Year 1, 40% for Year 2 and for 30% of the time in Years 3 and 4.

manner and facilitate the integration of project-inspired activities into existing programmes and practices.

In addition to various partners playing an advisory role, a number of project activities will be delivered through agreements, MOUs and sub-contracts where appropriate with relevant institutions, as follows:

Institutions	Responsibility for delivering
Prime Minister's Office-Local Governments and Regional Administration	Oversee the work of the Local Government Authorities to make sure that it is in line with policy and legal requirements of the local governments including delegation by devolution
Ministry of Industry, Trade and Marketing	Joint responsibility for ecotourism, trade development and promotion of fisheries.
Ministry of Agriculture, Food Security and Co-operatives	Components related to agriculture, particularly as regards the provision of technical inputs, enhanced crops and other technologies for agricultural productivity. Joint responsibility for irrigation (with Ministry of water)
Ministry of Natural Resources and Tourism	Responsible for all activities related to ecosystem rehabilitation and monitoring, and providing support to district administrations in setting up the Resilient Ecotourism revolving funds.
Ministry of Water and Irrigation	Relocation of boreholes, water quality monitoring and extension of irrigation infrastructures to project zones.
Ministry of Energy and Minerals	Delivering the alternative energy technologies to targeted communities.
Ministry of Transport	Delivery and supervision of all coastal and lakeshore infrastructure components of this project.
Ministry of Education and Vocational Training	Joint responsibility for the GreenJobs program with Ministry of Labour.
Ministry of Labour, Employment and Youth Development	Lead responsibility for the operation of the GreenJobs program.
Ministry of Livestock Development and Fisheries	Responsible for delivering fisheries assistance and technologies, and sustainable management of pastures and lands for livestock production.

Due to the large scope of this project, as well as the need to coordinate closely with related ongoing initiatives, this project will place special emphasis on internal and external coordination. As the central coordinating unit, the VPO will provide central coordination functions, administration of contracts and sub-contracts and other administrative functions as per Tanzanian government rules and regulations. Technical consultants may be hired to provide ad hoc expertise during project implementation and to provide higher level thematic coordination.

In addition to this central coordinating function, two regional coordinating units will be established in each of the project's major zones: one Coastal Coordination Unit and another

Lakeshore Coordination Unit. Each unit will be housed in one of the participating districts and will serve as a focal point for all local activities in that zone, and will be accountable to the National Project Coordinator. In addition, each district will name a project officer to oversee the implementation of activities in the district.

B. Describe the measures for financial and project / programme risk management.

The following risks have been determined during project design, that could influence the project's delivery of its objective.

Risk	Level	Mitigation
Operational: The multiple ongoing initiatives on climate adaptation in Tanzania could cause operational delays for this project	Low	Coordination among various partners at national and international levels is an integral part of this project. In addition, dedicated staff for project coordination will help ensure that the project maintains its objectives. The Tanzanian government is firmly committed to achieving the objectives of this project for implementation of concrete adaptation activities.
Political: District-level stakeholders and administrations show low engagement for adaptation measures	Low	District level administrations will be engaged early on in project activity planning and delivery. Efforts will be made to increase awareness of district-level stakeholders on the potential impacts of climate change on local economy and prospects. Incentives for private sector and vulnerable groups have been included in project activities in order to encourage active participation at all levels.
Political: the project could experience difficulties in coordination and oversight for activities delivered at various sectors, levels of governments or by multiple partners	Low	Dedicated personnel for project management will be provided through the Vice President's Office – who will act as overall coordinator and provide monitoring of project outputs and activities. Close collaboration among various ministries and stakeholders participating in the project will take place through national and district level mechanisms.
Environmental: Extreme weather events such as tropical storms, floods or droughts could hinder progress in ecosystem rehabilitation and infrastructure activities	Med	Measures designed to rehabilitate buffer ecosystems will be implemented so that no-regrets measures are implemented first, gradually building resilience of targeted ecosystems. Protective infrastructure rehabilitation will be designed according to the best available technical standards, using the best available technology.

Financial: market and price fluctuations could cause price variations and variations in costs of certain project activities, leading to budgetary constraints.	Low	A financial management strategy for the project will be established as per best management standards and accounts will be regularly monitored through regular audits. A financial risk strategy and contingency plans will also be developed as part of the financial management procedures used by Tanzanian government and UNEP.

C. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

The project will comply with formal guidelines, protocols and toolkits issued by the AF, UNEP, and Tanzanian government procedures.

UNEP will develop a **Supervision Plan** during the project's inception phase that will be distributed and presented to all stakeholders during the Inception Workshop. The emphasis of the Supervision Plan will be on outcome monitoring, learning and sustainability, but without neglecting financial management and implementation monitoring. Project risks and assumptions will be regularly monitored by UNEP. Risk assessment and rating is an integral part of the Project Implementation Review (PIR). The quality of the project's M&E will also be reviewed and rated as part of the PIR. Key financial parameters will be monitored annually to ensure the cost-effective use of financial resources.

The project will undergo an independent **Mid-Term Evaluation** at the mid-point of project implementation. The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, ToR and timing of the Mid-Term Evaluation will be decided after consultation between the parties to the project document. The relevant GEF Focal Area Tracking Tools will also be completed during the Mid-Term Evaluation cycle.

An independent **Final Evaluation** will take place three months prior to the project end date in accordance with UNEP and GEF guidance. The Final Evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the Mid-Term Evaluation, if any such correction took place). The Final Evaluation will assess the impact and sustainability of results, including their contribution to capacity development and the achievement of adaptation benefits. The Final Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded onto PIMS.

A key **Annual Project Review/Project Implementation Review** (APR/PIR) will be prepared to monitor progress made since the project's start and in particular for the previous reporting period. The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward the project's objective and outcomes - each with indicators, baseline data and end-of-project targets (cumulative).
- Project outputs delivered per project outcome (annual).
- Lesson learned/good practice.
- AWP and other expenditure reports.
- Project risk and adaptive management.

Periodic monitoring will be conducted through visits to the demonstration sites undertaken by relevant staff from UNEP. Visits will be jointly conducted based on the agreed schedule to assess project progress first hand.

M&E costs

MONITORING AND EVALUATION COSTS			
Type of M&E Activity	**Responsible Parties**	**Budget $ (excludes project team time)**	**TIMEFRAME**
Measurement of means of verification of project results (baseline assessments)	STA and NPC will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members. Technical support provided by UNEP.	52,000	within first 2 months of start-up
Direct project monitoring and quality assurance including progress and financial reporting, project revisions, technical assistance and risk management	UNEP TM and FMO	169,363	quarterly, half-yearly and annually
Evaluations (Mid-term Review and Independent Terminal Evaluation)	UNEP EO	166,500	At mid-point of project implementation and at end of project implementation
Inception meeting, field visits and steering committee (SC) meetings	UNEP, NCCC	82,500	Inception mtg within first 2 months of project start-up, annual SC mtgs
Total M&E cost		470,363	

D. Include a results framework for the project proposal, including milestones, targets and indicators.

	Activities	Outputs	Indicator	Target	Baseline	Means of Verification
Component 1 - Addressing climate change impacts on key infrastructure and settlements						
Outcome 1 - Adverse impacts of SLR on coastal infrastructures and settlements are reduced						

	Rehabilitate coastal protection facilities to protect settlements economic and cultural infrastructure	Sea wall raised or rehabilitated in areas showing particular damage	Length of sea walls raised and rehabilitated (m)	functional seawalls where appropriate in each sites by end of project	Dar es salaam seawall at ocean road showing signs of severe degradation	visual observation, engineering reports
		district level administration have the capacity to adequately manage rehabilitated infrastructure	Amount dedicated to infrastructure maintenance from district budgets	each district earmarks appropriate annual allocations for infrastructure maintenance.	infrastructure budgets within district administrations are low	project reports, plans and policies, district-level budgets
	Perform engineering assessment of climate change impacts on infrastructure (enabling)	report on climate change impacts on port infrastructure and adaptation recommendations (enabling)	assessment of climate impacts on port infrastructure available	1 study available and disseminated by 2nd year of project	no such study available	study, project reports
		Coastal engineering needs assessment and design study (enabling)	availability of engineering design plans	by end of first year	no such study	project reports
Outcome 2 - Adverse impacts of floods averted						
	Cleaning up of the drainage channels, dredging of estuaries, installation of floodgates, rehabilitation of storm drains in selected urban centers	Effective storm and flood drainage systems in urban areas and near coastal communities	% change drainage debit capacity (M/s) in all locations; reduction in sea water intrusion; number of floods averted	at least a 15% increase in drainage capacity	drainage is insufficient as seen by flooding incidents in targeted sites during heavy rains	visual observation, engineering reports
Outcome 3 - Adverse impacts of climate change on water supply and quality averted						
	Rehabilitation of resilient water mobilization structures along with sustainable water extraction and management practices	water extraction, conservation and harvesting infrastructure rehabilitated, along with adequate monitoring at local level	% change in water availability in all seasons; % reduction in waterborne diseases (cholera, malaria, diarrhea)	15% increase in safe water availability in all seasons in all locations; 10% decrase in waterborne disase	N-A	project reports, questionnaires, household surveys

