





Coastal Profile for Tanzania Mainland 2015 Portfolio of Actions – Volume V Final Draft



Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania





List of Contents

List of Contents	iii
List of Tables	vii
List of Figures	vii
Acronyms	ix
Table of Units	xiii
Introduction	15
Tanzania Coastal Zone	15
The Project	
Partners	
Study Objectives	15
The Coastal Profile	16
Organization of Volume V	17
Methodological Approach	18
Identification and Prioritisation of Threats to Coastal Communities and Livelihoods	
Structured update of Coastal Profile	
Participatory evaluation and prioritization of threats	
Rapid Assessment of Threat Susceptibility to Climate Change	
Threat Mitigation Measures	
Action Formulation	
Prioritised Actions	
Summary of Actions	
Tan-S01 Integrated Coastal Zone Management Framework	
Tan-S02 Spatial Planning	
Tan-S03 Shoreline Management	
Tan-S04 Information Management	
Tan-S05 Education in Primary and Secondary Schools	
Tan-S06 Awareness Raising	
Tan-S07 Integrated Legal Review	67
Tan-S08 Support for the NEMC	
Tan-S09 Support for Tourism Management Planning	72
Tan-L01: Rehabilitation and clean-up of four east-flowing rivers in Mkinga District	
Tan-L02: Rehabilitation and clean-up of Sigi and Mkulumzi rivers through Tanga Url	
Muheza Districts	
Tan-L03: Rehabilitation and clean-up of lower Pangani River, Muheza and Pangani	
Tan-L04: Safeguarding of the Wami River, Bagamoyo	
Tan-L05: Rehabilitation and clean-up of the Ruvu River, Bagamoyo District	90
Tan-L06: Rehabilitation and clean-up of Mkuza and Mpiji rivers, Bagamoyo and Kir districts	nondoni
Tan-L07: Rehabilitation and clean-up of seven rivers, Kinondoni District	
Tan-L08: Rehabilitation and clean-up of Msimbazi River Basin, Kinondoni and Ilala	
1	102

Tan-L09: Rehabilitation and clean-up of Kizinga and Mzinga river basins, Ilala and Temeke districts
Tan-L10: Safeguarding Nguva River and other rivers, Temeke District
Tan-L11: Rehabilitation and clean-up of lower Rufiji River and safeguarding the Mohord
River, Rufiji District 116
Tan-L12: Sewage collection and treatment facilities for Tanga City, Tanga Urban District . 120
Tan-L13: Sewage collection and treatment facilities for Pangani town, Pangani District 123
Tan-L14: Sewage collection and treatment facilities for Bagamoyo town, Bagamoyo District
Tan-L15: Sewage collection and treatment facilities for Kinondoni Municipality
Tan-L16: Sewage collection and treatment facilities for Ilala Municipality
Tan-L17: Sewage collection and treatment facilities for Temeke Municipality
Tan-L18: Sewage collection and treatment facilities for Kilindoni Town, Mafia District 138
Tan-L19: Sewage collection and treatment facilities for Kilwa Kivinje, Kilwa District 141
Tan-L20: Sewage collection and treatment facilities for Kilwa Masoko, Kilwa District 144
Tan-L21: Sewage collection and treatment facilities for Lindi town, Lindi Urban District 147
Tan-L22: Sewage collection and treatment facilities for Mikindani town, Mtwara Urban
District
Tan-L23: Sewage collection and treatment facilities for Mtwara town, Mtwara Urban District
153
Tan-L24: Safe toilet facilities for Bwejuu and Jibondo islands, Mafia District
Tan-L25: Urban Solid Waste Collection and Processing facility for Tanga Town, Tanga Urban
District
Tan-L26: Urban Solid Waste Collection and Processing facility for Pangani Town, Pangani
District
Tan-L27: Urban Solid Waste Collection and Processing facility for Bagamoyo Town,
Bagamoyo District
Tan-L28: Urban Solid Waste Collection and Processing facility for Kinondoni Municipality
168
Tan-L29: Urban Solid Waste Collection and Processing facility for Ilala Municipality 171
Tan-L30: Urban Solid Waste Collection and Processing facility for Temeke Municipality 174
Tan-L31: Urban Solid Waste Collection and Processing facility for Kilindoni, Mafia District
Tan-L32: Urban Solid Waste Collection and Processing facility for Kilwa Kivinje, Kilwa District
Tan-L33: Urban Solid Waste Collection and Processing facility for Kilwa Masoko, Kilwa
District
Tan-L34: Urban Solid Waste Collection and Processing facility for Lindi Town, Lindi Urban
District
Tan-L35: Urban Solid Waste Collection and Processing facility for Mikindani-Mtwara towns,
Mtwara Urban District
Tan-L36: Study, review and design of freshwater supply options for Tanga Town, Tanga
Urban District
Tan-L37: Study, review and design of freshwater supply options for Lindi Town, Lindi Urban
District
Tan-L38: Study, review, design and trial freshwater supply options for outlying small islands
in the Mafia Island Marine Park, Mafia District
Tan-L39: Study, review, design and trial freshwater supply options for outlying villages in the
Mnazi Bay-Ruvuma Estuary Marine Park, Mtwara Rural District

Tan-L40: Tanzania mainland fisheries sector review by fishery type and managemen	t areas
	205
Tan-L41: Small pelagic fisheries support on mainland Tanzania	209
Tan-L42: Support for mainland Tanzania fisheries MCS programme	214
Tan-L43: Support MCS to end blast fishing	219
Tan-L44: Strengthening management of octopus fisheries on mainland Tanzania	222
Tan-L45: Strengthening the seaweed farming industry on mainland Tanzania	226
Tan-L46: Tuna fisheries support programme for Mtwara and Lindi regions	230
Tan-L47: Support for prawn fishery in Rufiji Delta	234
Tan-L48: Fish farming research and cage trials in Tanga and Kilwa	238
Tan-L49: Beach erosion study for coastal Tanzania	243
Tan-L50: Kilwa Kisiwani World Heritage Site erosion study	246
Tan-L51: Waste oil treatment facility for Tanga, Dar es Salaam and Mtwara harbours	249
Tan-L52: Turtle and nesting beach protection at Pangani District	252
Tan-L53: Bagamoyo town planning	255
Tan-L54: Mangrove rehabilitation at Bagamoyo District	258

List of Tables

Table 1: Format for Action Sheets	23
Table 2: Number of projects grouped by budget size.	24
Table 3: Summary of actions identified actions for Mainland Tanzania	24
Table 4: Schedule of all actions with estimated budgets for key activities	27
List of Figures	
Figure 1: Sequence of study activities towards action formulation.	18

Acronyms¹

Addax International oil and gas exploration and production company

AEWA African-Eurasian Waterbird Agreement

AGIP Azienda Generale Italiana Petroli (General Italian Oil Company)

BG British Gas

BMU Beach Management Units BoE Barrels of oil Equivalent

CAMARTEC Center for Agricultural Mechanization and Rural Technology

CARE Cooperative for Assistance and Relief Everywhere CBNRM Community Based Natural Resource Management

CC Carrying Capacity

CFMA Collaborative Fisheries Management Areas
CFMU Collaborative Fisheries Management Units

CITES Convention on International Trade in Endangered Species

CMCA Community Marine Conservation Areas
CMIP Coupled Model Intercomparison Project
CNPC China National Petroleum Corporation

CPTDC China Petroleum and Technology Development Company

CPUE Catch per Unit Effort CPUF Catch per Unit Fisher

CPUFV Catch per Unit Fishing Vessel

CRIAM Coastal Rapid Impact Assessment Matrix

CRIF Coral Reef Information System

CSAG Climate Systems Analysis Group (University of Cape Town)

CTI Confederation of Tanzania Industries

DCCFF Department of Commercial Crops, Fruits and Forestry

DDT dichlorodiphenyltrichloroethane DED District Executive Director DEM Digital Elevation Model

DFMP Department of Fisheries and Marine Products

DoE Department of Environment
DSFA Deep Sea Fishing Authority
DSS Decision Support System
DWT Dead Weight Tonnage
EEZ Exclusive Economic Zone

EIA Environmental Impact Assessment EMA Environmental Management Act

Engen Energy company focusing on the downstream refined petroleum products

EPZ Economic Promotion Zone

EPZA Export Processing Zones Authority

ERA-Interim Model for near real time reanalysis used by the European Centre for Medium-Range

Weather Forecasts

ESRF Economic and Social Research Foundation
EV Evaluation Value calculated in CRIAM
EWURA Energy and Water Utilities Authority

EximBank China Export-Import Bank FDD Fisheries Development Division FMP Fisheries Management Plans

FYDP National Fisheries Development Plan GapCo Gulf Africa Petroleum Corporation

GapOil Retailers and marketer of petroleum products (GapCo subsidiary)

¹ The list of abbreviations and acronyms has been compiled for all five volumes of the coastal profile.

GCAP Global Climate Adaptation Partnership

GCM General Circulation Model
GDP Gross Domestic Product
GHG Green House Gasses

GIS Geographical Information System

GOZ Government of Tanzania GOZ Government of Zanzibar GPS Global Positioning System

GSM Global System for Mobile communication

HAT Hotel Association of Tanzania

HEP Hydro Electric Power HIMA Hifadhi Misitu ya Asili

HIV/AIDS Human Immunodeficiency Virus/Acquired ImmunoDeficiency Syndrome

IBA Important Bird Areas

ICM Integrated Coastal Management

ICT Information and Communication Technology

ICZM Integrated Coastal Zone Management

IDD Iodine Deficiency Disorder

IIDS Integrated Industrial Development Strategy

IMS Institute of Marine Sciences

IOD Indian Ocean Dipole

IPCC Intergovernmental Panel on Climate Change
 ISCP Innovation Systems and Cluster Programme
 IUCN International Union for Conservation of Nature
 IWMI International Water Management Institute
 IWRM Integrated Water Resources Management

KNMI Koninklijk Nederlands Meteorologisch Instituut (Royal Dutch Meteorological

Institute)

LEAT Lawyers' Environmental Action Team

LGA Local Government Authority
LNG Liquefied Natural Gas
LUP Land Use Plans

MACEMP Marine and Coastal Environmental Management Project
MAFSC Ministry of Agriculture, Food Security and Cooperatives
MALE Ministry of Agriculture, Livestock and Environment, Zanzibar

MANREC Ministry of Agriculture, Natural Resources, Environment and Cooperatives

MARUHUBI Zanzibar Institute of Tourism
MCS Marine Control and Surveillance
MCU Marine Conservation Unit

MIC Ministry of Infrastructure and Communications MIMCA Mnemba Island Marine Conservation Area

MIT Ministry of Industry and Trade

MKURABITA Property and Business Formalization Program
MKUZA II Zanzibar Strategy for Growth and Poverty Reduction
MLFD Ministry of Livestock and Fisheries Development
MNRT Ministry of Natural Resources and Tourism

MoT Ministry of Transport
MOW Ministry of Water
MoW Ministry of Works
MPA Marine Protected Area

MRPU Marine Reserves and Park Unit
MSME Micro, Small and Medium Enterprises

MSY Maximum Sustainable Yield

MUKUTA National Strategy for Growth and Reduction of Poverty (NSGRP)
MVIWATA Mtandaowa Vikundivya Wakulimawa Tanzania (farmers network)

NAPA National Adaptation Programme of Action

NAWAPO National Water Policy

NAWESCO National Sustainable Wetlands Management Steering Committee

NBS National Bureau of Statistics
NDC National Development Corporation

NEMC National Environmental Management Council

NFP National Forest Programme NGO Non-Government Organisation

NICEMS National Integrated Coastal Environment Management Strategy

NSGRP National Strategy for Growth and Reduction of Poverty

PCB Polychlorinated Biphenyl

PMO-RALG Prime Minister's Office for Regional and Local Government

PSA Production Sharing Agreement

Ramsar International convention on wetlands management

REDD Reducing Emissions from Deforestation and forest Degradation

RIAM Rapid Impact Assessment Matrix RV Range Value calculated in CRIAM

SACCOS Savings and Credit Cooperative Organizations
SAGCOT Southern Agriculture Corridor of Tanzania
SCUBA Self-Contained Underwater Breathing Apparatus

SEC South Equatorial Current

SESIA Strategic Environmental and Social Impact Assessment

SEZ Special Economic Zone

SIDO Small Industries Development Organization
SIDP Sustainable Industrial Development Policy
SME Small and Medium sized Enterprises

SMOLE Sustainable Management of Land and Environment

SPM Single Point Mooring

SSHS Saffir-Simpson Hurricane Scale SST Sea Surface Temperature

STCDA Stone Town Conservation and Development Authority
SUMATRA Surface and Marine Transport Regulatory Authority

SWMP Sustainable Wetlands Management TAA Tanzania Airports Authority

TAFORI Tanzania Forestry Research Institute
TAMPA Tanzania Milk Processors Association
TAMPRODA Tanzania Milk Producers Association
TANESCO Tanzania Electric Supply Company Limited

TASONABI Tanzania Specialist Organisation on Community Natural Resources and Biodiversity

Conservation

TASPA Tanzania Salt Producers Association
TATO Tanzanian Association of Tour Operators

TAWA Tanzania Wildlife Authority
TAZARA Tanzania-Zambia Railway

TCAA Tanzania Civil Aviation Authority

TCCIA Tanzania Chamber of Commerce, Industries and Agriculture

TCF Trillion Cubic Feet

TCMP Tanzania Coastal Management Partnership

TCPL Trans Canada Pipeline Limited

TD Tropical Depression

TEMDO Tanzania Engineering and Manufacturing Design Organization

TEU Twenty-foot Equivalent Units
TFCG Tanzania Forest Conservation Group
TFNC Tanzania Food and Nutrition Centre

TFS Tanzania Forest Services

TGFA Tanzania Government Flight Agency
TIPER Tanzania Italian Petroleum Oil Refinery

TIRDO Tanzania Industrial Research Development Organization

TLU Total Livestock Units

TMA Tanzania Meteorological Agency
TNBC Tanzanian National Business Council
TNRF Tanzania Natural Resources Forum

TPA Tanzania Ports Authority

TPCC Tanzania Portland Cement Company

TPDC Tanzania Petroleum Development Corporation

TPSF Tanzania Private Sector Foundation
TRAFFIC The Wildlife Trade Monitoring Network

TS Tropical Storm

TSH Tanzania Currency Unit TTB Tanzania Tourist Board

UNESCO United Nations Educational, Scientific and Cultural Organisation

UNFPA United Nations Population Fund
URT United Republic of Tanzania
USD United States Currency Unit
USDM University of Dar es Salaam

VAT Value Added Tax

VICOBA Village Community Banks
VLFR Village Land Forest Reserves
VPO Vice President's Office

WB World Bank

WCST Wildlife Conservation Society of Tanzania WRIAM Water Resources Impact Assessment Matrix

WWF World Wildlife Fund

ZATI Zanzibar Association of Tourism Investors
ZATO Zanzibar Association of Tour Operators

ZAWA Zanzibar Water Authority

ZCT Zanzibar Commission for Tourism ZECO Zanzibar Electricity Corporation

ZIPA Zanzibar Investment Promotion Authority

ZNCCIA Zanzibar National Chamber of Commerce, Industry and Agriculture

ZPC Zanzibar Port Corporation
ZPRP Zanzibar Poverty Reduction Plan

Table of Units

BoE Barrels of oil Equivalent

ft feet ha hectare km kilometre

km² square kilometre

m meter

 m^2 square meter m^3 cubic meter

Mm³ Million cubic metres mmscf million standard cubic feet

MV Mega Volt MW Mega Watt s second

TCF Trillion Cubic Feet

TEU Twenty-foot Equivalent Units

Introduction

Tanzania Coastal Zone

The coastal zone in Tanzania is under development pressure induced by population growth and economic activities and the area is experiencing a range of management problems giving rise to increased concern, including ecosystem encroachment, pollution, salinization of soils, estuaries and aquifers, degradation of resources, shoreline erosion and conflicts of interest among stakeholders depending on the coast for their livelihood. Climate change will further aggravate this situation due to sea level rise and more frequent extreme weather.