	Relocation of water extraction and conservation structures in coastal areas to avoid salinization	Boreholes and wells showing signs of salinization relocated, on the basis of ESIA studies	% reduction in salwater intrusion in coastal borehoes and wells	% salinity below national and WHO standards in relocated boreholes	tbd water quality study	visual observation, engineering reports, environmental and social impact assessment studies
Component 2 - Resilient livelihoods						
Outcome 4 - Livelihoods are sustainable, diversified and resilient						
	Development or rehabilitation of fishing docks and fish processing areas at community level	New or rehabilitated fishing docks and fish processing areas	change in sustainable fisheries; % change in fish transformation activities	15% increase	N-A	reports, household surveys
	Promotion of sustainable and resilient nature-based tourism through district-level tourism assistance revolving fund	Increased numbers of sustainable tourism enterprises and resilient touristic infrastructures	# of private companies promoting resilient and sustainable tourism or # of private companies retrofitting infrastructure for resilience	At least 2 in each district by end of project	N-A	reports, questionnaires
	Promote resilient agricultural practices	agricultural tools, materials, and sustainable technologies and approaches transferred	% change in agricultural productivity;	15% increase in agricultural productivity	agricultural productivity is insufficient to ensure food security in targeted sites	reports, household surveys
		irrigation technology and equipment transferred in areas subject to drought or erratic rains			irrigation is only marginally available in targeted sites.	
		Introduction of alternative resilient crops and crop management methods				reports, visual observation, mangrove and forest studies
	Promote alternative energy for avoided deforestation	appropriate alternative energy (efficient cookstoves, small solar, solar water heaters, small hydro) technology transferred	% change in deforestation	10% decrease in deforestation in all sites	N-A	reports, visual observation, mangrove and forest studies
Component 3 - Ecosystem-Based Integrated Coastal Area Management (EBICAM)						
Outcome 5 - Coastal and shoreline ecosystems are rehabilitated and ICAM is implemented						

	Coastal and shoreline ecosystem rehabilitation for climate resilience through the implementation of a GreenJobs program	Mangrove rehabilitation through planting of resilient seedlings, dredging and the creation of no-take buffer zones;	% change in mangrove coverage	15% increase in mangrove coverage and health	mangroves are showing signs of degradation and encroachment in targeted sites	reports, visual observation, mangrove and forest studies
		Coral reef rehabilitation and protection in coastal sites	% change in reef coverage and health	10% increase in reef coverages and health by end of project	reefs show signs of bleaching and death due to pollution and unsustainable fishing methods	visual observation , project reports
		Beach nourishment, coastline reforestation (trees and grasses)	Km of beach restored	175km	no beaches under restoration in targeted sites	visual observation , project reports
		Shoreline management and rehabilitation, using trees and grasses, replanting, stone dikes (rip rap) and no-build zones	Km of shoreline rehabilitated	175km	no shores under rehabilitation in targeted sites	visual observation , project reports
		Wetland rehabilitation	Ha of wetlands rehabilitated and protected	200ha	no wetlands under rehabilitation in targeted sites	visual observation , project reports
	Development of a supplementary action plan to the Integrated Coastal Management Strategy on Ecosystem-Based Integrated Coastal Area Management	One EBICAM plan for the coastal region and one EBICAM plan for the Lake region approved	Number of plans approved	2 plans	no plans yet available but ICZM capacity exists	project reports, plans and policies
Component 4 - Knowledge, monitoring and policy linkages						
Knowledge of climate impacts and adaptation measures is increased						

	stocktaking	avilable knowledge, science and data gathered for project implementation	availability of a comprehensive baseline study for project indicators; available knowledge gathered	1 baseline study in year 1	no such study	project reports
	monitoring	A climate change coastal observatory for Tanzania for ongoing monitoring of CZM and Coastal environmental status and scientific research	effective implementation of clearing house function	clearning house function is operational by mid-term	no such function	project reports, insitution reports
		Assessment of the economic viability and practical feasibility of adaptation measures (i.e. through undertaking cost-benefit analyses)	cost-effective measures are identified for upscaling and policy uptake	measures are identified for upscaling and policy uptake on an ongoing basis	ad hoc assessments available but none specific to this project	reports from climate observatory, project reports
	policy linkages	lessons learned from the project outputs documented and integrated into policy making	number of policy briefs provided to key sectors and regulators; number of workshops	5 briefing notes per year; 4 workshops during the project	no notes; no workshop	project reports; briefing materials; workshop reports

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

A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT[61] *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

Eng. Ngosi C.X. Mwihava (see attached Annex 4: Letter of Endorsement)	Date*: 28 October 2010*

B. IMPLEMENTING ENTITY CERTIFICATION *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (including Development Vision 2025, National Adaptation Programme of Action) and subject to the approval by the Adaptation Fund Board, understands that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.
Maryam Niamir-Fuller  Implementing Entity Coordinator GEF Executive Coordinator and Director UNEP PO Box 30552 Nairobi, Kenya

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

Gigiri Complex, Block R-ground floor email: maryam.niamir-fuller@unep.org tel: (254 20) 762-4166 fax: (254 20) 762-4041 www.unep.org	
Date: *28 October 2010*	Tel. and email:
Project Contact Person: Ermira Fida, Adaptation Task Manager, UNEP DGEF	
Tel. And Email: +254 20 762 3113 Ermira.fida@unep.org	

List of Annexes:

1. Costed Logical Framework
2. List of ongoing projects
3. Summary of key aspects of project sites
4. Additional technical specifications
5. Note on the use of the Implementing Entity Project Fee
6. Letter of Endorsement

Annex 1. Costed Logical Framework

Outputs	Indicator	Target	Baseline	Means of Verification	Sites					Amount
					1-coast Mtwara	2-coast Dar*	3-coast Muheza	4-lake Magu	5-lake Muleba	
Sea wall raised or rehabilitated in areas showing particular damage	Length of sea walls raised and rehabilitated (m)	functional seawalls where appropriate in each sites by end of project	Dar es salaam sewall at ocean road showing signs of severe degradation	visual observation, engineering reports		x				2,482,775
district level administration have the capacity to adequately manage rehabilitated infrastructure	Amount dedicated to infrastructure maintenance from district budgets	each district earmarks appropriate annual allocations for infrastructure maintenance.	infrastructure budgets within district administrations are low	project reports, plans and policies, district-level budgets	x	x	x	x	x	52,825
report on climate change impacts on port infrastructure and adaptation recommendations (enabling)	assessment of climate impacts on port infrastructure available	1 study available and disseminated by 2nd year of project	no such study available	study, project reports						79,238
Coastal engineering needs assessment and design study (enabling)	availability of engineering design plans	by end of first year	no such study	project reports						52,825

Effective storm and flood drainage systems in urban areas and near coastal communities	% change drainage debit capacity (M/s) in all locations; reduction in sea water intrusion; number of floods averted	at least a 15% increase in drainage capacity	drainage is insufficient as seen by flooding incidents in targeted sites during heavy rains	visual observation, engineering reports		x	x	x	x	633,900
water extraction, conservation and harvesting infrastructure rehabilitated, along with adequate monitoring at local level	% change in water availability in all seasons; % reduction in waterborne diseases (cholera, malaria, diarrhea)	15% increase in safe water availability in all seasons in all locations; 10% decrase in waterborne disase	N-A	project reports, questionnaires, household surveys	x		x	x	x	528,250
Boreholes and wells showing signs of salinization relocated, on the basis of ESIA studies	% reduction in salwater intrusion in coastal borehoes and wells	% salinity below national and WHO standards in relocated boreholes	tbd water quality study	visual observation, engineering reports, environmental and social impact assessment studies	x		x			211,300
										4,041,113

New or rehabilitated fishing docks and fish processing areas	change in sustainable fisheries; % change in fish transformation activities	15% increase	N-A	reports, household surveys	x	x	x	x	x	422,600
Increased numbers of sustainable tourism enterprises and resilient touristic infrastructures	# of private companies promoting resilient and sustainable tourism or # of private companies retrofitting infrastructure for resilience	At least 2 in each district by end of project	N-A	reports, questionnaires	x	x	x	x	x	528,250
agricultural tools, materials, and sustainable technologies and approaches transferred	% change in agricultural productivity;	15% increase in agricultural productivity	agricultural productivity is insufficient to ensure food security in targeted sites	reports, household surveys						528,250
					x	x	x	x	x	
irrigation technology and equipment transferred in areas subject to drought or erratic rains			irrigation is only marginally available in targeted sites.							316,950
					x	x	x	x	x	
Introduction of alternative resilient crops and crop management methods				reports, visual observation, mangrove and forest studies	x	x	x	x	x	316,950
appropriate alternative energy (efficient cookstoves, small solar, solar water heaters, small hydro) technology transferred	% change in deforestation	10% decrease in deforestation in all sites	N-A	reports, visual observation, mangrove and forest studies	x			x	x	316,950
										2,429,950

Mangrove rehabilitation through planting of resilient seedlings, dredging and the creation of no-take buffer zones;	% change in mangrove coverage	15% increase in mangrove coverage and health	mangroves are showing signs of degradation and encroachment in targeted sites							475,425
Coral reef rehabilitation and protection in coastal sites	% change in reef coverage and health	10% increase in reef coverages and health by end of project	reefs show signs of bleaching and death due to pollution and unsustainable fishing methods	reports, visual observation, mangrove and forest studies visual observation , project reports	x	x	x				211,300
Beach nourishment, coastline reforestation (trees and grasses)	Km of beach restored	175km	no beaches under restoration in targeted sites	visual observation , project reports	x	x					369,775
Shoreline management and rehabilitation, using trees and grasses, replanting, stone dikes (rip rap) and no-build zones	Km of shoreline rehabilitated	175km	no shores under rehabilitation in targeted sites	visual observation , project reports	x	x	x				369,775
Wetland rehabilitation	Ha of wetlands rehabilitated and protected	200ha	no wetlands under rehabilitation in targeted sites	visual observation , project reports				x x	x x		211,300

One EBICAM plan for the coastal region and one EBICAM plan for the Lake region approved	Number of plans approved	2 plans	no plans yet available but ICZM capacity exists	project reports, plans and policies	x	x	105,650
							1,743,225
avilable knowledge, science and data gathered for project implementation	availability of a comprehensive baseline study for project indicators; available knowledge gathered	1 baseline study in year 1	no such study	project reports			52,825
A climate change coastal observatory for Tanzania for ongoing monitoring of CZM and Coastal environmental status and scientific research	effective implementation of clearing house function	clearning house function is operational by mid-term	no such function	project reports, insitution reports			158,475
Assessment of the economic viability and practical feasibility of adaptation measures (i.e. through undertaking cost-benefit analyses)	cost-effective measures are identified for upscaling and policy uptake	measures are identified for upscaling and policy uptake on an ongoing basis	ad hoc assessments available but none specific to this project	reports from climate observatory, project reports			
lessons learned from the project outputs documented and integrated into policy making	number of policy briefs provided to key sectors and regulators; number of workshops	5 briefing notes per year; 4 workshops during the project	no notes; no workshop	project reports; briefing materials; workshop reports			211,300
							422,600

	8,636,888
	408,750
	9,045,638
	768,879
	9,814,517

Annex 2. List of Ongoing Projects

Project Title	Agency/ Financiers	Total Amount (Million USD - rounded)	Objective	Dates	Regional scope	Main Sector	Linkages, synergies or potential duplication
Agricultural Sector Development Programme	IFAD	180.9	The objectives of the programme are to: improve farmers' access to and use of agricultural knowledge, technologies, marketing systems and infrastructure, for the purpose of contributing to higher productivity, profitability and farm incomes and to promote private investment based on an improved regulatory and policy environment Participating farmers will prepare village development plans, which will be consolidated into district agricultural plans financed by the programme, and they will directly implement activities under the village plans. The programme provides support for agricultural activities in the proportion of about two thirds at local levels and about one third at national level, at which it assists agricultural sector line ministries.	2009-2016	National	Agriculture	project provides access to agricultural technologies and inputs; however project assumes that adaptation to climate change is already sufficient (spontaneous) and could be at risk for climate change; cooperation will be pursued if the project is intervening in AF regions
Agricultural Sector Development Programme - Livestock: Support for Pastoral and Agro-Pastoral Development	IFAD	29.1	The programme targets the poorest members of herder and agro-pastoralist groups who depend mainly on livestock for their livelihoods. Women, young people and marginalized groups, and some Zanzibar fishing households, will be a particular focus of the programme. The programme will also address the special needs of the large numbers of poor rural people affected by HIV/AIDS. The overall objective of the programme is to improve food security and increase incomes within these communities. Specifically the programme will work to improve livelihoods for the target groups by: helping farmers identify and manage their own development needs improving livestock production through research and technology improving marketing systems and infrastructure for livestock products strengthening national and local government	2007-2015	central and southwest - Zanzibar in its entirety and, on the mainland, Singida (Manyoni, Singida and Iramba districts), Pwani (Bagamoyo and Kibaha districts), Dodoma (Kondoa and Dodoma Rural districts), Manyara (Kiteto, Simanjiro and	livestock	project provides support for livestock production, animal health and insemination, sanitation and reproduction, as well as business support. Project intervenes in different areas than AF initiative

			institutions to improve services to livestock farmers promoting a participatory approach to natural resource management within local administrations investing in improved health care and water management		Hanang districts), Tanga (Kilindi and Handeni districts), Morogoro (Mvomero, Morogoro and Kilosa districts), Arusha (Ngorongoro and Monduli districts), Kilimanjaro (Same district), Mbeya (Chunya and Mbarali districts) and Iringa (Iringa district)		
Agricultural Services Support Programme	IFAD	114.4	The programme targets a broad section of the country's farming population, with a particular focus on the poorest households, including landless labourers, women, households headed by women and orphans, and HIV/AIDS-affected smallholders. These poor farmers are held back by lack of access to technology, financing, markets and natural resources. The programme will work to improve agricultural productivity by: promoting farmer's organizations to prioritize and manage development needs strengthening linkages between farmers and local and central government as well as the private sector improving access to relevant agricultural knowledge and technologies promoting policy changes in favour of poor farmers	2007-2014	national (districts interventions undetermined) including Zanzibar	institutional and technical capacity for agriculture	this project provides a basis on which to build, through community mobilization, access to basic technology for agricultural production, reform of extension services and the promotion of pro-poor policies, along with institutional capacity building for relevant ministries and government technical institutions. Cooperation will be sought if districts are similar.

Rural Micro, Small and Medium Enterprise Support Programme	IFAD	25.3	he programme has three goals: to improve the awareness of rural entrepreneurs of market opportunities and how these can be exploited through the development and implementation of a communication strategy (including radio linkages to poor and remote areas) and the training of the entrepreneurs to improve their businesses; to improve the coordination and cohesion of selected value chains, through the creation and strengthening of backward and forward linkages for the selected chains; to strengthen public and private sector institutions to provide efficient and effective support to rural enterprises.	2007-2014	Iringa, Manyara, Mwanza, Pwani, Ruvuma and Tanga	agriculture, small business	project provides a basis to build on through social mobilization, the creation of local rural networks and enterprises and the creation of enabling environments for the creation of alternative livelihoods. Project intervenes in some AF project regions, and cooperation will be sought.
Lake Victoria Region Water and Sanitation Initiative (LVWATSAN)	UN HABITAT	6	supporting participating governments to achieve the Millennium Development Goals for water supply and sanitation, with emphasis on innovative solutions and speedy delivery. the overall objective of the Lake Victoria Water and Sanitation Initiative is to make a substantial and rapid contribution to the achievement of internationally agreed water and sanitation goals in secondary towns in the Lake Victoria region in East Africa, involving 15 urban settlements and 1 million people in Kenya, Tanzania and Uganda.	2004-2008	Lake Victoria (Bukoba and Muleba and the border town of Mutukula)	water and sanitation	this project provides similar support to the AF project in at least 1 common area (Muleba), specifically regarding the rehabilitation and construction of water infrastructure. Therefore water infrastructure works in Muleba under the AF projcet have been reduced to the minimal adaptation requirements and cooperation will be sought to benefit from project studies, information, data and partnerships
Managing Water for Dar es Salaam	UN HABITAT	TBC	# Improve the efficiency and equity of water supply and use in Dar es Salaam # Improve the knowledge base of the impact of urbanization of water and aquatic ecosystems in Dar es Salaam # Create public awareness on urban water resources management and related environmental issues # To promote value based water education in formal and non-formal education aimed at increasing the understanding and creating a new water ethic among water providers and consumers	2006-2007	Dar es Salaam	water and sanitation	this project is a direct complementary intervention to the AF project scope. Since the AF project does not intend to support water infrastructure activities in Dar es Salaam, it will directly benefit from the UN Habitat intervention, which includes efforts to reduce leakage, wastage and illegal connections. Cooperation will be sought to benefit from project studies, partners and to ensure climate risks are

							mainstreamed
Lake Victoria Local Economic Development (LV-LED) Initiative	UN-HABITAT	TBC	* promote balanced territorial development in the Lake Victoria basin through enhanced rural-urban linkages, * alleviate poverty through the promotion of employment and other income-generating activities, notably through joint pilot projects, * reduce the rate of rural-to-urban migration in the region and * improve basic urban infrastructure, including in secondary towns, also as a means to contribute to the achievement of Millennium Development Goals.	2007-tbc	Lake Victoria region	rural development	This project could provide valuable linkages to the GreenJobs program envisaged under the AF project. Cooperation is being sought
Promoting Environmentally Sustainable Development in Tanzania	UN-HABITAT	3.65	The Sustainable Cities National Programme in Tanzania operates under the programme Promoting Environmentally Sustainable Urban Development in Tanzania. The programme focuses on two objectives: consolidation of the environmental planning and management (EPM) process in the Greater Dar es Salaam City Council and use of the methodology and experience gained from implementation of the SDP. the projec aims to build the capacity of urban local authorities to manage urban development through training and communication, to establish an environmental management information system and strategic urban development planning framework; to create gender awareness in EPM and to address poverty eradication; and to assist the city municipalities to mobilize resources in order to ensure project sustainability.	1997-tbd	dar es salaam urban	urban developemnt and municipal planning	there are potential linkages between this initiatve and the AF project through the development of spatial plans or building plans for coastal areas of Dar es Salaam city.
Zanzibar Sustainable Programme	UN-HABITAT	0.4	The programme's objectives are to develop the capacity of the Zanzibar Municipal Council to work with its partners in the public and private sectors to set up an environmental planning and management (EPM) process for the sustainable development of the city. The main issues the municipality faces are haphazard construction, developed areas characterized by a lack of basic infrastructure services, solid waste management, water and sanitation, flooding during heavy rains,	1998-tbd	Zanzibar	urban development and municipal planning	there are also potential linkages through the gathering of lessons learned for municipal planning in coastal areas. Although this project works in different geographic area, the AF initiative will build on capacities created by this project and will seek to provide assistance in promoting resilient