In order to address these management challenges the Government of Tanzania with World Bank assistance has through the project "Investment Prioritization for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.

The Project

The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.

The objective of the study is to prioritise geographically and thematically the actions to promote sustainable coastal livelihoods and ecosystems in Tanzania (both Mainland and Zanzibar). The results comprise proposals for measures for coastal management and climate change adaptation in Tanzania, which the Government of Tanzania, NGOs, and donors can use to guide their support and investments over a five year period.

Further details on the project are provided in the thematic part of the Coastal Profile for Tanzania and Zanzibar (Volume I).

Partners

The study is financed by the World Bank (WB) with trust funds provided by Nordic Development Fund (NDF).

The client for the project is Fisheries Department at the Ministry for Livestock and Fisheries Development (MLFD) in Dar es Salaam and the Department of Fisheries and Marine Resources at the Ministry of Agriculture, Livestock and Environment (MALE) in Zanzibar.

The consultants carrying out the study are DHI from Denmark and SAMAKI Consultants from Tanzania.

Study Objectives

The objective of the study is to prioritize geographically and thematically the actions to promote sustainable coastal livelihoods and ecosystems in Tanzania (both Mainland and Zanzibar). The results comprise proposals for measures for coastal management and climate change adaptation in Tanzania, which the Government of Tanzania, NGOs, and donors can use to guide their support and investments over a five year period. Specific objectives are:

1. Conduct a review of current coastal management and climate change adaptation studies and planning activities in Tanzania Mainland and Zanzibar, including an inventory of data and information available;

- 2. Identify, analyse and geographically locate the most important livelihood sources of Tanzania's coastal communities, and the ecosystems on which they depend;
- 3. Assess the economic costs of climate change on coastal communities and analyse the adaptive capacity of these communities;
- 4. Identify and geographically locate a gross list of major climate-related threats to sustain these livelihood sources and the ecosystems they depend on;
- 5. Evaluate the gross list of threats in terms of probability of occurrence, prediction confidence, and consequences if a 'business as usual' scenario is applied;
- 6. Identify possible adaptation measures to mitigate the threats and evaluate these measures in terms of cost-benefit efficiency and reasonability to implement;
- 7. Analyse the characteristics of the threats and adaptation measures to prioritize them and identify the most urgent and important investments for sustainable coastal livelihoods and ecosystems;
- 8. Identify on-going and planned projects supporting coastal management and climate change initiatives in coastal areas, and recognize overlaps with the above found priorities;
- 9. Identify data monitoring and research needs that should be addressed to augment the implementation and sustainability of the recommended investments;
- 10. Establish a GIS data base to document the results from the above objectives to the extent possible. The data base should be used as the basis upon which to undertake spatial analysis and thereby assist in prioritizing adaptation investments, based in large part on the characteristics and geographic locations of the major threats to sustainable livelihood sources.;
- 11. Develop an action plan for priority investment in the short-term (next five years) under multiple funding scenarios. The action plan should consider the prioritization results, total estimated costs compared to assumed available funds, and possible overlaps with existing initiatives. It should be specified whether the investments are targeted for Tanzania Mainland or Zanzibar.

The Coastal Profile

The coastal profile is based primarily on secondary data, acquired from key stakeholders during the extended inception period. A database has been established listing all relevant documents identified and linkages to soft copies have been included as available.

A Geographical Information Systems (GIS) has been established to contain acquired themes. The GIS has furthermore been used to examine inundation and flooding consequences of various Sea Level Rise scenarios. These analyses have been based on a Digital Elevation Model (DEM) developed for the coastal areas of the country. The GIS has also been used to produce district level statistical information.

The coastal profile is presented in five volumes:

<u>Volume I</u>: Coastal Themes, presenting the situation in the coastal zone thematically, i.e. from the perspective of various sectors and other country wide themes. There are separate volumes for Mainland Tanzania and Zanzibar.

<u>Volume II</u>: Coastal Districts, offering an overview of the situation in the coastal zone of each district, localising and adding detail to the information in Volume I. There are separate volumes for Mainland Tanzania and Zanzibar.

<u>Volume III</u>: Maps and Tables, presenting thematic and district maps in A3 format and offering tabulated information, collected from documents consulted or generated from the GIS. This is a combined volume for Mainland Tanzania and Zanzibar.

<u>Volume IV</u>: Overall Threat Mitigation, presenting action areas for the identified threats emerging from discussions in the two working groups established after the Inception stakeholder meetings. The working groups, one in Zanzibar and one in Dar es Salaam, assisted in validating and prioritising threats and in proposing overall adaption measures to address such threats. This is a combined volume for Mainland Tanzania and Zanzibar.

<u>Volume V</u>: A portfolio of prioritised actions to address threats to local communities and ecosystems in the coastal areas of Mainland Tanzania and Zanzibar. There are separate volumes for Mainland Tanzania and Zanzibar.

This is Volume V of the Coastal Profile for Mainland Tanzania.

Organization of Volume V

Volume V is organised in the following Sections:

• Introduction

A general introduction to the project as provided in all volumes of the coastal profile. This is followed by the current overview of the organization of Volume V of the Coastal Profile.

• Methodological Approach

The development of actions targeted by the study has been carried out in a sequence of steps. The methodology applied is presented and discussed in this section. The steps are:

- i) identification and prioritization of threats to coastal communities and livelihoods through a structured update of coastal information based on available information and dialogues with key stakeholders and followed by a validation and a threat prioritization effort in broader stakeholder workshops;
- ii) a rapid assessment of threat susceptibility to climate change applying a coarse ranking approach for each identified threat within different climate impact dimensions;
- iii) participatory identification of broad management measures that could be applied for mitigating threats;
- iv) a screening of action areas with the view of generating a shortlist of priority interventions for further detailing and
- v) structured action formulation and compilation of a portfolio priority actions.

• Prioritized Actions

This key section of Volume V provides a summary overview of all actions followed by full actions sheets for all prioritised actions.

Methodological Approach

The study has adopted a sequential approach to formulating actions to promote sustainable coastal livelihoods and ecosystems as illustrated in Figure 1. It is recognised that the methodology applied is rapid to satisfy the requirement for early mobilization of urgent actions and that analyses and assessments in many cases rely on experiences and local knowledge, rather than on a comprehensive information base. The portfolio of actions formulated through the process serves to provide a holistic overview of the most pertinent interventions required in the short term to mitigate the current development problems in coastal areas. Each of these intervention requires further appraisals before decisions are made to develop full projects.

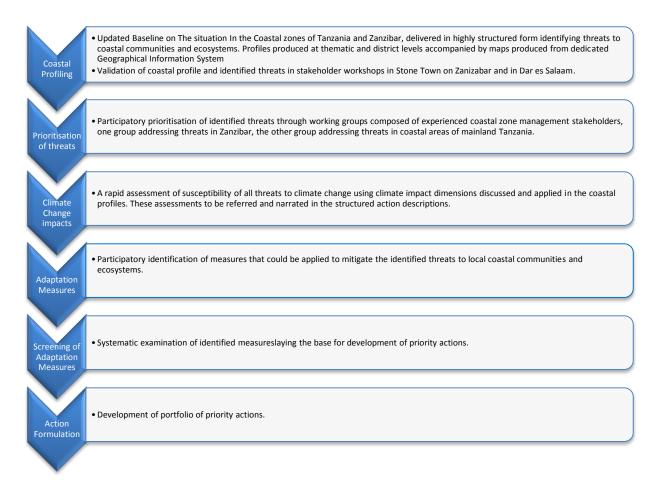


Figure 1: Sequence of study activities towards action formulation.

The lack of information in itself is one of major constraints to good decision making and planning in the complex situations prevailing along the coasts, and the development of a comprehensive information infrastructure to support development planning is a major requirement.

The following sections add some more detail to each of these steps.

Identification and Prioritisation of Threats to Coastal Communities and Livelihoods

Structured update of Coastal Profile

The first step in the study has been to examine current information available in Tanzania and Zanzibar on the situation in the coastal areas. A very structured approach has been applied to provide the systematic and holistic description offered in the first edition (version 0) of the coastal profiles. The first edition was organized in three separate volumes for Tanzania mainland and Zanzibar respectively:

- Volume I, giving a thematic overview covering natural resources and economic sectors
 and also discussing local communities, climate change and shoreline conditions. A
 general description of each sector was provided covering resources and their
 management, discussing economic and socio-economic importance and identifying
 sector associated threats to local communities. These threats were further discussed to
 evaluate to which extend they were influenced by climate change and a brief general
 outlook for the sector was given.
- Volume II, providing a geographical perspective presenting the coastal situation by district for mainland Tanzania and by region for Zanzibar. For each district or region an overview is given covering climate, population and the economy basis. This is followed by a more detailed description of the local coastal environment, encompassing physical, ecological, water, marine species, natural resources, settlements and infrastructure dimensions. Major threats to local communities have been identified and vulnerability to climate change assessed in brought terms, particularly with respect to sea level rise. Finally significant local projects and plans are described with a bearing on coastal conditions.
- Volume III, presenting maps and statistical information generated from the geographical information system that has been built to support the coastal profiles and analyses under the study.

The initial baseline thus produced consists of the following documents:

- Coastal Profile for Tanzania Mainland 2014 Thematic Volume Draft 0
- Coastal Profile for Tanzania Mainland 2014 District Volume Draft 0
- Coastal Profile for Zanzibar 2014 Thematic Volume Draft 0
- Coastal Profile for Zanzibar 2014 Region Volume Draft 0
- Coastal Profile for Tanzania 2014 Map and Table Volume Draft 0

These are available in digital versions (pdf), which have been broadly disseminated to stakeholders in connection with the Inception Stakeholder dialogues held in Stone Town and Dar es Salaam in April 2014.

Participatory evaluation and prioritization of threats

The initial coastal profiles were developed based on a compilation of existing documents and information and on dialogues with a range of stakeholders in the data acquisition process. A more comprehensive validation of the coastal profiles was achieved through two stakeholder workshops held in Stone Town for the Zanzibar Profile and in Dar es Salaam for the Mainland Tanzania Profile, both in April 2014. These workshops were attended by a large number of government as well as non-government stakeholders and encompassing central as well as local administration, private sector professionals, academia, civil society and NGOs. The workshops were designed to provide feedback on the coastal profiles with a special emphasis

on the identified threats to local communities and coastal livelihoods, while at the same time initiating a discussion on prioritization of these threats.

A tool to support the prioritization of threats was presented and tested during the workshops. The "Coastal Rapid Impact Assessment Matrix (CRIAM)" uses a set of 5 criteria (geographical extent, magnitude, permanence, reversibility and cumulativeness) to rank the severity of threats and it was applied to rank all threats in the thematic volumes of the coastal profiles looking at the severity from a central management level and all the threats identified in the district and regional volumes applying a local management angle.

To consolidate the CRIAM assessments two smaller working groups were formed in Dar es Salaam and Zanzibar to systematically review, assess and prioritise all identified threats. The results from the working group sessions in June 2014 have since been incorporated into separate sub-chapters in an expanded version of the coastal profiles. The overall ranking of problems are also tabulated in the thematic and district/region sections of Volume IV of the Coastal Profile.

More details about the CRIAM method, the participation in the stakeholder workshops and the composition of the working groups are provided in annexes to the thematic and district volumes of the coastal profiles (Volumes I and II).

Rapid Assessment of Threat Susceptibility to Climate Change

A further step in the study has then been to carry out a broad examination of all identified threats as to how susceptible these treats are to be further impacted by climate change using the following areas of impact, discussed in the thematic coastal profiles:

- Changes in weather patterns
- Extreme weather events
- Sea-level rise
- Seawater temperature rise
- Seawater acidification

Within each area the climate change impact has been ranked as follows:

- +++ Threat is severely aggravated from climate change dimension
- ++ Threat is aggravated from climate change dimension
- + Threat is slightly aggravated from climate change dimension
- 0 No influence of threat from climate change dimension
- Remediating effect on threat from climate change dimension

The examination of such climate change impacts is presented in the thematic and sector sections of Volume IV of the Coastal Profile.

Additional comments are given in the tabulations as relevant. The evaluations are intended to inform the final portfolio of prioritized actions in climate change sub-sections of each action profile.

Threat Mitigation Measures

The two working groups also in the June 2014 work sessions considered what broad measures could be taken to mitigate the prioritized threats. The broad measures brought forward fell into a series of management dimensions. For many threats measures suggested included several to many of these dimensions, reflecting the complexity of the situation in the coastal areas and underscoring the need for management to adopt a holistic approach and consider

integrated solutions in a framework that provides for coordination between many actors. The management dimensions identified for threat mitigation included:

- Integrated Coastal Zone Management (ICZM)
- Integrated Water Resources Management (IWRM)
- Land Use Management
- Shoreline Management Planning
- Solid and Liquid Waste Management
- Sanitation
- Capacity building
- Technology
- Law enforcement
- Legal Review
- Alternative/Improved Livelihood
- Awareness raising
- Education

The measures suggested by the working groups have been further processed and organized in tables by theme and by district/region in Volume IV of the Coastal Profile. From these tables a number of action areas have been extracted for final screening before developing more detailed action sheets.

Screening Matrices

The extracted action areas have been entered into screening matrices and subjected to an initial evaluation based on general knowledge and site-specific conditions. This is a qualitative evaluation, where each measure is narratively evaluated against the following criteria:

<u>Win/win</u>². Does the action measure have positive impact on other management challenges or opportunities?

Regret/No Regret³. Is the action measure beneficial without climate change impact?

<u>Flexibility</u>. Is the action measure receptive for adjustments according to new knowledge? The predictions of threat impact/development and of climate change impacts may at present be associated with high degree of uncertainty and new knowledge and information may require adjusted or different adaptation measures.

<u>Resilience</u>⁴. Does the action measure make the management system more robust in responding to the threat and climate change impacts?

<u>Urgency</u>. How will the implementation of the action measure be influenced if it is delayed? Impact of threat and climate change may not be catastrophic events, but may develop gradually. As the impact however may influence decisions/structures with long lifetimes

² Where everyone gains an advantage – in this case: initiatives that benefits more than one aspect/interest group.

³'No-regrets solutions' are those which are feasible and beneficial even if the climate does not change as expected (or does not change at all, for that sake). They are attractive in a context where action is required, but set against a background of incomplete financial resources and uncertainty about exactly how the climate will change in the time to come.

⁴Climate resilience is the ability to withstand a climate-related pressure, or to recover from an adverse climate-related event. Climate resilience is an important cross-cutting development goal in a context of high vulnerability and increasing exposure to climate-related pressures and events.

(planning horizons), lack of actions can eventually have huge implications on adaptation options and costs.

<u>Political acceptability</u>. Does the action measure require awareness raising and sensitization of the political process or has it already been addressed in policies.

Costs. Are huge investments associated with the action measure?

In an attempt to provide a prioritized assessment, each action area has been translated into scores ranging from "+++" for the best positive score, through "0" as neutral, to "---" as the worst score. Positive and negative scores are added separately allowing the following rating of the implementation measures:

High positive score = high priority in implementation

High negative score = a high level of controversy, high cost or otherwise problematic measure.

In the matrices the adaptation measures have been ranked according to the level of positive scoring. The negative score, if any, for a given adaptation measure emphasizes that careful planning and design must be carried out specifically seeking to minimize these negative aspects prior to implementation.

The currently evaluated measures, the evaluation criteria and the actual scores might be incomplete and may not reflect the actual situation in a fully objective manner. Therefore the screening matrices need to be updated and / or extended appropriately through interactive participation of local stakeholders.

The assessments made have been included as tables in the thematic and district/region sections of Volume IV of the Coastal Profile Version 1. In the narrative part of these sections recommendations are made for which action areas should be further processed into action sheets for inclusion in the portfolio of prioritised actions.

Action Formulation

The final step in the study has been to develop a portfolio of actions constituting a holistically generated overview of priority actions to address threats faced by local communities and ecosystems. Each action is presented in a uniform manner applying the format presented in Table 1, below. This format has been chosen as it is aligned to LFA formats extensively used as basis for development of Project Documents. It should be understood that the action sheets thus prepared do not provide the basis for committing financing for the action. Such commitment necessitates further more dedicated evaluations. The portfolio of actions on the other hand does give a holistic overview of high priority interventions required to mitigate the most pertinent threats to local communities and ecosystems in coastal areas of Mainland Tanzania and Zanzibar. As such the portfolio can provide the basis for government and development partners to agree on distribution of efforts needed to further appraise the feasibility of implementing actions contained in the portfolio.