			institutional conflicts and municipal financing. An environmental profile of the city has been prepared and discussed with all parties. A city consultation took place in December 1998.				municipal land use planning capacity
SIP-Reducing Land Degradation on the Highlands of Kilimanjaro	UNDP-GEF	24,4	To create a sustainable enabling environment for shade coffee as an incentive for integrated sustainable land management that reduces land degradation and improves livelihoods in the Kilimanjaro Highlands, Tanzania.o create a sustainable enabling environment for shade coffee as an incentive for integrated sustainable land management that reduces land degradation and improves livelihoods in the Kilimanjaro Highlands, Tanzania.;other description:Project Objective: To create a sustainable enabling environment for integrated sustainable land management that reduces land degradation and improves livelihoods in the Kilimanjaro Highlands, Tanzania. Component: 1) A sustainable Land Use System that is based on incentives for coffee as a cash crop is tested and adopted in zone 2 of Mountains. 2- Farmers in zone 3, via Village Govt / CSO, increase tree cover on farm and common lands, providing increased livelihood support and flow of ecological goods and services. 3 Institutional and systemic capacity to monitor and evaluate cross sectoral & vertical environment processes created and used to mainstream SLM in development process.		kilimanjaro	sustainable agriculture	this project could provide valuable information on land use, agricultural potential and the possible impacts of climate change on key crops such as coffee; ithe AF project will also seek to provide services to this project by helping integrate climate change relevant information. Both projects operate in different areas, however, the undp project provides essential institutional capacity building for monitoring environmental issues that will be of use to the AF project
SFM Extending the Coastal Forests Protected Area Subsystem	UNDP-GEF	10,6	The aim of the project is to strengthen biodiversity management fundamentals within the Protected Area network in Tanzania. This project addresses the Coastal Forests which are arguably the most threatened of all hotspots ecosystems in Tanzania and Zanzibar islands.	2009-2014	Zanzibar, Kichi–Matumbi Hills, greater Rondo system on the Tanzanian mainland	forestry	This project benefits the AF project in that it provides a missing piece of ecosystem-based adaptation, namely the rehabilitation and protection of coastal forests as a buffering ecosystem. AF project and this project will cooperate on sharing lessons, studies and technical advice. Although pilot activities are not implemented in common areas, cooperation will be sought at technical levels

SFM Sustainable Woodland Management in the Miombo Areas of Western Tanzania	UNDP-GEF	11.9	To enable miombo dependent communities to adopt productive practices that are favorable to biodiversity conservation, reduce carbon emissions from land use change and improving livelihoods.	2009-2015	West-central Miombo region	Forestry and land use	the two projects function in different environments; however this project could provide valuable information on land use and agriculture, and since it considers the impacts of climate change, it may provide valuable insight and cooperation through the Climate Change Observatory
Strengthening the Protected Area Network in Southern Tanzania: Improving the Effectiveness of National Parks in Addressing Threats to Biodiversity	UNDP-GEF	16.9	The biodiversity of Southern Tanzania is better represented and buffered from threat within National Parks. The project supports the development of new national parks, strengthened management of existing national parks through training, capacity building and private-public =partnerships.	2010-2016	southern Tanzania	biodiversity	this project operates in a different geographic and ecosystemic region of the country. However, linkages will be established particularly through information sharing on nature-based tourism, and potential extension of the Tourism Revolving Fund to this project's districts
Mainstreaming Climate Change in Integrated Water Resources Management in Pangani River Basin	UNDP-GEF	2.5	This project will initiate Integrated Water Resource Management (IWRM) frameworks in the Pangani River Basin of Northern Tanzania. These frameworks will address climate change and pilot adaptation measures. It is one of the first field-based climate change preparation projects in Eastern Africa with strong links to basin and national planning and policy, and as such will build national and regional capacity, provide lessons and serve as a national and regional demonstration site.	2006-2009	pangani district	Water management	This project provides a valuable basis on which to build additional adaptation activities since it provides local and institutional capacity for integrated water resources management, namely through training, information and awareness raising, social mobilization. The project also promotes the integration of climate change concerns in basin managemnet, and is therefore consistent with the pricniples of Ecosystem-based management as contained in the AF proposal
Integrating environment into National Strategy for growth and reduction of poverty – PEI	UNDP-PEI	4	As a follow-up to the project on mainstreaming environment into MKUKUTA, this project aims at promoting integration of environmental issues into the implementation of MKUKUTA strategies. Components include: Capacity strengthening to integrate environment in sector and district plans and implement strategic poverty-environment interventions at local level; Improved access and utilization of poverty-environment data in the MKUKUTA process and	2007-2010	national	policy	this project continues to provide the basis for environmental mainstreaming into national plans, policies and regulations, and will provide essential linkages between the AF project and national policy frameworks.

			local level planning ; Sustainable financing of environment targets in the MKUKUTA and in local level planning processes; and Promotion of efficient utilization of rangelands and empowering pastoralists through improved livestock productivity and market access.				
Integrating Environment into Poverty Reduction policies (phase II)	UNDP-UNEP	4	the project aims to support the integation of envronmental issues into the PSGRP (MKUKUTA) throughthe following expected outcomes: Institutional capacity further enhanced to integrate environment and livelihood issues into sector and district level plans, to implement strategic P-E interventions at local level, Improved access to and utilization of environment/livelihoods data for use in MKUKUTA process and at local level planning, Sustainable financing of environmental targets contained in the MKUKUTA.Promoting efficient utilization of rangelands and empowering pastoralist to improve livestock productivity through improved and market access	2007-2010	national	policy	this project provides a basis on which the AF project is built, namely efforts to build institutional capacity for the effective consideration of environemtnal issues, including climate change, into national devleopment planning. This project will provide national-level awareness raising and a contribution to component 4 of the AF project on policy linkages.
Expedited Financing for (Interim) Measures for Capacity Building in Priority Areas (Phase II)	UNEP	0.1	The project is being implemented as an interim capacity-building activity between the Initial and the Second Communications. Hence it is intended to complement activities of the Phase 1 project, related to the Initial Communication, while at the same time forming basis for initiation of the Second National Communication to the UNFCCC.	2010-?	national	policy	this project provides valuable capacity and information particularly in terms of vulnerability studies and climate models which will be brought into play in the AF project
Developing Core Capacity to Address Adaptation to Climate Change in Productive Coastal Zones	UNEP	10.8	To develop institutional capacities to manage climate change impacts through improved climate information, technical capacity, the establishment of demonstration projects to reduce vulnerability in key vulnerable areas, and learning. This project seeks to implement priorities of the National Adaptation Programme of Action (NAPA) in addition to barriers to implementation as identified in the NAPA report and terminal evaluation of the preparation phase of this project.	pipelined	tbd - national and coastal areas	coastal zone management	this project will be developed and executed in close collaboration with the AF project. Activities will be jointly implemented to minimize duplication and geographic scope will also be carefully delimited. It is expected that the LDCF project will focus on smaller-scale pilot initiatives
National Adaptation Plan (NAPA) for United Republic of Tanzania	UNEP	0.2	The objective of the proposed NAPA project for Tanzania is to develop a country-wide programme of immediate and urgent project-based adaptation activities that address the current and anticipated adverse effects of climate change, including extreme events.	2004-2007	national	policy	the NAPA provides the basis for development of this and other adaptation projects in Tanzania

Addressing Land-based Activities in the Western Indian Ocean (WIO-LaB)	UNEP	11.4	addresses some of the major environmental problems and issues related to the degradation of the marine and coastal environment resulting from land-based activities (LBA) in the Western Indian Ocean (WIO) region. Project Objectives: 1) Improve the knowledge base, and establish regional guidelines for the reduction of stress to the marine and coastal ecosystem by improving water and sediment quality; 2) Strengthen the regional legal basis for preventing land-based sources of pollution; and 3) Develop regional capacity and strengthen institutions for sustainable, less polluting development.		regional indian ocean	marine and coastal zones	This project provides technical lessons learned from pilot activities in Tanzania and other countries related to the development of ecotourism, as well as on technologies for ecosystem-based resileince in coastal systems (e.g. the use of vetiver grass in erosion control and leachate treatment; rehabilitation of mangroves; wastewater management and anti-erosion)
Community Participation for Biodiversity Conservation and Environmental Rehabilitation in Western Tanzania (Kibondo & Ngara)	UNEP		"aiming at prevention of biodiversity losses and contribute to environmental rehabilitation through supporting community participation in reforestation and raise the awareness among the refugees of environment conservation and forest management in the Kibondo and Ngara districts of Western Tanzania. Objectives of this project are to: 1) Enhance community participation in the establishment of tree nurseries, and environmental conservation, 2)Build and strengthen awareness of sustainable management of natural resources environment conservation at policy and management levels through empowering local communities, 3) Introduce participatory media process to train journalists for raising awareness in areas of environmental rehabilitation and conservation, 4) Introduce community participatory forest management methodologies to villagers surrounding reserved forest areas to its ensure sustainable utilization."		Kibondo and Ngara	forestry	although this project operates in a different region, it provides valuable input to the AF initiative, namely by promoting awarenss raising of sustainable management of natural resources, training journalists and the promotion of forestry management practices that could be extended to the AF project zones
Establishment of the AEIN in Tanzania to support production of Tanzania Environment Outlook report	UNEP				national	policy	This project will provide substantive linkages towards the development of the Climate Change Observatory, by building on the created capacities for environmental