The portfolio of actions has been prepared as Volume V of the Coastal Profile, one for Mainland Tanzania and one for Zanzibar. This is Volume V of the Coastal Profile for Mainland Tanzania.

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Background:	A brief presentation of the setting for the prioritised action. This presentation will as relevant draw on the GIS and make reference to information and knowledge acquired in reviews and in stakeholder dialogue.			
Title:	The title of the actions agreed upon in stakeholder dialogues.			
Action Reference:	Unique identifier for action	database and other references.		
Justification:		Provide statements justifying that this action should be considered for funding. The statements can draw on the outcome of the prioritization and screening efforts.		
Objective:	Establish what the action if	implemented is expected to achieve.		
Expected outputs:	Identify key outputs require	ed to fulfil the objective.		
Activities:	List key activities that have	to take place to produce the outputs.		
Assumptions:	State what assumptions cormust be met.	ncerning conditions outside the control of the action that		
Risks:	Identify risks that the source aware of and try to mitigate	re of funding and the responsible for the action should be		
Means of implementation:	Logistics, technical, scientific	Outline expectations for logistic requirements, technical and scientific environment.		
	Human Resources	Outline expectations on human resources engagement		
Budget estimate:	assessments can only be ma	udget requirements in very broad terms as detailed ade in project appraisal and detailed design. The budget of the project preparation (appraisal and design) and project		
Source of funding:	private sector, etc. or combi	cources, including government, development partners, ination thereof if applicable. The identification should to end with strategies and plans of the funding sources.		
Responsible for the action:	government and or non-gov	would be responsible for implementing the action, vernment. One institution should be overall responsible as should as applicable also be identified.		
Beneficiary from the action:	Make qualitative assessment of beneficiary (ies). Quantitative assessment of beneficiary (ies) can at best made in very broad terms until appraisal.			
Schedule:	Indicate a time schedule for the implementation of the action The time schedule overarching the actions is 5 years.			
Links to other actions:	Identify and explain linkage	es to other actions		
Performance indicators:	Identify verifiable performa implementation of the action	nce indicators that can be used to monitor the n.		
Comments:	Provide any comments that sources and institutions res	are considered useful for the considerations by funding sponsible for the action.		

Prioritised Actions

The remaining part of this Volume V presents the portfolio of prioritised actions to address the threats identified to local coastal communities and ecosystems in Zanzibar.

A small summary of actions is provided introducing the portfolio after which a structured presentation of each action is given in the action sheet format mentioned above.

Summary of Actions

A total of 63 prioritised actions have been identified and included in this portfolio of action sheets, out of which 9 are considered systemic and 54 local.

Systemic actions are actions directed towards improving the enabling environment for sustainable management of the development in the coastal zone. In this sense the systemic actions will be supportive for all local actions. They have been identified based on the mitigation intervention analysis in Volume IV of the Coastal Profile. These analyses considered both the thematic threats described in Volume I and the district/region threats described in Volume IV of the coastal profile. An important action concerns information management which has been discussed in the volumes mentioned above but which emerges particularly from the work carried out linked to the GIS described in Volume III of the Coastal Profile.

Local actions are more site specific actions derived from mitigation measures addressing threats emerging from district/region level analyses in Volume 2 of the Coastal Profile.

Table 2 below lists and summarises these actions by type, name, location and total cost. The total budget for all 63 actions adds up to USD 657,550,000. Projects are of various sizes cost wise as indicated in Table 2.

Table 2: Number of projects grouped by budget size.

Budget Size	2 million USD	Between 2 and 5	Between 5 and	Between 10 and	Above 25
group	and below	million USD	10 million USD	25 million USD	million USD
Number of projects	13	6	23	17	4

Table 4 adds further detail to these actions in the form of major activities for each action and their implementation schedule. The schedule covers a 10 years where the first 5 are arranged by quarters. Most activities as required in the scope of work for the study fall within the first 5 year period and includes project design, appraisal and mobilisation, which in most cases has been assessed to require one year. The schedule is ambitious and therefore likely in a detailed project design to be extended with a longer duration.

Table 3: Summary of actions identified actions for Mainland Tanzania

Type	Action Title	Location	Action ID	Cost USD
Systemic	Integrated Coastal Zone Management	Over-arching	Tan-S01	2.000.000
	Framework for Zanzibar			
Systemic	Integrated Spatial Planning	Over-arching	Tan-S02	3.850.000
Systemic	Shoreline Management Policy Framework	Over-arching	Tan-S03	2.000.000
Systemic	Information System as Decision Support for Coastal Development Management	Over-arching	Tan-S04	2.000.000
Systemic	Primary and Secondary Education	Over-arching	Tan-S05	1.800.000

Type	Action Title	Location	Action ID	Cost USD
Systemic	Overall Awareness Raising	Over-arching	Tan-S06	2.450.000
Systemic	Integrated Review of Legal Framework for Coastal Development Management	Over-arching	Tan-S07	1.250.000
Systemic	Support for the NEMC	Over-arching	Tan-S08	1.700.000
Systemic	Support for Tourism Management Planning	Over-arching	Tan-S09	1.250.000
Rivers	Rehabilitation and clean-up of four east- flowing rivers	Mkinga	Tan-L01	13.500.000
Rivers	Rehabilitation and clean-up of Sigi and Mkulumzi rivers	Tanga and Muheza	Tan-L02	13.500.000
Rivers	Rehabilitation and clean-up of lower Pangani River	Pangani and Muheza	Tan-L03	13.500.000
Rivers	Safeguarding of the Wami River	Bagamoyo	Tan-L04	7.500.000
Rivers	Rehabilitation and clean-up of Ruvu River Basin	Bagamoyo	Tan-L05	13.500.000
Rivers	Rehabilitation and clean-up of Mkuza and Mpiji rivers	Bagamoyo and Kinondoni	Tan-L06	13.500.000
Rivers	Rehabilitation and clean-up of seven east- flowing rivers	Kinondoni	Tan-L07	13.500.000
Rivers	Rehabilitation and clean-up of Msimbazi River Basin	Ilala-Kinondoni	Tan-L08	17.700.000
Rivers	Rehabilitation and clean-up of Kizinga and Mzinga river basins, Ilala and Temeke districts	Ilala-Temeke	Tan-L09	13.500.000
Rivers	Safeguarding Nguva River and other rivers in Temeke District	Temeke	Tan-L10	5.500.000
Rivers	Rehabilitation, clean-up and safeguarding the lower Rufiji and Mohoro rivers	Rufiji	Tan-L11	9.200.000
Sanitation	Sewage treatment facility Tanga City	Tanga city	Tan-L12	24.300.000
Sanitation	Sewage treatment facility Pangani Town	Pangani	Tan-L13	24.300.000
Sanitation	Sewage treatment facility Bagamoyo Town	Bagamoyo	Tan-L14	34.300.000
Sanitation	Sewage treatment facility Kinondoni Municipality	Kinondoni	Tan-L15	34.300.000
Sanitation	Sewage treatment facility Ilala Municipality	Ilala	Tan-L16	34.300.000
Sanitation	Sewage treatment facility Temeke Municipality	Temeke	Tan-L17	34.300.000
Sanitation	Sewage treatment facility Kilindoni Town	Mafia	Tan-L18	24.300.000
Sanitation	Sewage treatment facility Kilwa Kivinje Town	Kilwa	Tan-L19	24.300.000
Sanitation	Sewage treatment facility Kilwa Masoko Town	Kilwa	Tan-L20	24.300.000
Sanitation	Sewage treatment facility Lindi Town	Lindi Urban	Tan-L21	24.300.000
Sanitation	Sewage treatment facility Mikindani Town	Mtwara Urban	Tan-L22	24.300.000
Sanitation	Sewage treatment facility Mtwara Town	Mtwara Urban	Tan-L23	24.300.000
Sanitation	Safe toilet facilities for Bwejuu and Jibondo islands, Mafia District	Mafia	Tan-L24	6.800.000
Waste	Urban solid waste collection and processing facility Tanga City	Tanga	Tan-L25	6.800.000
Waste	Urban solid waste collection and processing facility Pangani town	Pangani	Tan-L26	6.800.000
Waste	Urban solid waste collection and processing facility Bagamoyo town	Bagamoyo	Tan-L27	6.800.000
Waste	Urban solid waste collection and processing facility Kinondoni	Kinondoni	Tan-L28	7.800.000

Type	Action Title	Location	Action ID	Cost USD
Waste	Urban solid waste collection and processing facility Ilala	Ilala	Tan-L29	7.800.000
Waste	Urban solid waste collection and processing facility Temeke	Temeke	Tan-L30	7.800.000
Waste	Urban solid waste collection and processing facility Kilindoni	Mafia	Tan-L31	7.800.000
Waste	Urban solid waste collection and processing facility Kilwa Kivinje	Kilwa	Tan-L32	6.800.000
Waste	Urban solid waste collection and processing facility Kilwa Masoko	Kilwa	Tan-L33	6.800.000
Waste	Urban solid waste collection and processing facility Lindi town	Lindi urban	Tan-L34	6.800.000
Waste	Urban solid waste collection and processing facility Mikindani/Mtwara	Mtwara Urban	Tan-L35	6.800.000
Freshwater Supply	Study, review, design and trial freshwater supply options for Tanga City	Tanga	Tan-L36	5.500.000
Freshwater Supply	Study, review, design and trial freshwater supply Lindi Town	Lindi Rural	Tan-L37	6.700.000
Freshwater Supply	Study, review, design and trial freshwater supply options for outlying small islands in the Mafia Island Marine Park	Mafia	Tan-L38	7.700.000
Freshwater Supply	Study, review, design and trial freshwater supply options for outlying villages in Mnazi Bay Ruvuma Estuary Marine Park	Mtwara Rural	Tan-L39	6.700.000
Fisheries	Fisheries sector review by fishery types and management areas	Over-arching	Tan-L40	3.600.000
Fisheries	Small pelagic fisheries support programme for mainland Tanzania	Over-arching	Tan-L41	1.700.000
Fisheries	Support for mainland fisheries monitoring, control and surveillance programme	Over-arching	Tan-L42	5.000.000
Fisheries	Support MCS to end blast fishing	Over-arching	Tan-L43	3.300.000
Fisheries	Strengthening the management of octopus fisheries on mainland Tanzania	Over-arching	Tan-L44	1.000.000
Fisheries	Strengthening the seaweed farming industry on mainland Tanzania	Over-arching	Tan-L45	1.000.000
Fisheries	Tuna fisheries support programme for Mtwara and Lindi Regions	Mafia	Tan-L46	2.600.000
Fisheries	Prawn fisheries support programme for Rufiji District	Rufiji	Tan-L47	1.700.000
Fisheries	Fish farming research and cage trials in Tanga and Kilwa	Tanga	Tan-L48	6.000.000
Erosion	Beach erosion study for coastal Tanzania mainland	Over-arching	Tan-L49	6.600.000
Erosion	Kilwa Kisiwani WH Site,	Kilwa	Tan-L50	3.100.000
Oil Waste	Waste oil treatment facility, DSM Harbour, Tanga Harbour, Kilindoni Harbour (Mafia), Mtwara harbour	Over-arching	Tan-L51	24.300.000
Turtles	Turtle and nesting beach protection	Pangani	Tan-L52	200.000
Urban Plan	Bagamoyo town planning	Bagamoyo	Tan-L53	400.000
Mangrove	Mangrove rehabilitation around Bagamoyo Town	Bagamoyo	Tan-L54	550.000
			Totals	657,550,000

Table 4: Schedule of all actions with estimated budgets for key activities

	Activity	Budget		Ye	ear 1			Yea	ır 2			Year	r 3			Yea	ır 4			Yea	r 5		Y6	Y7	Y8 1	Y9 Y	(10
Actions and Activities	ID	USD	Q1	Q2	Q3	Q4	01	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	O1	Q2		Q4	10		-10		
Grand Total	All	657,550,000	QI	Q2	QJ	Q ¹	Q1	22	QJ	Q [±]	Q1	Q2	QJ	Q ¹	Q1	Q2	QJ	Q±	Q1	Q2	QJ	Q±					
ICZM Framework	Tan-S01	007,000,000																									
a) Project design and appraisal		50,000																									
b) Project mobilisation		50,000																									
Mobilisation of national ICZM Platform		100,000																									
2) Mobilisation of local ICZM Platforms		200,000																									
3) Establish/update ICZM Baseline		700,000																									
4) ICZM Policy		200,000																									
5) ICZM Action Plan		300,000																									
6) Capacity Building		400,000																									
ICZM Framework	Total	2,000,000																									
Spatial Planning	Tan-S02																										
a) Project design and appraisal.		50,000																									
b) Project tendering		50,000																									
Establish/activate inter-sector technical	_	50,000																									
working committees/groups at National and																											
district levels for spatial planning																											
2) Baseline on state of the spatial planning in		100,000																									
Tanzania																											
3) Spatial planning policy/strategy		100,000																									
4) Situational analysis for spatial planning in		1,000,000																									
coastal Tanzania (overall and district)																											
5) Examine development scenarios for coastal		1,000,000																									
Tanzania (overall and district)																											
6) Prepare spatial plan for coastal Tanzania		1,000,000																									
pursuing preferred development scenarios (overall																											
and district)		F00,000																									
Capacity Building	T-1-1	500,000 3,850,000																									
Spatial Planning	Total Tan-S03	3,830,000																									
Shoreline Management	1 an-503	50,000																									
a) Project design and appraisal. b) Project tendering		50,000																							-+	+	
Map and describe sediment cells and sub-cells		300,000		1																					-+	-+	
along the coastline as basis for determining		300,000																									
boundaries for Shoreline Management Planning																											
areas and																											
Identify vulnerable areas for detailed shoreline		200,000																							-	+	
management planning.		200,000																									
Vulnerability assessment through Shoreline		400,000																									
Management Study and Plan.		,																									
4) Identify and quantify erosion/accretion along		400,000																									
the coast and translate into management policies																											
and strategies taking projected sea level rise into																											
account.																											
5) Mainstream shoreline management planning		200,000																									
into land use/local planning.																<u> </u>											

	Activity	Budget		Ye	ear 1			Yea	ır 2			Yea	r 3			Year 4			Yea	r 5		Y6	Y7	Y8	Y9	Y10
Actions and Activities	ID	USD	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2 Q3	Q4	Q1	Q2		Q4					
6) Capacity building		400,000	~	~	~	~	~	~	~	~	_~_	_~	~	~	~	~ ~	~	_~	_~	~	~					
Shoreline Management	Total	2,000,000																								
Information Management	Tan-S04																									
a) Project design and appraisal		50,000																								
b) Project mobilisation		50,000																								
Establishment of technical committee		300,000																								
2) Information needs assessment		200,000																								
3) Strategy development		400,000																								
4) Meta database development		400,000																								
5) Updating/consolidating shared database		200,000																								
6) Capacity building		400,000																								
Information Management	Total	2,000,000																								
Education in Primary and Secondary	Tan-S05	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,																								
a) Project design and appraisal		50,000																								
b) Project mobilisation		50,000																								
Establish coordination platform between		50,000																								
Ministry of Education and schools to participate in		,																								
action																										
2) Needs assessment		50,000																								-
3) Review of existing curricula and its use		50,000																								-
4) Develop revised curricula incorporating coastal		100,000																								-
issues		,																								
5) Develop teaching material		200,000																								
6) Train teachers		200,000																								-
7) Test revised curricula in testing schools		400,000																								-
8) Evaluate test		50,000																								
9) Capacity building		500,000																								-
10) Expansion of programme		100,000																								
Education in Primary and Secondary Schools	Total	1,800,000																								
Awareness Raising	Tan-S06																									
a) Project design and appraisal.		50,000																								
b) Project tendering		50,000																								
1) Establish coordination platform between for		50,000																								
action																										i
2) Stakeholder identification and profiling (targets		50,000																								
for awareness)																										
3) Stakeholder Assessment		50,000																								
4) Awareness raising strategy		50,000																								
5) Awareness raising programme		50,000																								
6) Training of press		100,000																								
7) Training of key staff		300,000																								
8) Awareness raising programme implementation		1,000,000																								
9) Impact evaluation among target groups		200,000																								
10) Capacity building		500,000																								
Awareness Raising	Total	2,450,000																								
Integrated Legal Review	Tan-S07																									
a) Project design and appraisal		50,000																								
b) Project mobilisation		50,000																								