							reporting and monitoring. The project will be linked to AF project component 4 on stocktaking and monitoring
Coastal Resilience to Climate Change: Developing a Generalizable Method for Assessing Vulnerability and Adaptation of Mangroves and Associated Ecosystems	UNEP-GEF	2	he purpose of the project is to develop a generalizable method and process to develop an effective adaptation strategy that could be adapted in different sites within common ecosystems. The project will focus its initiatives on a single ecosystem type - mangrove with near shore coral reefs. Further, the project will initiate pilot initiatives to test the adaptation strategy in the ecosystem to address and ameliorate climate change impacts. The overall goal of the project is to increase the resilience of vulnerable mangrove and coral reef ecosystems to the impacts of climate change	2007-2010	national	ecosystem -based adaptation	this project and findings from its implementation has formed a basis for the development of the AF initiative as it concerns mangrove rehabilitation and protection for adaptation and resilience.
Marine and Coastal Environment Management Project (MACEMP)	WB	63	The project development objective is to improve lives and livelihoods of coastal communities of mainland Tanzania and Zanzibar, through implementing participatory and integrated coastal development/economic activities while sustaining coastal resources. The Tanzania Marine and Coastal Environment Management Project aims to strengthen the sustainable management and use of the Borrower's Exclusive Economic Zone, territorial seas, and coastal resources resulting in enhanced revenue collection, reduced threats to the environment, better livelihoods for participating coastal communities living in the Coastal Districts, and improved institutional arrangements. The project consists of the following components: Component 1) will establish and implement a common governance regime for the Exclusive Economic Zone (EEZ) that contributes to the long-term sustainable use and management of EEZ resources. Component 2) will establish and support a comprehensive system of managed marine areas in the Territorial Seas, building on Integrated Coastal Management (ICM) strategies that empower and benefit coastal communities. Component 3) will empower coastal communities to access opportunities so that they can request, implement and monitor sub-projects that contribute to improved livelihoods and sustainable marine ecosystem management.	2005-2011	National with Community Funds in Kilwa, Rufiji, Mafia, Zanzibar	fisheries, coastal zone management	This project provides a basis on which to buld adaptation initaitives because it supports planning and policy for sustainable fisheries, improved licensing o f foreign vessels; enhanced monitoring, compliance and surveillance to regulate foreign commercial fishing fleets and reduce conflicts between artisanal and industrial fishing; establishment o f a sustainable financing mechanism; and improved fishery stock assessments on near- shore stocks. the project also supports strengthened spatial planning along the coastal margin, to develop a national system plan for marine managed and marine protected areas (MPAs), and to promote marine zoning that encourages local co-management. Although both projects do not work in similar areas, cooperation will be actively pursued

			Component 4) will provide efficient project implementation services				
Second Additional Financing for Agriculture Sector Development Project	WB	35	The original project's overall goal is to raise and sustain agricultural growth to help achieve the MKUKUTA target of reducing the proportion of the rural population below the basic-needs poverty line from 38.6 percent in 2000/01 to 24 percent in 2010. The Project has two complementary objectives that contribute to the higher order of agricultural growth and poverty reduction: (i) to improve farmers' access to and use of agricultural knowledge, technologies, and infrastructure, all of which contribute to higher productivity, profitability, and farm incomes; and (ii) to promote agricultural private investment based on an improved regulatory and policy environment.	2010-tbd	national with pilot locations unknown	Agriculture	there are strong potential linkages as this project supports small scale irrigation infrastructure development at the district level; project also supports research and extension, institutional capacity building for agriculture planning. Cooperation will be sought, particularly for technical lessons on irrigation
Tanzania Stratetic Cities Project	WB		The objective of the Strategic Cities Project for Tanzania is to improve the quality of and access to basic urban services in participating Local Government Authority's (LGAs). There are three components to the project. The first component of the project is core urban infrastructure and services. This component will support improvements in core infrastructure and key urban services in the participating LGAs. It will comprise two subcomponents that will provide: (a) investment in core urban infrastructure and services for subprojects prioritized by the participating LGAs; and (b) technical assistance for construction supervision and support for the implementation and monitoring of Environmental and Social Management Plans (ESMPs) and Resettlement Action Plans (RAPs) linked to individual subprojects, including the payment of compensation costs.	2010-2015	Mtwara, Arusha, Dodoma Kigom, Mbeya, Mwanza	Infrastructure	this project provides assistance for the rehabilitation and construction of key municipal infrastructures, namely roads, waste treatment facilities, storm drainage and key buildings. The AF project will provide direct services to this project by providing coastal protective infrastructure around these investments when necessary. Cooperation will be sought to share information on social and environmental impacts, as well as engineering studies and to ensure coordination of works in common project areas. For example, in Mtwara urban district, the SCP is already rehabilitating storm drainage,

							meaning that the AF project will not need to provide support to this activity in this site.
Tanzania - Accelerated Food Security Project	WB	299	Project Objective. The objective of the Project is to contribute to higher food production and productivity in targeted areas by improving farmers' access to critical agricultural inputs. The proposed Project will have three components: (i) Improving access to agricultural inputs (fertilizer and seed); (ii) Strengthening input supply chains; and (iii) Project management and monitoring and evaluation (M&E). THis project is an emergency response credit to the financial crisis which has affected Tanzanian agricultural exports	2009-2012	40 districts - tbc	agriculture	these two projects also provides a useful basis on which to build additional adaptation activities, as it seeks to provide basic productive assets to vulnerable communities and by strengthening the productive chains in the agriculture sector - all factors that are essential baselines for resilience. Where these projects are active in common AF project areas, cooperation will be sought to ensure lack of duplication and synergies and so that the AF project can focus on additional activities designed to promote adaptation and resilience
Tanzania Agricultural Sector Development Project	WB	151.5 million	The Agricultural sector Development Project for Tanzania has two complementary objectives: (1) to enable farmers to have better access to and use of agricultural knowledge, technologies, marketing systems and infrastructure; all of which contribute to higher productivity, profitability, and farm incomes; and (2) to promote agricultural private investment based on an improved regulatory and policy environment. The project has two components: (1) Local Level Support to improve agricultural service delivery; the quality of agricultural investments; and the local policy and regulatory environment for private investment in agriculture; and (2) National Level Support to improve the responsiveness and quality of agricultural research and policy; to carry out preparatory work and investment in national level irrigation through public-private partnerships; to improve	2010-2012	40 districts - tbc	agriculture	same as above

			food security and sector coordination, and to stimulate agricultural markets and private sector development.				
Conservation and Management of the Eastern Arc Mountain Forests	WB-UNDP-GEF	45,7	The Project aims to bring about the long-term sustainable implementation and financing of forest biodiversity conservation and community-based conservation and sustainable development activities in Tanzania's Eastern Arc Mountain forests. The project has six components as follows: A holistic Eastern Arc Conservation Strategy, which addresses the overall Vision for the Eastern Arc Mountain Forests, and is based on individual mountain block strategies and District strategies; is developed, approved and under implementation A set of thematic strategies for biodiversity conservation are developed and implemented – through both macro frameworks and individual management plan processes Sustainable financing strategies are developed and under implementation Adaptive monitoring programmes developed and under implementation A socio-economic monitoring programme developed that links to the PRSP and livelihoods Information, education and communication strategies (IEC) developed and implemented	2003-2008	Kilimanjaro, Tanga, Dodoma, Morogoro and Iringa	forestry	This project can provide valuable lessons and studies on coastal forest management and status.
Sustainable Management of Inland Wetlands in Southern Africa: A Livelihoods and Ecosystem Approach	UNEP-GEF	1.3	The objective is to increase capacity for management of wetlands in government and non-governmental agencies in southern Africa by generating new knowledge on wetland functioning and development of sustainable land management (SLM) options for wetlands. The project will generate four outcomes. (1) Enhanced information available to decision-makers and other stakeholders in Southern Africa on wetland resources, attributes, linkages with surrounding catchments and degradation status and potential risk. (2) Guidelines for SLM in wetlands developed, based on new knowledge on functions of wetland types, their processes and linkages with catchments. These will comprise	2004-2010	Regional Southern Africa	wetlands	this project will provide valuable technical insight on best available technologies for wetland rehabilitation as well as guidelines on sustainable land use. Cooperation will be established based on commonalities between project areas

			protocols to assess impacts and limits of human activities in wetlands and surrounding catchments. (3) Demonstrated innovative interventions for sustainable land and water management in wetland types utilized for agriculture and other livelihood-supporting activities. (4) Enhanced capacity and awareness of sustainable management of wetlands in the southern Africa region at government, extension and grassroots levels.				
Dar es Salaam Water Supply and Sanitation Project	WB	164.6 million	The objective of the Dar es Salaam Water Supply and Sanitation Project for Tanzania is to provide a reliable, affordable and sustainable water supply service and improve the sewerage and sanitation in the 'service area' of the Dar es Salaam Water and Sewerage Authority (DAWASA) that includes Dar es Salaam and part of the coast region to help improve public health and well-being in a city prone to cholera outbreaks or other water-borne diseases and support productive activities of the country's main economic center. The completion of this contract will increase the likelihood of sustainability by allowing for the: (i) replacement of aged high lift pumps; and (ii) the procurement of necessary spares deemed essential to the continued functioning of the Upper Ruvu and Lower Ruvu plants. Both have been experiencing frequent breakdowns that have disrupted service delivery to Dar es Salaam. Efforts to procure the pumps begin in June 2009, however, there have been significant delays. The borrower first requested the association's approval to proceed with the purchase of the pumps on July 6, 2009. However, the first attempt to procure the pumps failed as quotations from shortlisted suppliers were considered expensive and the proposed delivery period extended beyond the initial project closing date of December 31, 2009. Processing of a second request for bids was therefore suspended until an extension of the project was granted up to June 30, 2010.	2003-2010	national	Water and sanitation and infrastructure	This project provides much needed support for water sector reform and rehabilitation in Dar Es Salaam. the AF project is not intervening in infrastructural works in Dar es Salaam due to this project's presence; however cooperation will be sought so that interventiosn conducted elsewhere benefit from best technology and knowledge generated by this project and so that aspcets related to climate resilience are integrated and mainstreamed