	Activity	Budget		Ye	ear 1			Yea	ır 2			Yea	r 3			Yea	ır 4			Yea	r 5		Y6	Y7	Y8 .	Y9	Y10
Actions and Activities	ID	USD	Q1	Q2	Q3	Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	1				
Establish coordination platform for action		50,000	χ	~-	20	2-	2-	~-	20	2.1	~-	~-	20	~~	2.	~-	20	2-	~-	~-	- Z	~-					
Institutional and Legal Baseline		100,000																									
3) Participatory assessment		200,000																								+	
4) Reform Strategy		50,000																								+	
5) Action Plan		50,000																								\rightarrow	
6) Reform preparation		500,000																									
7) Capacity Building		200,000																									
Integrated Legal Review	Total	1,250,000																									
Support for the NEMC	Tan-S08	1,200,000																									
a) Project design and appraisal	1411 000	50,000																								+	
b) Project mobilisation		50,000																								+	
Establish coordination platform for action		50,000																								+	
2) Stakeholder identification/profiling (targets for		100,000																								\rightarrow	
awareness)		200,000																				1					
3) Awareness raising strategy		200,000																				+				+	
Awareness raising programme		50,000																								+	
5) Training of key staff and relevant stakeholder on		200,000																								+	
target areas																											
6) Impact evaluation among target groups		500,000																									
7) Capacity Building		500,000																									
Support for the NEMC	Total	1,700,000																									
Support for Tourism Management Planning	Tan-S09																									-	
a) Project design and appraisal		50,000																									
b) Project mobilisation		50,000																									
Establish coordination platform for action		50,000																									
2) Institutional Baseline		100,000																									
3) Participatory assessment		200,000																									
4) Development of Training Strategy		50,000																									
5) Action Plan		50,000																									
6) Training preparation		500,000																									
7) Capacity Building		200,000																									
Support for Tourism Management Planning	Total	1,250,000																									
Rehabilitation of four east-flowing rivers in	Tan-L01	, = =,===																									
Mkinga District																											
a) Project preparation and mobilisation		100,000																									
b) Mobilisation and review of river basin		200,000																									
influences																											
1) Enforce relevant legislative/regulatory		300,000																									
instruments																											
2) Re-locate and re-house commercial and		3,000,000					1																				
residential houses and infrastructure affecting																											
basins																											
3) Rehabilitate natural sources of streams and bank		8,000,000																									
vegetation																											
4) Increase awareness among households and		600,000																									
farmers/livestock herders to avoid dumping waste																											
and agrochemicals in streams																											

	Activity	Budget		Ye	ear 1			Yea	ır 2			Yea	ır 3			Yea	ır 4			Yea	ır 5		Y6	Y7	Y8 Y9	Y10
Actions and Activities	ID	USD	Q1	Q2	Q3	Q4	Q1	Q2		Q4	10		10 17	110												
5) Develop, review and implement a river basin	ID	300,000	Qı	Q2	Q3	QŦ	Qı	Q2	QJ	QŦ	Qı	Q2	Q3	Q±	QI	Q2	Q3	QŦ	Qı	Q2	QJ	Q±				+
waste management strategy		300,000																								
6) Design appropriate stream management		1,000,000																								
involving local partners and secure sustainability		1,000,000																								
Rehabilitation of four east-flowing rivers in	Total	13,500,000																								
	1 ota1	13,500,000																								
Mkinga District	T 100											-														
Rehabilitation of Zigi and Mkulumzi rivers in	Tan-L02																									
Tanga Urban and Muheza districts		100.000										-														
a) Project preparation and mobilisation		100,000																								
b) Mobilisation and review of river basin		200,000																								
influences																										
1) Enforce relevant legislative/regulatory		300,000																								
instruments																										
2) Re-locate and re-house commercial and		3,000,000																								
residential houses and infrastructure affecting																										
basins																										
3) Rehabilitate natural sources of streams and bank		8,000,000																								
vegetation																										
4) Increase awareness among households and		600,000																								
farmers/livestock herders to avoid dumping waste																										
and agrochemicals in streams																										
5) Develop, review and implement a river basin		300,000																								
waste management strategy																										
6) Design appropriate stream management		1,000,000																								
involving local partners and secure sustainability		,,																								
Rehabilitation of Zigi and Mkulumzi rivers in	Total	13,500,000																								
Tanga Urban and Muheza districts		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,																								
Rehabilitation of lower Pangani River, Pnngani	Tan-L03																									
District																										
a) Project preparation and mobilisation		100,000																								
b) Mobilisation and review of river basin		200,000																								
influences		,																								
Enforce relevant legislative/regulatory		300,000																								+
instruments		000,000																								
2) Re-locate and re-house commercial and		3,000,000																								_
residential houses and infrastructure affecting		3,000,000																								
basins																										
3) Rehabilitate natural sources of streams and bank		8,000,000																								
vegetation		0,000,000																								
4) Increase awareness among households and		600,000																								+
farmers/livestock herders to avoid dumping waste		000,000																								
and agrochemicals in streams																										
		300,000					1	1																		+
5) Develop, review and implement a river basin		300,000																								
waste management strategy		1 000 000																				1				+
6) Design appropriate stream management		1,000,000																								
involving local partners and secure sustainability		4=======		-																		1	-			
Rehabilitation of lower Pangani River, Pangani	Total	13,500,000																								
District P. District	T 701						1			1		+			-							1				+
Safeguarding the Wami River, Bagamoyo District	Tan-L04																									

	Activity	Budget		Y	ear 1			Yea	ır 2			Yea	ır 3			Yea	ır 4			Yea	r 5		Y6	Y7	Y8	Y9 '	Y10
Actions and Activities	ID	USD	Q1	Q2	Q3	Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4					
a) Project preparation and mobilisation		100,000	~-	~-	~	~-	~-	~-	χ	~-	~=	~	~	~-	~-	~-	~	~-	~-	~-	~	~-					
b) Mobilisation and review of river basin		200,000																								-	
influences		,																									I
Enforce relevant legislative/regulatory		300,000																								-	
instruments																											l
2) Re-locate and re-house commercial and		1,000,000																								-	
residential houses and infrastructure affecting		,,																									I
basins																											I
3) Rehabilitate natural sources of streams and bank		4,000,000																									
vegetation		, ,																									l
4) Increase awareness among households and		600,000																									
farmers/livestock herders to avoid dumping waste		,																									l
and agrochemicals in streams																											I
5) Develop, review and implement a river basin		300,000																									
waste management strategy		ŕ																									l
6) Design appropriate stream management		1,000,000																									
involving local partners and secure sustainability																											I
Safeguarding the Wami River, Bagamoyo District	Total	7,500,000																									
Rehabilitation of Ruvu River, Bagamoyo District	Tan-L05																										
a) Project preparation and mobilisation		100,000																									
b) Mobilisation and review of river basin		200,000																									
influences																											I
1) Enforce relevant legislative/regulatory		300,000																									-
instruments																											I
2) Re-locate and re-house commercial and		3,000,000																									-
residential houses and infrastructure affecting																											l
basins																											l
3) Rehabilitate natural sources of streams and bank		8,000,000																									
vegetation																											l
4) Increase awareness among households and		600,000																									1
farmers/livestock herders to avoid dumping waste																											I
and agrochemicals in streams																											
5) Develop, review and implement a river basin		300,000																									l
waste management strategy																											
6) Design appropriate stream management		1,000,000																									
involving local partners and secure sustainability																											
Rehabilitation of Ruvu River, Bagamoyo District	Total	13,500,000																									
Rehabilitation of Mkuza and Mpiji rivers,	Tan-L06																										l
Kinondoni District																											
a) Project preparation and mobilisation		100,000																									
b) Mobilisation and review of river basin		200,000																									
influences																											
1) Enforce relevant legislative/regulatory		300,000																									
instruments																							1				
2) Re-locate and re-house commercial and		3,000,000																									
residential houses and infrastructure affecting																											
basins																											

	Activity	Budget		Y	ear 1			Yea	ır 2			Yea	ır 3			Yea	ır 4			Yea	ır 5		Y6	Y7	Y8 Y	9 Y1	0
Actions and Activities	ID	USD	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2		Q4	Q1	Q2		Q4	01	Q2		Q4					
3) Rehabilitate natural sources of streams and bank		8,000,000	2.	2-	20	~-	~-	<u> </u>	Q.	2-	2.	~_	Q.	2.	2-	~-	Z	2.	~-	~-	20	χ					
vegetation		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,																									
Increase awareness among households and		600,000																									
farmers/livestock herders to avoid dumping waste																											
and agrochemicals in streams																											
5) Develop, review and implement a river basin		300,000																									
waste management strategy																											
Design appropriate stream management		1,000,000																									
involving local partners and secure sustainability																											
Rehabilitation of Mkuza and Mpiji rivers,	Total	13,500,000																									
Kinondoni District																											
Rehabilitation of seven rivers, Kinondoni District	Tan-L07																										
a) Project preparation and mobilisation		100,000																									
b) Mobilisation and review of river basin		200,000								1																T	
influences																											
1) Enforce relevant legislative/regulatory		300,000								1																T	
instruments																											
2) Re-locate and re-house commercial and		3,000,000																									
residential houses and infrastructure affecting																											
basins																											
3) Rehabilitate natural sources of streams and bank		8,000,000																									
vegetation																											
4) Increase awareness among households and		600,000																									
farmers/livestock herders to avoid dumping waste																											
and agrochemicals in streams																											
5) Develop, review and implement a river basin		300,000																									
waste management strategy																											
6) Design appropriate stream management		1,000,000																									
involving local partners and secure sustainability		4																									
Rehabilitation of seven rivers, Kinondoni District	Total	13,500,000																									
Rehabilitation of Msimbazi River Kinondoni -	Tan-L08																										
Ilala districts a) Project preparation and mobilisation		100,000																									
b) Mobilisation and review of river basin		200,000																								+	
influences		200,000																									
Enforce relevant legislative/regulatory		300,000																									
instruments		300,000																									
2) Re-locate and re-house commercial and		5,000,000																								-	
residential houses and infrastructure affecting		3,000,000																									
basins																											
3) Rehabilitate natural sources of streams and bank		10,000,000		1												1					1		1	1		+-	_
vegetation		10,000,000																									
4) Increase awareness among households and		800,000																								+	
farmers/livestock herders to avoid dumping waste		222,200																									
and agrochemicals in streams																											
5) Develop, review and implement a river basin		300,000																									
waste management strategy																											
. 0	1	1			1														-								

	Activity	Budget		Y	ear 1			Yea	ır 2			Yea	ır 3			Yea	ar 4			Yea	ar 5		Y6	Y7	Y8 Y9	Y10
Actions and Activities	ID	USD	Q1	Q2	Q3	Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	10		20 17	113
6) Design appropriate stream management	110	1,000,000	Qı	Q2	Q3	Q 4	Qı	Q2	Q3	Q±	Qı	Q2	Q3	Q4	Qı	Q2	Q3	Q4	Qı	Q2	Q3	Q 4				_
involving local partners and secure sustainability		1,000,000																								
Rehabilitation of Msimbazi River Kinondoni -	Total	17,700,000																								
Ilala districts	Total	17,700,000																								
Rehabilitation of Kizinga and Mzinga rivers Ilala	Tan-L09																									
- Temeke districts	1 all-LU9																									
a) Project preparation and mobilisation		100,000																								
b) Mobilisation and review of river basin		200,000																								
,		200,000																								
influences		200,000																								
1) Enforce relevant legislative/regulatory		300,000																								
instruments																										
2) Re-locate and re-house commercial and		3,000,000																								
residential houses and infrastructure affecting																										
basins																										
3) Rehabilitate natural sources of streams and bank		8,000,000																								
vegetation																										
4) Increase awareness among households and		600,000																								
farmers/livestock herders to avoid dumping waste																										
and agrochemicals in streams																										
5) Develop, review and implement a river basin		300,000																								
waste management strategy																										
Design appropriate stream management		1,000,000																								
involving local partners and secure sustainability																										
Rehabilitation of Kizinga and Mzinga rivers Ilala	Total	13,500,000																								
- Temeke districts																										
Safeguarding Nguva River and other rivers -	Tan-L10																									
Temeke District																										
a) Project preparation and mobilisation		100,000																								
b) Mobilisation and review of river basin		200,000																								
influences																										
1) Enforce relevant legislative/regulatory		300,000																								
instruments		,																								
2) Re-locate and re-house commercial and		1,000,000																								
residential houses and infrastructure affecting		,,																								
basins																										
3) Rehabilitate natural sources of streams and bank		2,000,000																								-
vegetation		2,000,000																								
4) Increase awareness among households and		600,000																								
farmers/livestock herders to avoid dumping waste		000,000																								
and agrochemicals in streams																										
5) Develop, review and implement a river basin		300,000																								
		300,000																								
waste management strategy 6) Design appropriate streem management		1 000 000																				1		+		+
6) Design appropriate stream management		1,000,000																								
involving local partners and secure sustainability	70 4 1	E E00 000			1																	1		1		+
Safeguarding Nguva River and other rivers -	Total	5,500,000																								
Temeke District	T 144				-			1		1		1			1						1			1		+
Rehabilitation of lower Rufiji River and	Tan-L11																									
safeguarding Mohoro River, Rufiji District		100 000					1	1		1		1		1	1						1			1		+
a) Project preparation and mobilisation		100,000																								

	Activity	Budget		Ye	ear 1			Yea	ır 2			Yea	ır 3			Yea	nr 4			Yea	r 5		Y6	Y7	Y8 Y	(9)	Y10
Actions and Activities	ID	USD	Q1	Q2	Q3	Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	10	1			
b) Mobilisation and review of river basin	ID	200,000	QI	Q2	Qs	Q4	Qı	Q2	Qo	Q*	ŲΙ	Q2	Qs	Q4	Qı	Q2	Qs	Ų4	ŲΙ	Q2	Qs	Q*					
influences		200,000																									
Evaluate agrochemical usage and enforce		1,000,000																								+	
relevant legislative/regulatory instruments		1,000,000																									
Re-locate and re-house commercial and		1,000,000																								+	
residential houses and infrastructure affecting		1,000,000																									
basins																											
3) Rehabilitate natural sources of streams and bank		5,000,000																								-	
vegetation		0,000,000																									
4) Increase awareness among households and		600,000																								_	
farmers/livestock herders to avoid dumping waste		000,000																									
and agrochemicals in streams																											
5) Develop, review and implement a river basin		300,000																									
waste management strategy		233,300																									
6) Design appropriate stream management		1,000,000																									
involving local partners and secure sustainability		_,																									
Rehabilitation of lower Rufiji River and	Total	9,200,000																								_	
safeguarding Mohoro River, Rufiji District		,,																									
Sewage facilities for Tanga City	Tan-L12																										
Project preparation and mobilisation	-	100,000																									
Initial studies, design and engineering,		200,000																									
Project management (includes construction		1,000,000																									
management)		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,																									
Site acquisition: Acquisition of building plot,																											
brokers, notaries, taxes.																											
Sewage collection system		5,000,000																									
Site preparation: Demolishing, ground work,		1,000,000																									
rerouting pipes & cables, roads		, ,																									
Construction: civil, mechanical, etc., Contingency.		15,000,000																									
Supplies, personnel (hiring and training/capacity		2,000,000																									
building)																											
Sewage facilities for Tanga City	Total	24,300,000																									
Sewage facilities for Pangani Town	Tan-L13																										
Project preparation and mobilisation		100,000																									
Initial studies, design and engineering,		200,000																									
Project management (includes construction		1,000,000																									
management)																											
Site acquisition: Acquisition of building plot,																											
brokers, notaries, taxes.																											
Sewage collection system		10,000,000																									
Site preparation: Demolishing, ground work,		1,000,000																									
rerouting pipes & cables, roads																											
Construction: civil, mechanical, etc., Contingency.		10,000,000																									
Supplies, personnel (hiring and training/capacity		2,000,000																									
building)																											
Sewage facilities for Pangani Town	Total	24,300,000																									
Sewage facilities for Bagamoyo Town	Tan-L14																										
Project preparation and mobilisation		100,000																									