Water Sector Support Project	WB	951 million	The Water Sector Support Project is to strengthen sector institutions for integrated water resources management and improve access to water supply and sanitation services. There are 4 components to the project: a) strengthening institutional capacity for improving the management of water resources. It will provide: (i) logistical and technical assistance for strengthening of the 9 basin institutions and their management systems, (ii) support for the planning and preparation of integrated (river and lake) basin development and management plans, (iii) support for the implementation of selected priority water resources (single and multi-purpose) investment projects identified by the Government of Tanzania; b) providing support to all local governments in the scaling up of the provision of rural water and sanitation services in pursuit of the MDGs; c) giving support to Dar es Salaam, all regional and district capitals, and gazetted small town utilities in the scaling up of provision of urban water and sanitation services in pursuit of the MDGs; and d) providing: (i) support for putting into operation the new role of the Ministry of Water, (ii) assistance for strengthening sub-sector planning and operational capacities, (iii) support to sector coordination and policy re-alignment, and (iv) support for sector capacity building.	2007-2012	national	water, sanitation, infrastructure	This project provides a useful basis on which to build additional adaptation activities, since it provides the institutional baseline for management of fragile ecosystems concerned by the AF proposal, including basin-wide organizations. This project also supports the rehabilitation of certain water sources, and cooperation will be sought in order to avoid duplication and to build resilience across implemented measures
Lake Victoria Environmental Management Program (phases 1 and 2)	WB	105.8	The Second Lake Victoria Environmental Management Project for Eastern Africa development objectives are to: (i) improve collaborative management of the transboundary natural resources of Lake Victoria basin (LVB) for the shared benefits o f the East African Community (EAC) partner states; and (ii) reduce environmental stress in targeted pollution hotspots and selected degraded sub catchments to improve the livelihoods of communities, who depend on the natural resources of LVB. There are four components to the project. The first component of the project is strengthening institutional capacity for managing shared water and fisheries resources. This component will focus on building the capacity of existing regional and national institutions to harmonize policies, legislation, and regulatory standards, and	2009-2013	Regional all lake countries with local sites unknown	fisheries	There are potentially strong linkages between this project and the AF proposed interventions. This project promotes activities that fall outside the scope of the AF project, for example pollution control, invasive species management and wastewater treatment. These activities can function as complementary to the activities envisaged under the AF proposal. On the other hand the project also promotes livelihoods interventions, including intensification of land-based activities as an alternative to overfishing, which

			develop basin-wide management frameworks, to improve cooperative management of the shared transboundary water and fisheries resources of the LVB. The second component of the project is point source pollution control and prevention. This component aims at reducing environmental stresses within the lake and its littoral zone, through the rehabilitation of priority wastewater treatment facilities, promotion of industrial cleaner production technologies, installation of the lake navigation equipment, and implementation of a contingency plan for the oil spills and hazardous wastes management in the LVB. The third component of the project is watershed management. This component seeks to reduce environmental stresses from the lake basin through the implementation of sustainable soil and water management practices and livelihoods improvement interventions, using community-driven development approaches, to improve water use efficiency in the LVB and generate positive externalities to downstream countries. The fourth component of the project is project coordination and management. This component will provide resources necessary for the effective project coordination, regional and national levels communication, monitoring and evaluation activities, and sharing of information among countries.				could potentially run counter to the objectives of the AF project; finally a set of interventions can be seen as directly complementary (and possibly duplicative, depending on the location and scale) to those promoted in the AF, namely the provision of fish processing and post harvest conservation technologies. Among similar activities, the LVEMP also seeks to implement rain water harvesting and storage, small water reservoirs, sediment retention dams, gully erosion control, planting multipurpose trees, afforestation, and reforestatio and wetlands rehabilitation. Close collaboration is being pursued to avoid duplication, determine gaps and geographic niches
Pangani - Saadani Coastal Protection	WTO - STEP	TBC	The Sustainable Tourism for Eliminating Poverty (STEP) project is a global initiative funded by a group of donors and steered by the UN World Tourism Organization. The ST-EP program includes four main components. The first is a research base to identify linkages, principles and model applications. There is also an operating framework for promoting and developing incentives for good practice among companies, consumers and communities. Forums for sharing and exchanging information, ideas and plans are designed to bring together private, public and non-governmental stakeholders. Finally, there is the ST-EP Foundation which was originally concerned with attracting new, dedicated financing from business, philanthropic and government sources.		Pangani district	tourism	this project provides a useful model for the Sustainable Tourism Revolving Fund sought to be established by the AF project since it promotes a similar small scale model in the Saadani national park. Lessons from this project will be gathered and cooperation will be sought for the tourism component of the AF project.

3. Summary of key aspects of site vulnerabilities

	Coastal sites			Lake sites	
	1. Mtwara	**3. Dar Es Salaam**	**4. Muheza**	**5. Magu**	**6. Muleba**
rainfall	unimodal	bimodal	bimodal	bimodal - 600-800mm	bimodal - 1400-2000mm
mangrove	yes	yes	yes		
sea wall					
forest	yes	yes	yes		yes
port	yes	yes			
reef	yes				
estuary	yes		yes		
dunes		yes			
seagrass					
wetlands + swamps		yes		yes	
crops	yes	yes, urban and periurban ag (vegetables, cassava, legumes, sweet potatoes, cashewnut, coconuts); fisheries; industry etc.	palm trees, sisal (cash), citrus, sisal, coconuts, cashew, maize, cassava, rice and sea weeds	yes	banana, coffee,tea, cassava, beans, more recently mushrooms and vanilla
fish	yes	yes		lake	
livestock					
existing climate hazards		drought, floods		variability, droughts	

anthropogenic pressures		pollution, poor urbanization, deforestation		overgrazing, deforestation, population growth , poor farming methods, pollution, malaria, invasive species	soil erosion, deforestation, excessive dependency on single crop,
future climate impacts	SLR, decreased precipitation - (=salinization of groundwater supplies)	droughts, floods, SLR, decreased precipitation	SLR, increased precipitation (flooding)	increased precipitation (flooding)	increased precipitation (flooding)
reg. population (district)	1.13 million	2.5 million	1.6 million	2.9 million	2.0 million (386,000)

Regional welfare ranking (from Tanzania PRSP, 2000)

Regional [6]/	Food Security	Unemployment	GDP per capita	Female illiterate Rate	Gross Enrollment (prim. School)	Health Status[7]/	Health services[8]/	Nutrition level[9]
1. Dodoma	3	18	3	7	6	2	11	10
2. Kagera	10	15	1	11	4	1	5	3
3. Lindi	5	6	10	8	2	4	18	6
4. Kigoma	6	4	2	4	4	10	9	15
5. Coast	4	5	7	3	9	9	13	11
6. Morogoro	2	8	8	14	14	7	13	7
7. Mara	7	9	6	15	18	3	7	2
8. Tanga	1	3	5	16	12	13	13	17
9. Mtwara	9	11	9	8	13	8	12	9
10. Rukwa	18	14	19	5	3	5	2	5
11. Arusha	8	7	18	11	7	17	2	14
12. Mwanza	14	18	14	6	10	10	9	8
13. Iringa	11	20	17	17	17	5	13	1
14. Mbeya	15	12	11	13	15	10	7	12
15. Shinyanga	16	13	15	1	7	16	1	18
16. Tabora	17	17	12	2	1	18	4	19
17. Singida	12	19	13	10	10	19	5	12
18. Kilimanjaro	13	2	4	20	20	20	20	16
19. Ruvuma	19	10	16	18	15	15	19	3
20. DSM	20	1	20	19	19	13	13	20

Source: Poverty and Welfare Monitoring Indicators, Vice President's Office, Dar es Salaam November, 1999

[6]/ Rank"1" Implies most deprived region and "20" least deprived region.
[7] / Weighted average ranking for infant mortality rate, life expectancy and crude death rate
[8] / Average weight and ranking for population per health facility and population per hospital bed
[9] / Average weighted rate for population per health facility and population per hospital bed

Annex 4 – ADDITIONAL TECHNICAL SPECIFICATIONS

A. Rehabilitation of the Sea wall at Dar es Salaam

All the initiatives related to the protection of the Tanzania coast are well coordinated and design through important documents such as Port Master Plan (2008-2028) and National Adaptation Programme of Action, 2007.

In all cases the functions of the seawall are to:

- To control the wave overtopping in consideration of the environmental conditions and others to which the sea walls concerned are subjected.

- To protect the land area behind the seawall from waves and storm surges.

As seen below, the seawall at Dar es Salaam in Ilala district is showing signs of severe degradation and near disappearance in places and needs to be rehabilitated to take into account the projected sea level rise. In the central area of the city, the main road, Ocean road, links the major city buildings (State House, commercial buildings and offices, foreign embassies, hospital, parks) and neighborhoods. In some areas, this road is now mere meters away from the water.

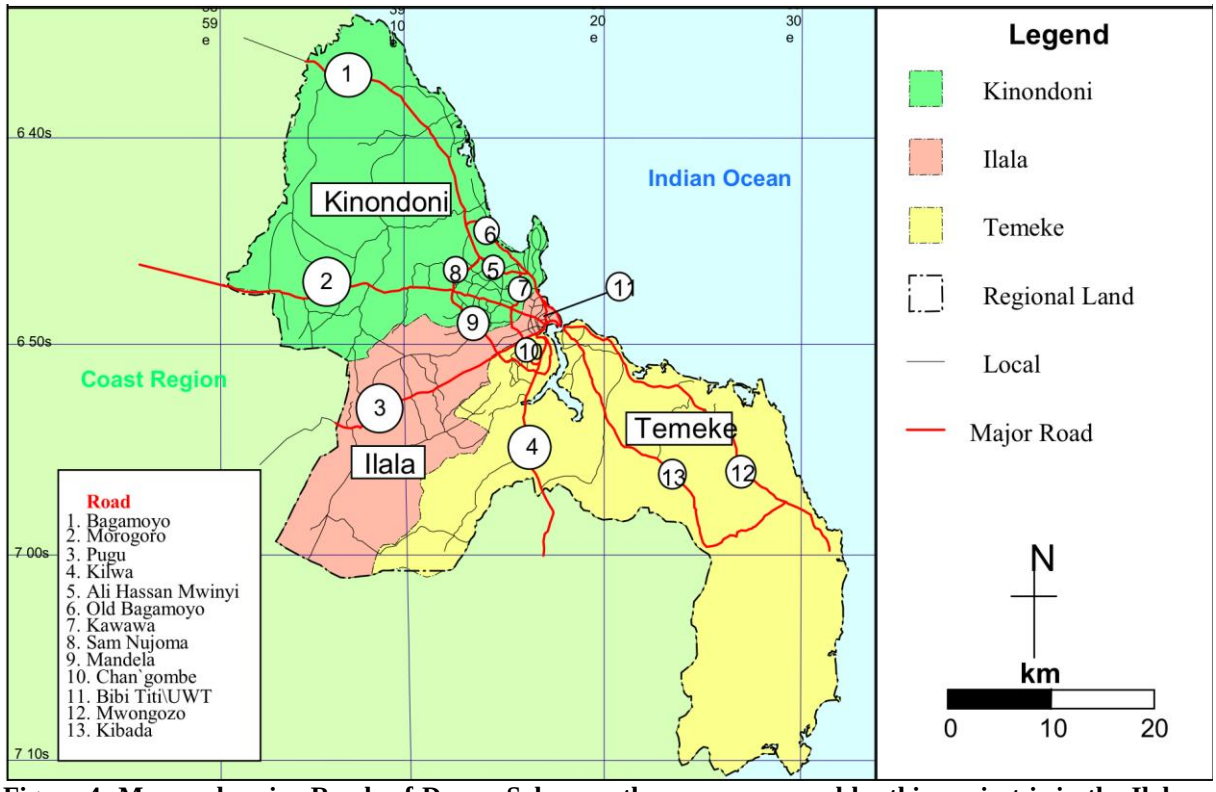


Figure 4: Map and major Roads of Dar es Salaam – the area concerned by this project is in the Ilala zone, along the water.

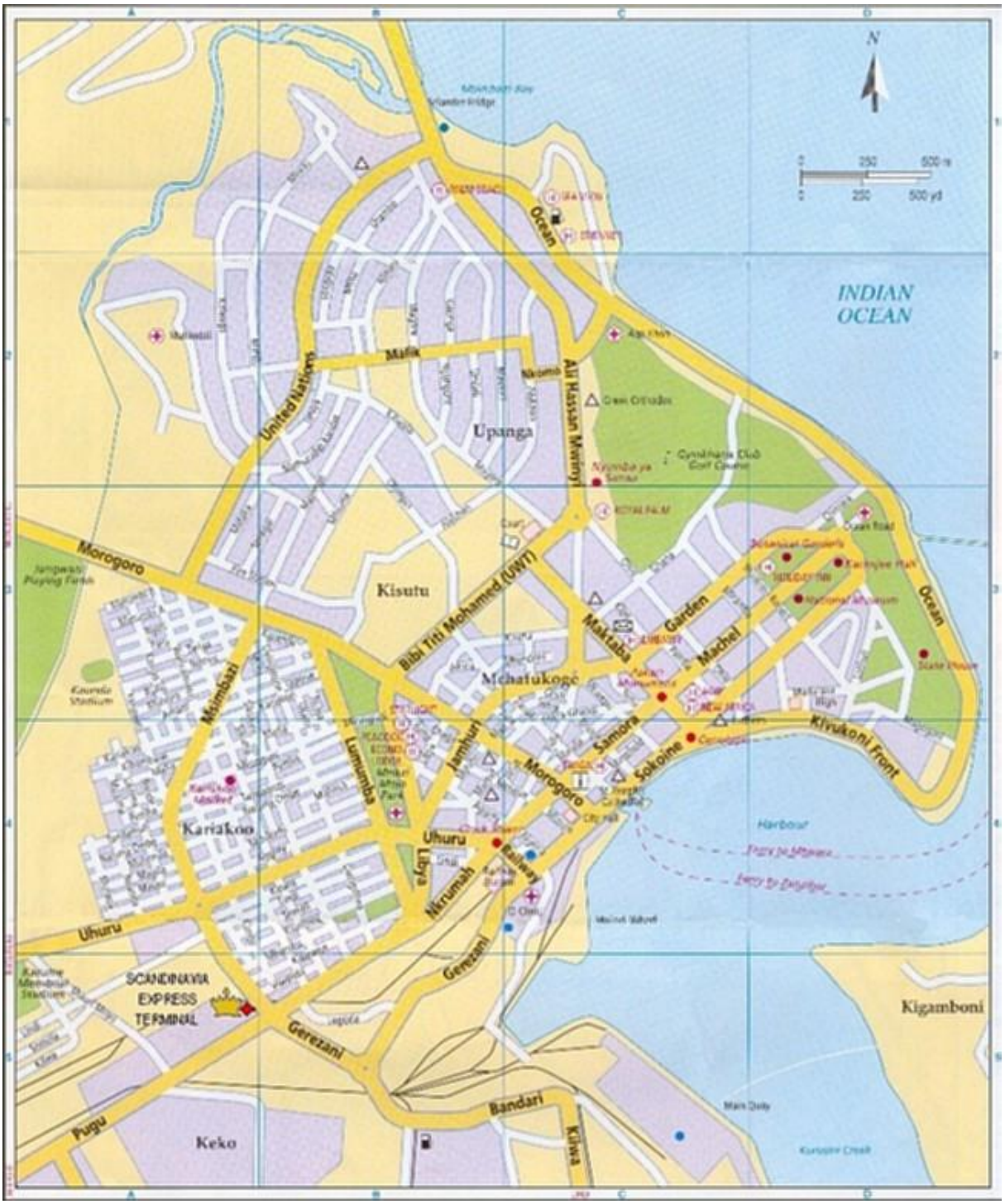


Figure 5: map of Dar Es Salaam, Ocean Road and major sites

Figure 3: Current Situation along Coastal Zone in Dar es Salaam

Figure 4: Current Situation Of The Sea Wall In Dar Es Salaam To Be Re-Constructed

Figure 5: Evidence of water movement towards the wall

Figure 6: Relation of the current sea wall to Ocean road and other infrastructure

Proposed rehabilitation of Dar es Salaam seawall at Ocean Road.

The desired height of the peak of the Wall will be set to + 4.50 m Chart Datum based on the amplitude of the tides, the maximum amplitude of the waves, the potential sea rise based on present and future climate change scenarios, *surcote* (local weather conditions) and a safety margin (for example to take into account the phenomenon of compressing which follows construction). In addition, sea wall design takes into consideration the following elements:

- Tidal current between 1Kn – 3Kn
- ESE swell with peak period of 8 seconds to 10seconds and wave height 0.5m and 2.5m from March to December.
- NE wind wave with peak wave period of 6s to 8s and wave heights between 0.5m to 2.0m from December to February

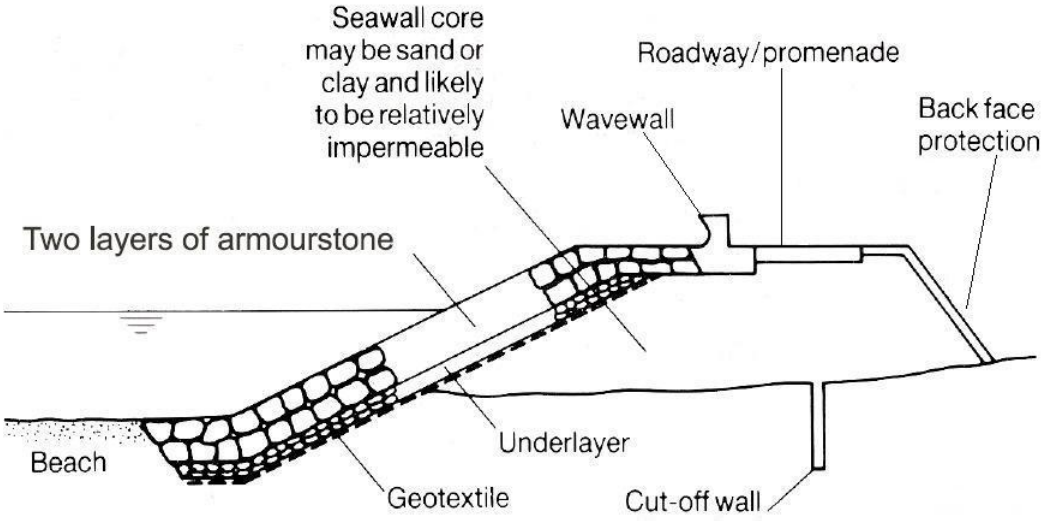


Figure 7: Typical cross section of the seawall

The table below shows the specifications of the planned coastal infrasructure.

General Configuration	Value
Total Length of the zone to be rehabilitated/constructed (m)	1020
Width wall and walk and riprap (m)	17
Total width (m)	22.5
Distance of the structure from the line of reference (m)	+10
Baseline on which the basis of the work will rest (m)	-3.4

B. Relocation and redesign of boreholes

One of the major concerns related to sea level rise along the coast of Tanzania is inundation and salinization of wells. In areas where salinity has penetrated to water wells, or where existing wells have been inundated due to coastal erosion and SLR, existing wells will be decommissioned, and new wells or boreholes will be constructed in higher locations. The precise locations of new wells will be based on recommendations of proper hydrogeological surveys and models.

Typical well details for coastal conditions is presented in figure 8 . The boreholes will range from 40 to 100m and are cased in uPVC pipes which are corrosion resistant. The exact depth and well details will depend on engineering desing at specific sites. It is envisaged that boreholes will constructed in Mtwara and Muheza areas.