	Activity	Budget		Ye	ear 1			Yea	ır 2			Yea	r.3			Year 4			Year	5		Y6	Y7	Y8	Y9	Y10
Actions and Activities	ID	USD	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2 Q3	Q4	Q1		Q3	Q4	10	-,	10	1,	110
Initial studies, design and engineering,	ID	200,000	Q1	Q2	QJ	Q [±]	Q1	Q2	QJ	Q±	Qı	Q2	QJ	Q±	Qı	Q2 Q3	Q±	Q1	Q2	QJ	QŦ					
Project management (includes construction		1,000,000																								
management)		1,000,000																								
Site acquisition: Acquisition of building plot,																										
brokers, notaries, taxes.																										
Sewage collection system		15,000,000																								
Site preparation: Demolishing, ground work,		1,000,000																								
rerouting pipes & cables, roads		1,000,000																								
Construction: civil, mechanical, etc., Contingency.		15,000,000																								
Supplies, personnel (hiring and training/capacity		2,000,000																								
building)		2,000,000																								
Sewage facilities for Bagamoyo Town	Total	34,300,000																								
Sewage facilities for Kinondoni Municipality	Tan-L15	01,000,000																								
Project preparation and mobilisation	- MII 110	100,000						1										1								
Initial studies, design and engineering,		200,000										+						+	+ +							
Project management (includes construction		1,000,000																								
management)		1,000,000																								i
Site acquisition: Acquisition of building plot,																										
brokers, notaries, taxes.																										
Sewage collection system		15,000,000																								
Site preparation: Demolishing, ground work,		1,000,000																								
rerouting pipes & cables, roads		1,000,000																								
Construction: civil, mechanical, etc., Contingency.		15,000,000																								
Supplies, personnel (hiring and training/capacity		2,000,000																								
building)																										
Sewage facilities for Kinondoni Municipality	Total	34,300,000																								
Sewage facilities for Ilala Municipality	Tan-L16																									
Project preparation and mobilisation		100,000																								
Initial studies, design and engineering,		200,000																								
Project management (includes construction		1,000,000																								
management)																										
Site acquisition: Acquisition of building plot,																										
brokers, notaries, taxes.																										
Sewage collection system		15,000,000																								
Site preparation: Demolishing, ground work,		1,000,000																								
rerouting pipes & cables, roads																										
Construction: civil, mechanical, etc., Contingency.		15,000,000																								
Supplies, personnel (hiring and training/capacity		2,000,000																								
building)																										
Sewage facilities for Ilala Municipality	Total	34,300,000																								
Sewage facilities for Temeke Municipality	Tan-L17																									
Project preparation and mobilisation		100,000																1	1							
Initial studies, design and engineering,		200,000																_								
Project management (includes construction		1,000,000																								i
management)																										
Site acquisition: Acquisition of building plot,																										i
brokers, notaries, taxes.		45.000.000																								
Sewage collection system		15,000,000							1																	i

	Activity	Budget		Ye	ar 1			Yea	ır 2			Yea	r 3			Yea	r 4			Yea	ır 5		Y6	Y7	Y8	Y9	Y10
Actions and Activities	ID	USD	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	01	Q2		Q4	10		13		
Site preparation: Demolishing, ground work,	10	1,000,000	21	2-	20	21	2-	~-	QU	21	~-	~_	QU	Q.	Q.	2-	QU	~1	2.	~-	20	21					
rerouting pipes & cables, roads		1,000,000																									İ
Construction: civil, mechanical, etc., Contingency.		15,000,000																									
Supplies, personnel (hiring and training/capacity		2,000,000																									
building)																											ı
Sewage facilities for Temeke Municipality	Total	34,300,000																									
Sewage facilities for Kilindoni Town, Mafia	Tan-L18	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,																									
District																											ı
Project preparation and mobilisation		100,000																									
Initial studies, design and engineering,		200,000																									
Project management (includes construction		1,000,000																									
management)																											ı
Site acquisition: Acquisition of building plot,																											i
brokers, notaries, taxes.																											.
Sewage collection system		10,000,000																									
Site preparation: Demolishing, ground work,		1,000,000																									İ
rerouting pipes & cables, roads																											.
Construction: civil, mechanical, etc., Contingency.		10,000,000																									.
Supplies, personnel (hiring and training/capacity		2,000,000																									ı
building)																											
Sewage facilities for Kilindoni Town, Mafia	Total	24,300,000																									İ
District	T I 10																										
Sewage facilities for Kilwa Kivinje Town Project preparation and mobilisation	Tan-L19	100,000																									
Initial studies, design and engineering,		200,000																									
Project management (includes construction		1,000,000																									
management)		1,000,000																									ı
Site acquisition: Acquisition of building plot,																											
brokers, notaries, taxes.																											ı
Sewage collection system		10,000,000																									
Site preparation: Demolishing, ground work,		1,000,000																									
rerouting pipes & cables, roads		1,000,000																									İ
Construction: civil, mechanical, etc., Contingency.		10,000,000																									
Supplies, personnel (hiring and training/capacity		2,000,000																									 I
building)																											İ
Sewage facilities for Kilwa Kivinje Town	Total	24,300,000																									
Sewage facilities for Kilwa Masoko Town	Tan-L20																										 I
Project preparation and mobilisation		100,000																									
Initial studies, design and engineering,		200,000																									
Project management (includes construction		1,000,000																									1
management)																											.
Site acquisition: Acquisition of building plot,																											1
brokers, notaries, taxes.																											ı
Sewage collection system		10,000,000																									
Site preparation: Demolishing, ground work,		1,000,000																							7		
rerouting pipes & cables, roads																											
Construction: civil, mechanical, etc., Contingency.		10,000,000																									

	Activity	Budget		Y	ear 1			Yea	r 2			Yea	r 3			Year	· 4			Year	5		Y6	Y7	Y8	Y9	Y10
Actions and Activities	ID	USD	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1		Q3	Q4	Q1		Q3	Q4					110
Supplies, personnel (hiring and training/capacity	ID	2,000,000	Qı	Q2	QJ	QŦ	Qı	Q2	Q3	QŦ	Qı	Q2	Q3	Q±	Qı	Q2	Q3	Q±	Qı	Q2	QJ	Q±					
building)																											
Sewage facilities for Kilwa Maksoko Town	Total	24,300,000																									
Sewage facilities for Lindi Town	Tan-L21																										
Project preparation and mobilisation		100,000																									
Initial studies, design and engineering,		200,000																									
Project management (includes construction		1,000,000																									
management)																											
Site acquisition: Acquisition of building plot,																											
brokers, notaries, taxes.																											
Sewage collection system		10,000,000																									
Site preparation: Demolishing, ground work,		1,000,000																									
rerouting pipes & cables, roads																										. 1	
Construction: civil, mechanical, etc., Contingency.		10,000,000																									
Supplies, personnel (hiring and training/capacity		2,000,000																									
building)		, ,																									
Sewage facilities for Lindi Town	Total	24,300,000																									
Sewage facilities for Mikindani Town	Tan-L22	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,																									
Project preparation and mobilisation		100,000																									
Initial studies, design and engineering,		200,000																								\rightarrow	
Project management (includes construction		1,000,000																								-	
management)		1,000,000																								. 1	
Site acquisition: Acquisition of building plot,																											—
brokers, notaries, taxes.																										. 1	
Sewage collection system		10,000,000																									—
Site preparation: Demolishing, ground work,		1,000,000																									—
rerouting pipes & cables, roads		1,000,000																								. 1	
Construction: civil, mechanical, etc., Contingency.		10,000,000																									
Supplies, personnel (hiring and training/capacity		2,000,000																									
building)		2,000,000																									
Sewage facilities for Mikindani Town	Total	24,300,000																									
Sewage facilities for Mtwara Town	Tan-L23	24,300,000																									
Project preparation and mobilisation	Tall-L23	100,000																									
Initial studies, design and engineering,		200,000																									
Project management (includes construction		1,000,000																									
management)		1,000,000																									
Site acquisition: Acquisition of building plot,																											
brokers, notaries, taxes.																											
Sewage collection system		10,000,000																									
Site preparation: Demolishing, ground work,		1,000,000								1										+							
rerouting pipes & cables, roads		1,000,000																									
Construction: civil, mechanical, etc., Contingency.		10,000,000								1										+							
Supplies, personnel (hiring and training/capacity		2,000,000			1															-							
building)		2,000,000																									
Sewage facilities for Mtwara Town	Total	24,300,000																									
Safe toilets facilities for Bwejuu and Jibondo islands, Mafia District	Tan-L24																				7						
Project preparation and mobilisation		100,000												1												\rightarrow	
1 roject preparation and mobilisation		100,000						1	1		l	1	1	1	1	1			1					I			

	Activity	Budget		Y	ear 1			Yea	ar 2			Yea	ır 3			Year 4			Y	ear 5		Y6	Y7	Y8	Y9	Y10
Actions and Activities	ID	USD	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2 Q3	Q4	Q1	Q2		Q4	10	17	10	17	110
Initial studies, design and engineering,	ID	200,000	Qı	Q2	Q3	QŦ	Qı	Q2	Q3	QŦ	Qı	Q2	QJ	Q±	Qı	Q2 Q	QŦ	QI	Q2	. Q3	QŦ				-	
Project management (includes construction		500,000																							,—	
management)		300,000																							, 1	
Site acquisition: Acquisition of building plot,																									,—	
brokers, notaries, taxes.																									, 1	
Toilet and sewage system		2,000,000																								
Site preparation: Demolishing, ground work,		1,000,000																							-	
rerouting pipes & cables, roads		1,000,000																							, 1	
Construction: civil, mechanical, etc., Contingency.		2,000,000																								
Supplies, personnel (hiring and training/capacity		1,000,000																							, —	<u> </u>
building)																									, 1	
Safe toilets facilities for Bwejuu and Jibondo	Total	6,800,000																								
islands, Mafia District		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,																							, 1	
Solid waste collection/processing Tanga City	Tan-L25																									
Project preparation and mobilisation		100,000																							\Box	
Mobilisation/review of solid waste generation and		200,000																								
design of specific needs																									, 1	
Project management		500,000																								
Waste processing site acquisition:																										
Infrastructure		1,000,000																								
Equipment		2,000,000																								
Site preparation: ground work, roads		1,000,000																							,	
Construction: civil, mechanical, contingency.		1,000,000																								
Supplies, personnel (hiring and training/capacity building)		1,000,000																								
Solid waste collection/processing Tanga City	Total	6,800,000																								
Solid waste collection/processing Pangani Town	Tan-L26																									
Project preparation and mobilisation		100,000																								
Mobilisation/review of solid waste generation and		200,000																								
design of specific needs																									, 1	
Project management		500,000																								
Waste processing site acquisition:																										
Infrastructure		1,000,000																								
Equipment		2,000,000																								
Site preparation: ground work, roads		1,000,000																								
Construction: civil, mechanical, contingency.		1,000,000																								
Supplies, personnel (hiring and training/capacity		1,000,000																								
building)																									, 1	
Solid waste collection/processing Pangani Town	Total	6,800,000																								
Solid waste collection/processing Bagamoyo	Tan-L27																								, 1	
Town																										
Project preparation and mobilisation		100,000																								
Mobilisation/review of solid waste generation and		200,000																							,	1
design of specific needs																										
Project management		500,000																								
Waste processing site acquisition:																										
Infrastructure		1,000,000																								
Equipment		2,000,000																								

	Activity	Budget		Ye	ar 1			Yea	ır 2			Yea	r 3			Year 4			Yea	ır 5		Y6	Y7	Y8	Y9	Y10
Actions and Activities	ID	USD	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2	Q3	Q4	Q1	Q2 Q3	Q4	Q1		Q3	Q4					
Site preparation: ground work, roads		1,000,000	~	~	~	~	~	~	~	_~	~	~	~	~	_~_	~ ~	~	~	~	~	~				$\overline{}$	
Construction: civil, mechanical, contingency.		1,000,000																							\neg	-
Supplies, personnel (hiring and training/capacity		1,000,000																								
building)																										
Solid waste collection/processing Bagamoyo	Total	6,800,000																								
Town																										
Solid waste collection/processing Kinondoni	Tan-L28																									
Municipality																										
Project preparation and mobilisation		100,000																								
Mobilisation/review of solid waste generation and		200,000																								
design of specific needs																										
Project management		500,000																								
Waste processing site acquisition:																										
Infrastructure		1,500,000																								
Equipment		2,000,000																								
Site preparation: ground work, roads		1,500,000																								
Construction: civil, mechanical, contingency.		1,000,000																								
Supplies, personnel (hiring and training/capacity		1,000,000																								
building)																										
Solid waste collection/processing Kinodoni Municipality	Total	7,800,000																								
Solid waste collection/processing Ilala	Tan-L29																									
Municipality																										
Project preparation and mobilisation		100,000																								
Mobilisation/review of solid waste generation and		200,000																								
design of specific needs																										
Project management		500,000																								
Waste processing site acquisition:																										
Infrastructure		1,500,000																								
Equipment		2,000,000																								
Site preparation: ground work, roads		1,500,000																								
Construction: civil, mechanical, contingency.		1,000,000																								
Supplies, personnel (hiring and training/capacity		1,000,000																								
building)																										
Solid waste collection/processing Ilala Municipality	Total	7,800,000																								
Solid waste collection/processing Temeke	Tan-L30																									
Municipality																										
Project preparation and mobilisation		100,000																								
Mobilisation/review of solid waste generation and		200,000																								
design of specific needs																										
Project management		500,000																								
Waste processing site acquisition:																										
Infrastructure		1,500,000																								
Equipment		2,000,000																								
Site preparation: ground work, roads		1,500,000																								
Construction: civil, mechanical, contingency.		1,000,000																								