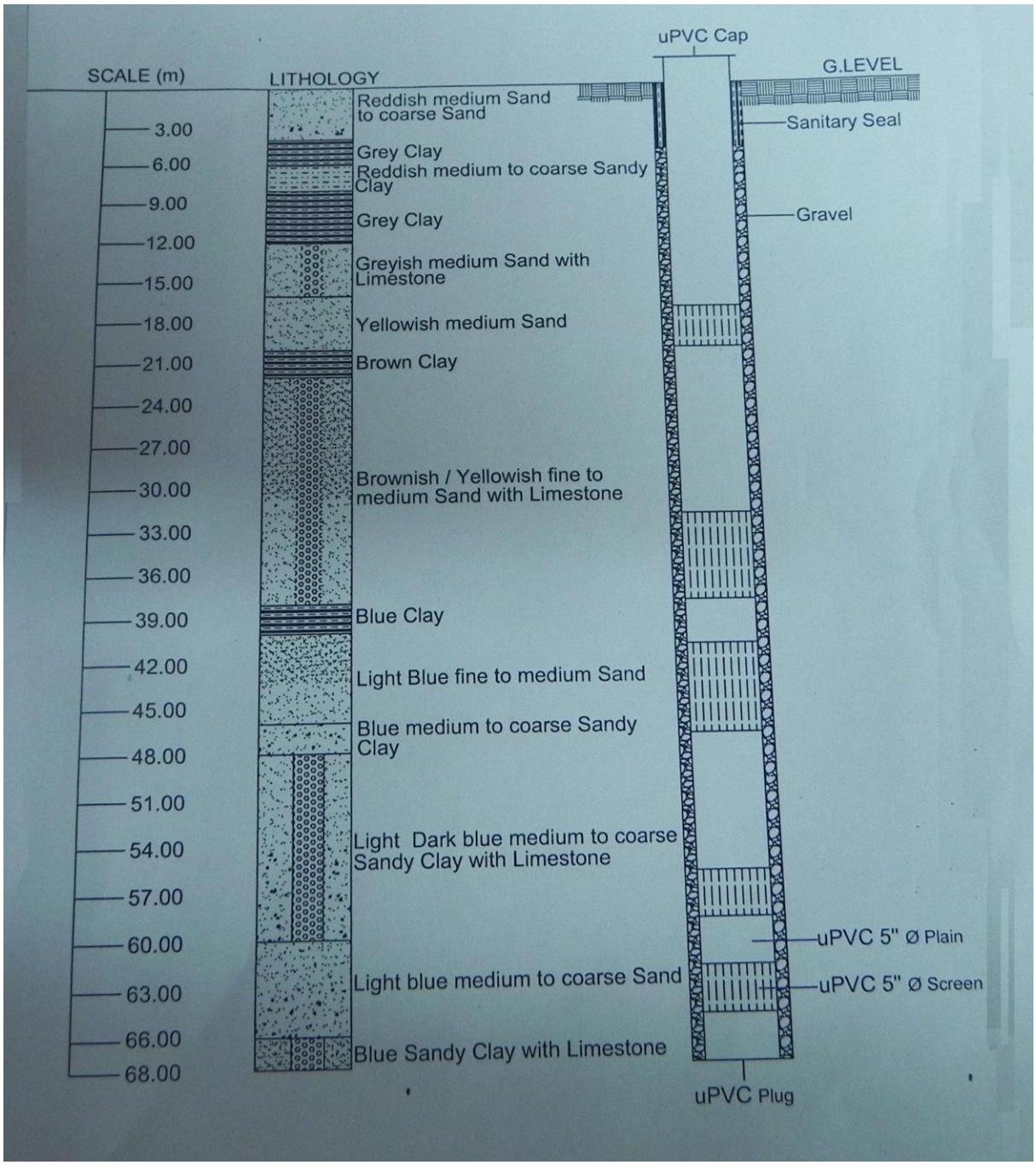


Figure 8: Typical borehole details for coastal areas in Tanzania (DDCA, 2008)

Specifications for new boreholes

	value
Depth (m)	40-100
Casing	uPVC
Casing diameter (inches)	4.5-12.0

C. Fish Landing sites

Climate change resulting in increased water levels in the indian ocean and low levels in lake victoria have already started to affect the fishing communities and the country at large. Tanzanian government has started responding to this amid low the low financial capacity, a total of 24 landing sites have been repaired. Lake victoria has 800 landing sites all of which need repairs including extension of jetties to follow the receding water line, extension of fancing, and in some cases relocation. Modern landing facilities with floating docs that can allow vessels to land fish at veriable depth are required to adapt to extrem low and high levels expected due to climate change. The construction of proper landing site with modern facilities for handling fish in hygenic manner add value to fish, increases income to poor fishermen and makes them more resilient to climate change impacts. Typical landing site design and desirable specifications are provided below.

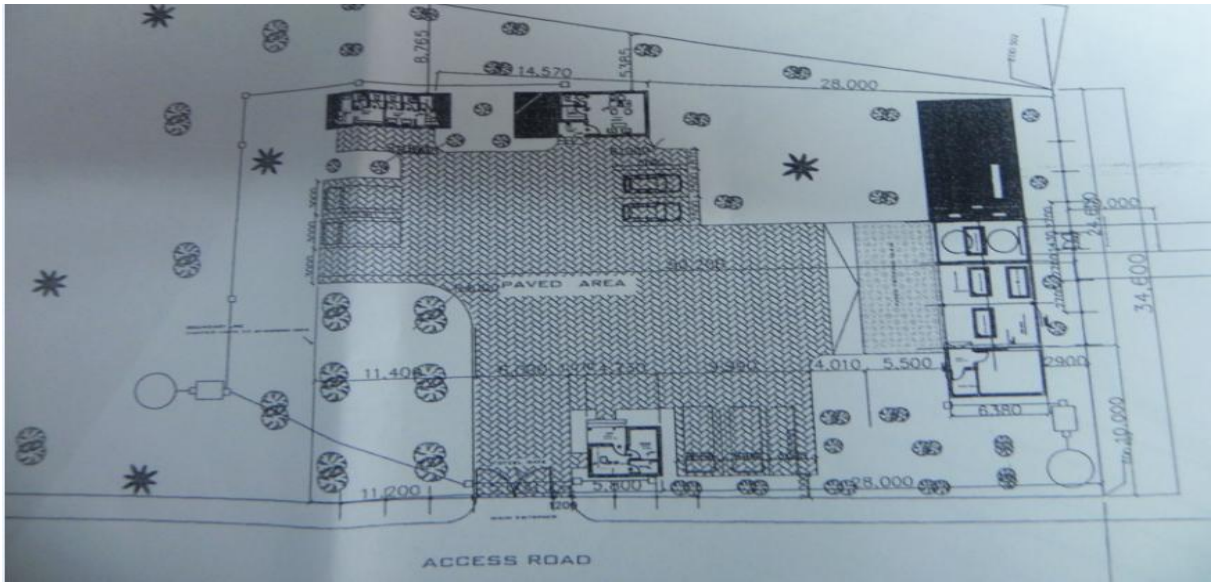


Figure 9: Typical layout of fish landing site

Specifications

The table below provides specifications of fish landing facilities to be upgraded or build through this project. [62]

S/N.	General Configuration	value
1.	Landing jetty length (m)	65-100
2.	Fish terminal area for receiving & auction (m^2)	400
3.	Chilly room capacity (tons)	10-20
4.	Ice room capacity (tons/24hrs)	5
5.	Fish handling capacity (tons/day)	30
6.	Fish vendors (Nr)	100-200
7.	Boat repair slipway (m)	5wide/12length
8.	Berthing capacity	6-10 boats

[62] Note: The specifications given will be used in New landing sites and for rehabilitation/upgrading of the existing landing sites affected by climate induced rise/drop in water levels.

9.	Flake ice plant (tons/24hrs)	5
10	Cold storage (tons)	20-30

Annex 5. Note on the use of the Implementing Entity Project Fee

Tanzania - Adaptation Fund MIE fee budget	8.5% Fee	Project	Total financing
Overall coordination and management	157,620		
Oversight and management of project development and project implementation	198,371		
Financial management, including accounting, treasury, grant and trust fund management	119,945		
Information and communication management	42,288		
Quality assurance including internal and external audits	76,888		
Overall administration and support costs	173,767		
Total indirect costs (Note 1)	**768,879**	**9,045,638**	**9,814,517**

Note 1 - Direct costs will be recovered from the project

Annex 6. Letter of Endorsement

THE UNITED REPUBLIC OF TANZANIA

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VICE PRESIDENT'S OFFICE
P. O. BOX 5380
DAR ES SALAAM
TANZANIA

28th October 2010

The Adaptation Fund Board Secretariat,

1818 H Street NW, MSN G6-602,

Washington, DC.20433

United States of America.

Fax: 1 (202) 522-3240/5

Email: secretariat@Adaptation-Fund.org

RE: Endorsement of the "Implementation of Concrete Adaptation Measures to Reduce Vulnerability of Livelihood and Economy of Coastal and Lake Shore Communities in Tanzania" Project

Kindly refer to the subject.

The Vice President's Office-Division of Environment, being the Designated Authority (DA) of the Adaptation Fund, confirms that the captioned project conforms with the National Climate Change Adaptation priorities, *inter alia*, the National Vision 2025, the National Adaptation Programme of Action (NAPA) and the National Adaptation Strategy and Action Plan.

I therefore wish to endorse this project proposal amounting to US$ 9,994,600 and submit it for funding through UNEP as a Multilateral Implementing Entity.

Your consideration and cooperation is highly appreciated.

Mwihava

Eng. Ngosi C. X. Mwihava

ACTING PERMANENT SECRETARY