Addison and Activities 10		Activity	Budget		Ye	ar 1			Yea	ır 2			Yea	r 3			Year	4			Yea	r 5		Y6	Y7	Y8	Y9	Y10
Semplace personned plaining and trainingly capacity with Manufacting 100,000 100	Actions and Activities	,		O1			O4	01	O2	O3	O4	O1			04	01			O4	O1			O4					
Solid waste collection/processing Teneke Total 7,800,000 Total 7	Supplies, personnel (hiring and training/capacity			~-	_~=	~	~-	~-	~-		~	~_					~	~	~-	~-		2-						
Solid waste collection/processing Killsdooi Town Town Town Town Town Town Town Town	building)																											ı
Town		Total	7,800,000																									1
Mobilasion/review of solid waste generation and design of specific needs Project management Infrastructure Lagramment Solid waste collection/processing Killondu Solid waste onlection/processing Killondu Solid waste collection/processing Kil	Solid waste collection/processing Kilindoni Town	Tan-L31																										
Design of specific needs Design of specific	Project preparation and mobilisation		100,000																									
Project management	Mobilisation/review of solid waste generation and		200,000																									
Waste processing site acquisition:	design of specific needs																											1
Infrastructure	Project management		500,000																									 I
Solid waste collection/processing Kilwa Kivinje Solid waste collection/processing Kilwa Kivinje Total Solid waste collection/processing Kilwa Kivinje Solid waste collection/processing Ki	Waste processing site acquisition:																											 I
1,500,000 1,50	Infrastructure																											1
Construction: civil. mechanical. contingency. 1,000,000 1,00	Equipment		2,000,000																									1
Supplies, personnel (hiring and training/capacity building) Solid waste collection/processing Killwa Kivinje Project preparation and mobilisation Mobilisation/review of solid waste generation and design of specific needs Project management Waste prosessing stile acquisition: Infrastructure Equipment Site preparation: ground work, roads Construction: civil, mechanical, contingency. Solid waste collection/processing Killwa Kivinje Total A 8,00,000 Solid waste collection/processing Killwa Kivinje Total A 8,00,000 Mobilisation/review of solid waste generation and design of specific needs Total Total Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Killwa Mivinje Total Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Killwa Mivinje Total Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Killwa Mivinje Total Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Killwa Mivinje Solid waste collection/processing Lindi Town Total Solid waste collection/processing Lindi Town Total Solid waste collection/processing Lindi Town Total Solid waste collection/processing Lindi Town Total Solid waste collection/processing Lindi Town Total Solid waste collection/processing Lindi Town Total Solid waste collection/processing Lindi Town Total Solid waste collection/processing Lindi Town Total Solid waste collection/processing Lindi Town Total Solid waste collection/processing Lindi Town Total Solid waste collection/processing Lindi Town Total Solid waste collection/proce	Site preparation: ground work, roads																											
Solid waste collection/processing Kilmoni	Construction: civil, mechanical, contingency.		1,000,000																									
Solid waste collection/processing Kilimadoni Town Solid waste collection/processing Kiliwa Kivinje Project preparation and mobilisation Mobilisation/review of solid waste generation and design of specific needs Waste processing site acquisition: Infrastructure Equipment Solid waste collection/processing Kiliwa Kivinje Project management Solid waste collection/processing Kilimadoni Robilisation/Robinsolid Solid waste generation and design of specific needs Solid waste collection/processing Kiliwa Misoko Project pranagement Solid waste collection/processing Kiliwa Misoko Project proparation and mobilisation Mobilisation/Robinsolid Solid waste collection/processing Kiliwa Misoko Waste processing Kiliwa Misoko Project proparation and mobilisation Mobilisation/Robinsolid Solid waste collection/processing Kiliwa Misoko Waste proparation and mobilisation Mobilisation/Robinsolid Solid waste generation and design of specific needs Waste processing site acquisition: Infrastructure Solid waste collection/processing Kiliwa Misoko Waste processing site acquisition: Infrastructure Solid waste collection/processing Kiliwa Misoko Waste processing site acquisition: Infrastructure Solid waste collection/processing Kiliwa Misoko Total Solid waste collection/processing Kiliwa Misoko Total Solid waste collection/processing Kiliwa Masoko Total Tan-134 Total	Supplies, personnel (hiring and training/capacity building)		1,000,000																									1
Solid waste collection/processing Kilwa Kivinje	Solid waste collection/processing Kilindoni	Total	7,800,000																									
Project preparation and mebilisation Mobilisation/review of solid waste generation and design of specific needs Project management Soo.000 State preparation: Social waste generation and design of specific needs Project management Soo.000 State preparation: Social waste collection/processing Kilwa Kivinje Solid waste collection/processing Kilwa Masoko Project management Total Solid waste collection/processing stillat and social waste generation and mobilisation Mobilisation/ review of solid waste generation and mobilisation Mobilisation/ review of solid waste generation and mobilisation Mobilisation/ review of solid waste generation and mobilisation Mobilisation/ review of solid waste generation and mobilisation Mobilisation/ review of solid waste generation and mobilisation Mobilisation/ review of solid waste generation and mobilisation Mobilisation/ review of solid waste generation and mobilisation Mobilisation/ review of solid waste generation and design of specific needs Project management Soo.000 Mobilisation/ review of solid waste generation and design of specific needs Project management Soo.000 Mobilisation/ review of solid waste generation and design of specific needs Project management Soo.000 Mobilisation/ review of solid waste generation and design of specific needs Project management Soo.000 Mobilisation/ review of solid waste generation and design of specific needs Project management Soo.000 Mobilisation/ review of solid waste generation and design of specific needs Project management Soo.000 Mobilisation/ review of solid waste generation and design of specific needs Project management Soo.000 Mobilisation/ review of solid waste generation and design of specific needs Project management Soo.000 Total Soo.000 Mobilisation/ review of solid waste collection/processing kilwa Masoko Total Soo.000 Mobilisation/ review of solid waste collection/ processing kilwa Masoko Total Soo.000 Mobilisation/ review of solid waste collection/ processing kilwa Masoko Total Soo.000 Mobilisation/ review of so		Tan-L32																									-	
Mobilisation/review of solid waste generation and design of specific needs Project management Waste processing site acquisition: Infrastructure 1,000,000 Equipment 2,000,000 Equipment 2,000,000 Equipment 3,000,000 Equipment 1,000,000 Equipment 1,		Tun Eo2	100.000																								-	
design of specific needs																											-	
Waste processing site acquisition:	design of specific needs		200,000																									l
Infrastructure	Project management		500,000																									 I
Equipment	Waste processing site acquisition:																											 I
Site preparation: ground work, roads Construction: civil, mechanical, contingency. Supplies, prespannel (hiring and training/capacity building) Total 6,800,000 Solid waste collection/processing Kilwa Masoko Project preparation and mobilisation Mobilisation/review of solid waste generation and design of specific needs Project management Waste processing site acquisition: Infrastructure Equipment Supplies, presonnel (hiring and training/capacity building) Supplies, personnel (hiring and training/capacity building) Solid waste collection/processing Kilwa Masoko Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total Total 6,800,000 Total Tota	Infrastructure		1,000,000																									
Construction: civil, mechanical, contingency. Supplies, personnel (hiring and training/ capacity building) Solid waste collection/processing Kilwa Kivinje Solid waste collection/processing Kilwa Misoko Total 6,800,000 Solid waste collection/processing Kilwa Misoko Total 100,000 Mobilisation/review of solid waste generation and design of specific needs Project preparation and mobilisation Mobilisation/review of solid waste generation and design of specific needs Total 500,000 Waste processing site acquisition: Infrastructure 1,000,000 Site preparation: ground work, roads Construction: civil, mechanical, contingency. Supplies, personnel (hiring and training/ capacity building) Solid waste collection/processing Kilwa Masoko Solid waste collection/processing Kilwa Masoko Total 6,800,000 Tan-1.34	Equipment		2,000,000																									
Supplies, personnel (hiring and training/capacity building) Solid waste collection/processing Kilwa Masoko Solid waste collection/processing Kilwa Masoko Tan-L33 Project preparation and mobilisation Mobilisation/review of solid waste generation and design of specific needs Project management Maste processing site acquisition: Infrastructure 1,000,000 Site preparation: ground work, roads Construction: civil, mechanical, contingency. Supplies, personnel (hiring and training/ capacity building) Solid waste collection/processing Kilwa Masoko Total 6,800,000 Date of the service of solid waste generation and design of specific needs Project management 1,000,000 Date of the service of solid waste generation and design of specific needs Project management 1,000,000 Date of the service of solid waste generation and design of specific needs Project management 1,000,000 Date of the service of solid waste generation and design of specific needs Project management 1,000,000 Date of the service of solid waste generation and design of specific needs Project management 1,000,000 Date of the service of solid waste generation and design of specific needs Date of the service of solid waste generation and design of specific needs Date of the service of solid waste generation and design of specific needs Date of the service of solid waste of specific needs Date of the service of solid waste of specific needs Date of the service of specific needs Date of the service of solid waste of specific needs Date of the service of specific needs Date of the service of specific needs Date of the service of solid waste of specific needs Date of the service of specific needs Date of the service of specific needs Date of the service of specific needs Date of the service of specific needs Date of the service of specific needs Date of the service of specific needs Date of the service of specific needs Date of the service of specific needs Date of the service of the service of specific needs Date of	Site preparation: ground work, roads		1,000,000																									 I
building) Solid waste collection/processing Kilwa Kivinje Solid waste collection/processing Kilwa Masoko Tan-L33 Project preparation and mobilisation 100,000 Mobilisation/ review of solid waste generation and design of specific needs Project management Solid waste collection/processing site acquisition: Infrastructure Equipment 2,000,000 Equipment Construction: civil, mechanical, contingency. Supplies, personnel (hiring and training/capacity building) Solid waste collection/processing Kilwa Masoko Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 6,800,000 Total 1,000,000 Total	Construction: civil, mechanical, contingency.		1,000,000																									1
Solid waste collection/processing Kilwa Masoko Solid waste collection/processing Kilwa Masoko Tan-L33 Tan-L34 Tan-L33 Tan-L33 Tan-L33 Tan-L33 Tan-L33 Tan-L33 Tan-L33 Tan-L34	Supplies, personnel (hiring and training/capacity		1,000,000																									1
Solid waste collection/processing Kilwa Masoko Project preparation and mobilisation 100,000 Mobilisation/review of solid waste generation and design of specific needs Project management Solid waste processing site acquisition: Infrastructure Infr	building)																											ı
Project preparation and mobilisation 100,000 2		Total	6,800,000																									ı
Mobilisation/review of solid waste generation and design of specific needs Project management South of specific needs Project management Waste processing site acquisition: Infrastructure 1,000,000 Equipment 2,000,000 Site preparation: ground work, roads Construction: civil, mechanical, contingency. Supplies, personnel (hiring and training/ capacity building) Solid waste collection/processing Kilwa Masoko Total 6,800,000 Total		Tan-L33																										L
Description of specific needs Description of specific need			,																									L
Project management 500,000			200,000																									1
Waste processing site acquisition: Infrastructure Infrastruc																												.
Infrastructure			500,000																									.
Equipment 2,000,000																												ļ
Site preparation: ground work, roads 1,000,000 Construction: civil, mechanical, contingency. Supplies, personnel (hiring and training/capacity building) Solid waste collection/processing Kilwa Masoko Solid waste collection/processing Lindi Town Tan-L34 1,000,000 1,000,000 1,000,000 1,000,000			, ,																									ļ
Construction: civil, mechanical, contingency. Supplies, personnel (hiring and training/capacity building) Solid waste collection/processing Kilwa Masoko Solid waste collection/processing Lindi Town Tan-L34 1,000,000 1,000,000 1,000,000 1,000,000	Equipment																											
Supplies, personnel (hiring and training/capacity building) Solid waste collection/processing Kilwa Masoko Solid waste collection/processing Lindi Town Tan-L34 1,000,000 1,000,000 1,000,000 1,000,000																												
building) Solid waste collection/processing Kilwa Masoko Total 6,800,000 Solid waste collection/processing Lindi Town Tan-L34 Solid Waste Collection/processing Lindi Town Tan-L34 Solid Waste Collection/processing Lindi Town Tan-L34 Solid Waste Collection/processing Lindi Town Tan-L34 Solid Waste Collection/processing Lindi Town Tan-L34 Solid Waste Collection/processing Lindi Town Tan-L34 Solid Waste Collection/processing Lindi Town Tan-L34 Solid Waste									1																			
Solid waste collection/processing Kilwa Masoko Solid waste collection/processing Lindi Town Tan-L34 Solid waste collection/processing Lindi Town Tan-L34 Solid waste collection/processing Lindi Town Tan-L34 Solid waste collection/processing Lindi Town Tan-L34 Solid waste collection/processing Lindi Town Tan-L34 Solid waste collection/processing Lindi Town Tan-L34			1,000,000																									ĺ
Solid waste collection/processing Lindi Town Tan-L34 Tan-L34 Tan-L34		Total	6.800.000																									i
			0,000,000						1				1														\rightarrow	 I
	Project preparation and mobilisation	1 all-L34	100,000																									

	Activity	Budget		Ye	ear 1			Yea	ar 2			Yea	r 3			Year 4			Yea	r 5		Y6	Y7	Y8	Y9	Y10
Actions and Activities	ID	USD	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2 Q3	Q4	Q1	Q2		Q4					
Mobilisation/review of solid waste generation and	10	200,000	2-	ν-	QU	21	21	2-	QU	21	21	2-	QU	ν.	21	Q2 Q5	Q.	~-	2-	20	2.					
design of specific needs		200,000																								
Project management		500,000																								
Waste processing site acquisition:																										
Infrastructure		1,000,000																								
Equipment		2,000,000																								
Site preparation: ground work, roads		1,000,000																								
Construction: civil, mechanical, contingency.		1,000,000																								
Supplies, personnel (hiring and training/capacity building)		1,000,000																								
Solid waste collection/processing Lindi Town	Total	6,800,000																							,	
Solid waste collection/processing Mikindani-	Tan-L35	0,000,000																								
Mtwara towns																										
Project preparation and mobilisation		100,000																							,	
Mobilisation/review of solid waste generation and		200,000																								
design of specific needs		,																								1
Project management		500,000																							$\overline{}$	
Waste processing site acquisition:		,																								
Infrastructure		1,000,000																								
Equipment		2,000,000																								
Site preparation: ground work, roads		1,000,000																							, 1	
Construction: civil, mechanical, contingency.		1,000,000																							, 1	
Supplies, personnel (hiring and training/capacity		1,000,000																							,	
building)		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,																								
Solid waste collection/processing Mikindani-	Total	6,800,000																								
Mtwara towns		, ,																							, !	
Freshwater supply options for Tanga City	Tan-L36																									
Project preparation and mobilisation		100,000																								
Mobilisation/review of freshwater options		200,000																								
Project management		200,000																								
Trial of rain water harvesting and storage systems		1,000,000																								
Re-habilitate existing water infrastructure		2,000,000																								
Develop freshwater master plan for Pemba		1,000,000																								
Supplies, personnel (hiring and training/capacity building)		1,000,000																								
Freshwater supply options for Tanga City	Total	5,500,000																								
Freshwater supply options for Lindi Town	Tan-L37																									
Project preparation and mobilisation		100,000																							, 1	
Mobilisation/review of freshwater options		400,000																								
Project management		200,000																								
Trial of rain water harvesting and storage systems		1,000,000																								
Re-habilitate existing water infrastructure		3,000,000																								
Develop freshwater master plan for Lindi		1,000,000																								
Supplies, personnel (hiring and training/capacity		1,000,000																							-	
building)		, ,																								1
Freshwater supply options for Lindi Town	Total	6,700,000																							-	
Freshwater supply options for Mafia Island	Tan-L38																								-	
Marine Park																									ı	<u> </u>

	Activity	Budget		Ye	ear 1			Yea	ır 2			Yea	r 3			Yea	r 4			Yea	r 5		Y6	Y7	Y8	Y9	Y10
Actions and Activities	ID	USD	Q1		Q3	Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	O1		Q3	Q4	10		10	1,	110
Project preparation and mobilisation	ID.	100,000	Q1	Q2	QJ	Q±	Q1	Q2	QJ	Q±	Q1	Q2	QJ	QI	Q1	Q2	QJ	Q±	Q1	Q2	QJ	Q±					
Mobilisation/review of freshwater options		400,000																									
Project management		200,000																									
Trial of rain water harvesting and storage and		3,000,000																									
		3,000,000																									I
supply systems Re-habilitate existing water infrastructure		2,000,000																									
Develop freshwater master plan for Mafia		1,000,000																									
		, ,																									
Supplies, personnel (hiring and training/capacity		1,000,000																									I
building)	m . 1	= = 00 000																									
Freshwater supply options for Mafia Island	Total	7,700,000																									I
Marine Park	T 100																										
Freshwater supply options for Mnazi Bay	Tan-L39																										I
Ruvuma Estuary Marine Park		100,000																									
Project preparation and mobilisation		100,000																									
Mobilisation/review of freshwater options	1	400,000																									<u> </u>
Project management		200,000																									
Trial of rain water harvesting and storage systems		1,000,000																									
Re-habilitate existing water infrastructure		3,000,000																									
Develop freshwater master plan for Pemba		1,000,000																									
Supplies, personnel (hiring and training/capacity		1,000,000																									I
building)																											
Freshwater supply options for Mnazi Bay	Total	6,700,000																									I
Ruvuma Estuary Marine Park																											
Mainland fisheries sector review by fishery type	Tan-L40																										I
and management areas																											
Project preparation and mobilisation		100,000																									
Mobilisation/review of catch records		100,000																									1
Project management		200,000																									I
Conduct frame survey (x2)		500,000																									1
Collect additional catch/effort data - ground-		200,000																									
truthing																											I
Implement improved catch assessment survey		400,000																									
(CAS)																											I
Review fisheries management plans (x4)		400,000																									
Review fisheries legislation		200,000																									
Implement Fisheries Management Plans		1,000,000																									
Supplies, personnel (hiring and training/capacity		500,000																									
building)		,																									I
Mainland fisheries sector review by fishery type	Total	3,600,000																									
and management areas		.,,																									I
Small pelagic fisheries support for mainland	Tan-L41							1																			Ī
Tanzania																											I
Project preparation and mobilisation		100,000																									
Review of small pelagic catch records		,																									
Project management	1	200,000																									
Conduct frame survey, focused on small pelagic fishery		Na																									
Collect additional catch/effort data – ground-truthing		Na																									
for small pelagics		1 101																									1

	Activity	Budget		Ye	ear 1			Yea	r 2			Yea	r.3			Year 4			Ye	ar 5		Y6	Y7	Y8	Y9	Y10
Actions and Activities	ID	USD	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2 Q3	Q4	Q1	Q2		Q4	10	1,	10	1,	110
Implement improved catch assessment survey (CAS) for	ID	Na	Qı	Q2	QJ	Q±	Qı	Q2	QJ	QŦ	Qı	Q2	Q3	Q±	Qı	Q2 Q3	Q±	Qı	Q2	Q3	QŦ					
small pelagics		144																							, !	
Reviewsmall pelagics fisheries management plan		Na																								
Implement small pelagics Fisheries Management Plan		Na																							i	
Work with fishing units (50)		500,000																								
Conduct feasibility study for sardine cannery (x2)		200,000																								
Assess seasonal changes and model vs		300,000																								
climate/oceanographic parameters		000,000																							, !	
Supplies, personnel (hiring and training/capacity		500,000																				1			- 	
building)																										
Small pelagic fisheries support for mainland	Total	1,700,000																							, !	
Tanzania																										
Mainland fisheries MCS programme	Tan-L42																									
Project preparation and mobilisation		100,000																								
Project management		200,000																								
Communication of revised fisheries legislation to fishers		50,000																								
Launch pilot project of registration and licencing		300,000																								
for tuna, small pelagic, octopus and mixed reef		200,000																								
fisheries																										
MBUs and district officers trained and supported		300,000																								
Research mechanisms on sustainability funding		50,000																								
Finalise fisheries patrol unit structure and begin		1,000,000																								
implementation		1,000,000																								
Expand pilot project for registration		1,000,000																								
Supplies, personnel (hiring and training/capacity		2,000,000																								
building)																										
Mainland fisheries MCS programme	Total	5,000,000																								
Support to MCS to end blast fishing	Tan-L43																									
Project preparation and mobilisation		100,000																								
Project management		200,000																								
Finalise anti-blast fishing patrol unit structure and		1,000,000																							, !	
begin implementation																										
Supplies, personnel (hiring and training/capacity		2,000,000																								l
building)																										1
Support to MCS to end blast fishing	Total	3,300,000																								
Strengthening management of octopus fisheries on mainland	Tan-L44																									
Project preparation and mobilisation		100,000																								
Review of small octopus catch records		Na																								
Project management		200,000																								
Conduct frame survey, focused on octopus fishery		Na																							$\overline{}$	
Collect additional catch/effort data -		200,000																							,	
groundtruthing for octopus																										
Implement improved catch assessment survey (CAS) for		Na																								
octopus fishrery		- 100																								
Review octopus fisheries management plan		Na																							┈╻	
Implement octopus Fisheries Management Plan	1	Na																							, $ eg$	

	Activity	Rudget		V	ear 1			Yea	. ?			Yea	w 2			Yea	- 1			Yea	E		Y6	Y7	Y8	Y9	Y10
A 41	,	Budget	04			04	01			0.4	04			0.4	04			- 04	04			- 04	10	17	18	19	110
Actions and Activities	ID	USD	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4					
Work with octopus fishing units (50)		150,000																								-	
Conduct population genetics study of fished		50,000																								1	
populations		200,000																								-	
Assess seasonal changes and model vs		200,000																								1	
climate/oceanographic parameters		400.000																								-	
Equipment, supplies, personnel (hiring and		100,000																								1	
training/capacity building)	m . 1	4 000 000																									
Strengthening management of octopus fisheries	Total	1,000,000																								1	
on mainland Strengthening seaweed farming on mainland	Tan-L45																										
Project preparation and mobilisation	1 an-L45	100,000																									—
Mobilisation/review of harvest records		50,000																									—
Project management		200,000																									
Conduct frame survey		50,000																									<u> </u>
Work with farmers (50) to improve uderstanding												1															
		150,000																								1	
of opportuniteis for value-adding		Na																									—
Develop seaaweed farming management plan Implement Seaweed Farming Management Plan												+															—
		50,000																									
Conduct feasibility study for seaweed processing		100,000																								1	
plant		100,000																									
Study options for alternative species		100,000																									
Assess seasonal changes and model vs climate/oceanographic parameters for each species		100,000																								1	
and areas (Pemba/Unguja)																										1	
Equipment, supplies, personnel (hiring and		100,000																									
training/capacity building)		100,000																								1	
Strengthening seaweed farming on mainland	Total	1,000,000																									
Tuna fisheries support for Mtwara-Lindi regions	Tan-L46	1,000,000																								$\overline{}$	
Project preparation and mobilisation	Tall-L40	100,000																								$\overline{}$	
Review of tuna catch records		Na																									
Project management		200,000																								_	
Conduct frame survey, focused on tuna fishery		200,000																									—
Collect additional catch/effort data -		200,000																									—
groundtruthing for tuna		200,000																								1	
Implement improved catch assessment survey (CAS) for		Na																									<u> </u>
tuna		INa																								1	
Develop tuna pelagics fisheries management plan		Na										+															
Implement tuna Fisheries Management Plan		Na																								$\overline{}$	
Work with fishing units (10)		200,000																									
Trial FADs		400,000																									
Trial pole-and-line and dropline fishing		500,000																									
Assess seasonal changes and model vs		200,000																									
climate/oceanographic parameters and map hot-		200,000																								1	
spots and share data with IOTC																											ĺ
Conduct population genetics study of fished		200,000																								$\overline{}$	
populations		200,000																									ĺ
		200,000																								$\overline{}$	
Host two IOTC working parties		200,000																				1					<u> </u>

	Activity	Budget		Y	ear 1			Yea	r 2			Yea	r 3			Year 4				Year	r 5		Y6	Y7	Y8	Y9	Y10
Actions and Activities	ID	USD	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2 Q	3 (24 (Q1	Q2		Q4	20		-10		
Equipment, supplies, personnel (hiring and	ID.	400,000	Źτ	Q2	25	27	QI	22	Q3	Q ²	Δı	Q2	23	Q T	Q1	Q2 Q	ي ر	t T	×-	Q ²	Q3	Q±					
training/capacity building)		,																									
Tuna fisheries support for Mtwara-Lindi regions	Total	2,600,000																									
Prawn fisheries support for Rufiji	Tan-L47																										
Project preparation and mobilisation		100,000																									
Review of Rufiji prawn fishery catch records		Na																									
Project management		200,000																									
Conduct frame survey, focused on prawn fishery		Na																									
Collect additional catch/effort data -		Na																									
groundtruthing for prawns																											
Implement improved catch assessment survey		Na																									
(CAS) for prawns																											
Review prawns fisheries management plan		Na																									
Implement prawns fisheries Management Plan		Na																									
Work with fishing units (50)		500,000																									
Sample and analyse prawns for agrochemicals		100,000																									
Assess seasonal changes and model vs		300,000																									
climate/oceanographuic parameters																											
Supplies, personnel (hiring and training/capacity		500,000																									
building)																											
Prawn fisheries support for Rufiji	Total	1,700,000																									
Fish farming research and cage trials at Tanga	Tan-L48																										
and Kilwa																											
Project preparation and mobilisation		100,000																									
Project management		200,000																									
Study visit to Mauritius/Singapore		50,000																									
Research into cage site suitability		500,000																									
Survey of suitability of land/sea areas for diverse		100,000																									
fish/shellfish aquaculture																											
Survey of tourism industry requirements		50,000																									
Site for laboratory/hatchery and ponds identified		100,000																									
Facility designed and constructed		2,000,000																									
Research identifying and cultivating potential		500,000																									
species																											
Training in hatchery techniques required for cage		100,000																									
culture																											
Conducting fish cage trials		100,000																									
Research into recruitment of mangrove crab, tilapia		100,000																									
farming acceptability and smale-scale feed																											
production								1																			
Feasibility study for Pemba Aquaculture Training		100,000																									
Centre																											
Equipment, supplies, personnel (hiring and		2,000,000																									
training/capacity building)						1																					
Fish farming research and cage trials at Tanga and Kilwa	Total	6,000,000										L		L													
Beach erosion study for mainland Tanzania	Tan-L49																										
Project preparation and mobilisation		200,000																									

	Activity	Budget		Y	ear 1			Yea	ır 2			Yea	r 3			Yea	ır 4			Yea	r 5		Y6	Y7	Y8 3	Y9	Y10
Actions and Activities	ID	USD	Q1	Q2	Q3	Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	Q1	Q2		Q4	10	1,	10		-10
Project management	ענ	200,000	Źī	22	23	27	Q1	Q2	23	Q ²	ζ ₁	22	QJ	QT	Δı	Q2	QJ	Ų∓	Q1	Q2	23	Ų₹					
Study erosion/accretion processes		1,500,000																									
Review, develop, implement/enforce laws		200,000																									
Re-habilitate natural erosion soft barriers		3,000,000																									
Develop/review beach management strategy		500,000																									
Local capacity building		1,000,000																									
Beach erosion study for mainland Tanzani	Total	6,600,000																									
Beach erosion study for Kilwa Kisiwani World	Tan-L50	0,000,000																									
Heritage Site	Tail-L30																										
Project preparation and mobilisation		200,000																									
Project management		200,000																									
Study erosion/accretion processes		500,000																									
Review, develop, implement/enforce laws		200,000																									
Re-habilitate natural erosion soft barriers		1,000,000																									
		, ,																									
Develop/review beach management strategy		500,000				1																		1			
Local capacity building	m . 1	500,000																									
Beach erosion study for Kilwa Kisiwani World Heritage Site	Total	3,100,000																									
Waste oil treatment facility, Tanga, Dar es Salaam and Mtwara harbours	Tan-L51																										
Project preparation and mobilisation		100,000																									
Initial studies, design and engineering,		200,000					_																				
Project management (includes construction		1,000,000																									
management)		1,000,000																									
Site acquisition: Acquisition of building plot,		Na																									
brokers, notaries, taxes.		Na																									
Infrastructure: Access roads, power supply		5,000,000																									
City and a structure: Access roads, power supply																											
Site preparation: Demolishing, ground work, & cables, etc.		1,000,000																									
Construction: civil, mechanical, etc., Contingency.		15,000,000																									
Supplies, personnel (hiring and training/capacity		2,000,000																									
building)	Total	24 200 000		1	1	-																		1			
Waste oil treatment facility, Tanga, Dar es Salaam and Mtwara harbours	Total	24,300,000																									
Turtle and nesting protection Pangani	Tan-L52																										
Project preparation and mobilisation		10,000					\perp															\perp				T	
Study nesting and turtle movement data (1 year)		20,000																									
Review, develop, implement and enforce turtle		120,000																									
nesting protection and awareness programme (3																						1					
years)																						1					
Develop and review Pangani turtle nesting		10,000																									
management strategy (by year 2)																											
Supplies, personnel (hiring and training/capacity		40,000																									
building)																								1			
Turtle and nesting protection Pangani	Total	200,000																									
Urban Planning Bagamoyo	Tan-L53																										
Project preparation and mobilisation		50,000																									
Study Bagamoyo land use data (1 year)		100,000																									

	Activity	Budget		Ye	ear 1			Yea	r 2			Yea	r 3			Yea	ır 4			Yea	r 5		Y6	Y7	Y8	Y9	Y10
Actions and Activities	ID	USD	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4					
Develop and review Bagamoyo Town Land Use		100,000																									
Plan																											
Train local district staff to implement and enforce		100,000																									
the Bagamoyo Town Land Use Plan																											
Supplies, personnel (hiring and training/capacity		50,000																									
building)																											
Urban Planning Bagamoyo	Total	400,000																									
Mangrove rehabilitation Bagamoyo	Tan-L54																										
Project preparation and mobilisation		50,000																									
Study and survey mangrove forest data and		100,000																									
present condition																											
Develop and review a Bagamoyo mangrove forest		100,000																									
management strategy																											
Bagamoyo mangrove forest management strategy		100,000																									
accepted by local stakeholders																											
Rehabilitate degraded mangrove forest areas		100,000																									
Implement and enforce mangrove protection and		50,000																									
awareness programme																											
Supplies, personnel (hiring and training/capacity		50,000																									
building)																											
Mangrove rehabilitation Bagamoyo	Total	550,000																									

Tan-S01 Integrated Coastal Zone Management Framework

1. Background:	The coastal zone in Mainland Tanzania is under development pressure from
1. Dackground.	population growth and economic activities and the area is experiencing a range of encroachment, pollution, and salinization of soils, estuaries and aquifers, degradation of management problems giving rise to increased concern, including ecosystem resources, shoreline erosion and conflicts of interest among stakeholders. Climate change will further aggravate this situation due to sea level rise and more frequent extreme weather.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	There are 16 districts in the coastal zone of mainland Tanzania bordering the Indian Ocean. The population in these districts totalled 6,612,827 people in 2012 or around 15% of the country's total population. The combined area of these districts is 57,534 km² or 6% of the country's total area of 895,753 km². The population density is 150 persons/km² which is more than twice the density for the whole country of 50 persons/km².
2. Title:	Integrated Coastal Management Framework
3. Action Reference:	Tan-S01
4. Justification:	The working group in Dar es Salaam found that in Mainland Tanzania the mitigation of
	 76 out of the 120 identified thematic threats to local coastal communities and ecosystems in Mainland Tanzania corresponding to 63%, and 110 out of the 119 identified district level threats to local coastal communities corresponding to 92 %,
	would benefit from an Integrated Coastal Management Framework providing for better coordination within government and between government and non-government organisations.
	Traditional sector planning falls short in coping with the complex development situation in the coastal areas, which has contributed to unsustainable land uses, and it is recognised that more integrated approaches are required for development management. Such approaches have matured internationally over the past decades and are increasingly embraced by the international community and considered particularly suited to address the challenges of climate change. It is important that integrated management appreciates the need for linking upstream catchment management arrangements with coastal zone management arrangements to address impacts from inland activities on coastal conditions.
5. Objective:	The objectives of the Integrated Coastal Management Framework Action are
	 For a coordinated management of the development in the coastal zone of Mainland Tanzania established and operational at central level and in one (to several) districts. System for updating baseline descriptions of the situation in the coast in place and two structured bi-annual State of the Coast Reports generated
	overall for mainland Tanzania and for the involved districts in support of development planning

		nated development management pro and action planning, aligned with e anning.								
6. Expected	·	Two consecutive ICZM Baselines for Mainland Tanzania (State of the Coast)								
outputs:	• ICZM Policy									
•	ICZM Action Plan for	r Mainland Tanzania								
	• ICZM Coordination Platform at Central and at District level (one to several)									
7. Activities:	a) Project design and appraisal.									
	b) Project tendering	r								
	1) Mobilisation of ICZM	I Platforms								
	2) Establish/update ICZ									
	3) ICZM Policy develop									
	4) ICZM Action Plan pro	eparation								
	5) Capacity Building	-								
8. Assumptions:		zania is committed to engaging in re	eform processes							
_		ted and integrated coastal zone man								
9. Risks:	Non engagement from s and information.	stakeholders and unwillingness to sl	nare experience							
10. Means of	Logistics, technical,	Venues at central and local level	l for regular ICZM							
implementation:	scientific	Platform meetings	U							
		• Secretariats for ICZM Platforms	;							
		Budgets for meetings								
	Budgets for technical assistance									
	Access to information									
	Human Resources • High level participation in ICZM Coordination									
	Platform at decision making level from									
	Government and non-Government stakeholders.									
		 Involvement of technical staff in 	n activities under							
		the ICZM Platforms, i.e. ICZM I	Baseline, ICZM							
		Policy, ICZM Action Plan								
11. Budget	_	w does not provide for participation	_							
estimate:	0 1	ecretariat, which is considered a gov								
	contribution. Nor does the project provide funds for accessing existing information.									
	Item		Estimate in USD							
	Project preparation and		100,000							
		ation of ICZM platforms	300,000							
	First and second update		700,000							
	ICZM Policy developn	nent	200,000							
	ICZM Action Plan		300,000							
	Capacity building Total		400,000							
10 Course of		. /1 1 ,	2,000,000							
12. Source of		nia (budget, participation, meeting p	oremises,							
funding:	secretariat)	(C)								
	Private Sector (participal)	pation)								
	NGOs (participation)									
	. D1	• Development Partners (Technical Assistance budget). AfDB, WB, EU,								
	-	,	-,,,							
10 P "1	Bilateral assistance pro	ogrammes								
13. Responsible	Bilateral assistance pro Strong Government coa	ogrammes stal development stakeholder capab								
13. Responsible for the action:	Bilateral assistance pro	ogrammes stal development stakeholder capab								

	High-level members of the ICZM Coordination Platform from										
	Government Ministries										
14. Beneficiary from the action:	Key beneficiaries will be senior management and technical staff in government institutions at national and local levels that have management responsibilities related to development in the coastal areas. Indirect or long term beneficiaries will be the coastal populations at large that through improved coastal zone management will have bettered their opportunities for socio-economic development without compromising sustainable natural resources and environmental management.										
15. Schedule:	Year 1										
16. Links to other actions:	This action is of importance to all other actions in providing: • A forum for systematic cross sector coordination. Of particular relevance and importance would be links to: • Tan-S04: Information Management • Tan-S06: Awareness Raising • Tan-S07: Integrated Legal Review										
17. Performance indicators:	 Tan-S07: Integrated Legal Review Legislation empowering the ICZM Coordination Platforms Minutes of meetings in the ICZM Coordination Platforms Regular validated Baselines (State of the Coast Reports) Validated ICZM Policy Validated ICZM Plan 										
18. Comments:	Tanzania has a well-established institutional infrastructure with various mandates related to the management of the coastal areas. There is however a pronounced shortage in institutional and human resources and management is therefore falling short in sustainably coping with the development in these areas. Further exacerbating this situation is the traditional sector based management. There is an imposing need for institutional reforms towards proactive coordinated management. This however should be undertaken well aligned to existing institutions.										

Tan-S02 Spatial Planning

1. Background:	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats. The coastal zone in Mainland Tanzania is under development pressure from
	population growth and economic activities and the area is experiencing a range of management problems giving rise to increased concern, including ecosystem encroachment, pollution, and salinization of soils, estuaries and aquifers, degradation of resources, shoreline erosion and conflicts of interest among stakeholders. Climate change will further aggravate this situation due to sea level rise and more frequent extreme weather.
	Physical planning targets the optimization of land uses in support of socio-economic and economic development. It is institutionally embedded with statutory status used for forward land use planning (zoning) and in development control. Physical planning ideally operates in a nested or hierarchical manner at different administrative management levels. Structural planning provides a planning framework spatially expressing policies for overall infrastructure and other sector priorities, regional plans translate these into more detailed infrastructure and land use zoning plans and local area plans provide details for development control.
	An overall spatial development strategy and plan for the coastal areas of Tanzania are therefore important entry points for mainstreaming climate change adaptation measures into national planning. In the context of sea level rise, vulnerability and risk mapping vis-à-vis erosion and inundation become significant themes in spatial analyses. Mainstreamed spatial plans needs to be accompanied by directions and or guidelines for environmental impact assessments for development in vulnerable areas ensuring that climate change mitigation measures are incorporated in plan and project design and implementation.
2. Title:	Integrated Spatial Planning
3. Action Reference:	Tan-S02
4. Justification:	The working group in Dar es Salaam found that in Mainland Tanzania the mitigation of
	 77 out of the 120 identified thematic threats to local coastal communities and ecosystems in Mainland Tanzania corresponding to 64%, and 111 out of the 119 identified district level threats to local coastal communities corresponding to 93 %,
	would benefit from strengthened spatial planning providing for sustainable land use and development control.
	Support has been provided from the World Bank financed MACEMP to the development of District Land Use Frame Work Plans. These efforts provide an opportunity and foundation to further capacitating the spatial planning system and it is imperative to thoroughly align this action to these activities.
5. Objective:	Spatial planning in Tanzania capacitated and coastal spatial plans updated and used in development control.

-										
6. Expected outputs:	• State of the spatial planning in Tanzania generally and in the coastal area in particular.									
outputs.	Spatial development strategy for	r the coastal areas in line wit	h national							
	structure planning									
	Updated regional land use plans for all coastal districts									
	Capacitated spatial planning in Tanzania									
7. Activities:	7 7 0 11									
	b) Project tendering									
	1) Establish/activate inter-sector t		/groups at							
	National and district levels for s	1 0								
	2) Baseline on state of the spatial p3) Spatial planning policy/strateg	8								
	4) Situational analysis for spatial p	•								
	5) Examine development scenario									
	6) Prepare spatial plan for coastal		development							
	scenarios	1 01	1							
	7) Capacity Building									
8. Assumptions:	The Government of Tanzania is cor	nmitted to engaging in conso	lidating the							
	spatial planning in Tanzania									
9. Risks:	Reluctance/unwillingness to pa	irticipate in spatial planning f	rom other							
	government institutions.	-l								
	• Reluctance/unwillingness to ex spatial analysis.	change data and information	required for							
10. Means of	Logistics, technical,	Budgets for meetings	1							
implementation	scientific	Budgets for technical								
:		hemes								
	Human Resources • Spatial planners									
	 IT staff Technical staff from other departments									
		Technical assistance	omer departments							
11. Budget	Item	- Technical applicance	Estimate in USD							
estimate:	Project design and appraisal.		50,000							
	Project tendering		50,000							
	Establish/activate inter-sector tech		50,000							
	/groups at National and district le									
	Baseline on state of the spatial pla	nning in Tanzania	100,000							
	Spatial planning policy/strategy	100,000								
	Situational analysis for spatial pla		1,000,000							
	Examine development scenarios for		1,000,000							
	Prepare spatial plan for coastal Ta	1,000,000								
	development scenarios Capacity Building									
	1) 0									
	Total									
12. Source of		participation, meeting prem								
12. Source of funding:	Government of Tanzania (budget)	, participation, meeting prem	<u> </u>							
		, participation, meeting prem	<u> </u>							
	Government of Tanzania (budget Private Sector (participation)		ises, secretariat)							
	 Government of Tanzania (budget Private Sector (participation) NGOs (participation) 		ises, secretariat)							
	 Government of Tanzania (budget Private Sector (participation) NGOs (participation) Development Partners (Technical 	Assistance budget). AfDB, V	vB, EU, Bilateral							

14. Beneficiary from the action:

Key beneficiaries will be senior management and technical staff in government institutions that have management responsibilities related to development in the coastal areas, in particular spatial planners.

Indirect or long term beneficiaries will be the coastal populations at large that through updated district plans will have a spatial framework informing and directing land uses.

15. Schedule:

	П	Yea	ır 1			Yea	r 2			Yea	ır 3			Yea	ır 4			Yea	r 5	
Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2 (Q3	Q4
Spatial Planning																				
a) Project design and appraisal.																				
b) Project tendering																				
Establish/activate inter-sector technical working committees/groups at National and district levels for spatial planning																				
Baseline on state of the spatial planning in Tanzania																				
3) Spatial planning policy/strategy																				
Situational analysis for spatial planning in coastal Tanzania (overall and district)																				
5) Examine development scenarios for coastal Tanzania (overall and district)																				
Prepare spatial plan for coastal Tanzania pursuing preferred development scenarios (overall and district)																				
Capacity Building		Ì																		

16. Links to other actions:

This action is of importance to all other actions in addressing the need for updated quality information in support of:

- Decision making and planning, locally and overall
- Informed dialogues between stakeholders
- Transparency in decision-making

Of particular relevance and importance would be links to:

- Tan-S01: Integrated Coastal Zone Management Framework
- Tan-S03: Shoreline Management
- Tan-S04: Information Management
- Tan-S06: Awareness Raising

17. Performance indicators:

- State of the land use planning in Tanzania overall
- Spatial Plan Strategy for the Coast of Mainland Tanzania
- Strategy / policy for spatial planning
- Spatial plans
- People trained

18. Comments:

The proposed action offers the resources to follow up on earlier initiatives (MACEMP) to reach a comprehensive district plan level for coastal Tanzania and in the process capacitating the Tanzania planning system. The action is well suited to link closely with Tan-S04: Information Management as the spatial analyses rely heavily on a wide range of updated spatial themes. The action can in this sense be considered a strong case for Tan-S04. The action should also be informed by the policies and strategies emerging from Tan-S03: Shoreline Management.

Tan-S03 Shoreline Management

= = = = = = = = = = = = = = = = = = = =	reline Management
1. Background:	Shoreline erosion and accretion are natural processes shaping coastlines where land meets the sea. Influencing factors include winds, waves, currents, tides, storm and surge conditions, sea level rise, land subsidence and sediment supply from rivers. Anthropogenic interference with underlying processes may significantly alter the rates of accretion or sedimentation. This can be through land use changes in catchments, which may impact on sedimentation processes that play a role in shoreline morphology. It may also alter the hydrological regime which can impact on erosion/accretion patterns along the sea adjacent to estuaries. Interference with the shoreline itself by infrastructure and other development can also influence erosion and accretion long distances along the coast.
	The dynamic interface between land and sea will move landwards with sea level rise emphasising the demand for specialised studies and planning to develop policies and strategies for land uses along the shoreline to feed into spatial planning.
	To determine appropriate management responses to erosion requires an analysis of actual and potential shoreline erosion against planned and existing development activities at the coast. It is recommended to undertake a systematic shoreline management planning process in Tanzania to produce appropriate policies and strategies for adaptation to coastal erosion.
2. Title:	Shoreline Management Policy Framework
3. Action	Tan-S03
Reference:	
4. Justification:	The working group in Dar es Salaam found that in Mainland Tanzania the mitigation of
	• 53 out of the 120 identified thematic threats to local coastal communities and ecosystems in Mainland Tanzania corresponding to 44%, and
	• 87 out of the 119 identified district level threats to local coastal communities corresponding to 33 %,
	would benefit from shoreline management interventions.
	A systematic assessment of the shorelines of Tanzania to determine vulnerabilities related to erosion and inundation is a matter of urgency to develop local policies that can be incorporated/mainstreamed into development planning and at the same time consider impacts of climate variability and change.
5. Objective:	Spatial planning informed by policies for shoreline management
6. Expected	Shoreline Management Plan for Tanzania
outputs:	Policies for inclusion and consideration in regional planning
	Institutions and staff capacitated within shoreline management
7. Activities:	 a) Project design and appraisal. b) Project tendering 1. Map and describe sediment cells and sub-cells along the coastline as basis for determining boundaries for Shoreline Management Planning areas. 2. Identify vulnerable areas for detailed shoreline management planning. 3. Vulnerability assessment through Shoreline Management Study and Plan. 4. Identify and quantify erosion/accretion along the coast and translate into management policies and strategies taking projected sea level rise into account. 5. Mainstream shoreline management planning into land use/local planning. 6. Capacity building

8. Assumptions:	The Government of Zanz	ibar is committed to engaging in sho	oreline management								
	planning										
9. Risks:	Reluctance/unwillingnes	s to participate in spatial planning f	rom other								
	government institutions.	Reluctance/unwillingness to excha	nge data and								
	information required for s	information required for shoreline management. Non adherence to shoreline									
	management policies.										
10. Means of	Logistics, technical,	Satellite imageries, Wave and current data,									
implementation:	lementation: scientific geomorphology of coast, river disc										
		meteorological data, numerical me	odelling, field								
	Human Resources	Access to technical staff within the	C								
		numerical modelling, GIS, hydrole	ogist, hydro								
		morphologist, coastal engineering	•								
11. Budget	Item		Estimate in USD								
estimate:	a) Project design and ap	praisal	50,000								
	b) Project mobilisation		50,000								
	1) Map and describe se	diment cells and sub-cells along	300,000								
	the coastline as basis for	determining boundaries for									
	Shoreline Management										
	2) Identify vulnerable ar	eas for detailed shoreline	200,000								
	management planning.										
	3.) Vulnerability assessn	nent through Shoreline	400,000								
	Management Study and										
		erosion/accretion along the coast	400,000								
		gement policies and strategies									
	taking projected sea leve										
		e management planning into land	200,000								
	use/local planning.										
	6) Capacity building		400,000								
	Total		2,000,000								
12. Source of		nia (budget, participation, informat	ion, meeting and								
funding:	working premises)										
	Private Sector (particing)	pation)									
	NGOs (participation)										
	-	s (Technical Assistance budget). AfI	OB, WB, EU,								
	Bilateral assistance pr										
13. Responsible	O	epartment capable of effectively coo	- C								
for the action:	1	ents with stakes or mandates, exper	rience and technical								
	capacity related to sho										
14. Beneficiary	II =	senior management and technical st	_								
from the action:		d local levels that have managemen	it responsibilities								
	related to shoreline land uses.										
	Key beneficiaries will be 1	oarties with interest in shoreline dev	velopment being								
	directed through explicit		1 0								
		1	ions at laws that								
	_	eficiaries will be the coastal population management will be us bettered	_								
		ine management will have bettered									
	access to the sea.	nd benefitting from associated servi	ces and genning								
	access to the sed.										

15. Schedule:			Yea	ar 1			Yea	ır 2	2		Yea	r 3			Yea	ar 4			Yea	ır 5	
	Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Shoreline Management	$oxed{oxed}$	<u> </u>			ļ															
	a) Project design and appraisal.		1			ļ							ļ	ļ				ļ	ļ		
	b) Project tendering 1) Map and describe sediment cells and		ļ																ļ		
	sub-cells along the coastline as basis																				
	for determining boundaries for Shoreline																				
	Management Planning areas and																				
	2) Identify vulnerable areas for detailed																				
	shoreline management planning.	ļ	ļ	ļ		ļ								_		1		ļ			
	Vulnerability assessment through Shoreline Management Study and Plan.																				
	4) Identify and quantify					ļ					\neg										
	erosion/accretion along the coast and																				
	translate into management policies and																				
	strategies taking projected sea level rise into account.																				
	5) Mainstream shoreline management	ļ												$\overline{}$				П			
	planning into land use/local planning.																				
	6) Capacity building																				
.6. Links to other actions:	This action is of importance updated quality information. Decision making and plae Informed dialogues between	n i nn	in s ing	sup g al	pc on	rt g t	of: he	sh					SS1	ng	tn	e n	ee	a r	or		
	• Transparency in decision																				
	Of particular relevance and importance would be links to:																				
	• Tan-S01: Integrated Coastal Zone Management Framework																				
	• Tan-S02: Spatial Planning																				
	• Tan-S04: Information Management																				
	• Tan-S06: Awareness Rais	inį	5																		
7. Performance	• Shoreline management p	lar	า																		
ndicators:	Policies and regulations f			ore	lir	ıe ı	1se	S													
	Regional spatial plans	_				•		-													
8. Comments:																					
o. Comments.	The action is well suited to link closely with Tan-S04: Information Management																				
	as the shoreline analyses rely heavily on a wide range of updated spatial themes.																				
	The action can in this sense									_					ın-	504	4.	The	e a	ctio	on
	should also inform and fee	d i	ntc	Ta	an-	S0	2: 5	Spa	atia	al F	'laı	nni	ing	5.							

Tan-S04 Information Management

1. Background:

The coastal zone in Mainland Tanzania is under development pressure from population growth and economic activities and the area is experiencing a range of management problems giving rise to increased concern, including ecosystem encroachment, pollution, and salinization of soils, estuaries and aquifers, degradation of resources, shoreline erosion and conflicts of interest among stakeholders. Climate change will further aggravate this situation due to sea level rise and more frequent extreme weather.

The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.

Spatial data from various sources have been compiled and used to build the Geographical Information System (GIS) supporting the prioritisation study. In this process it has become apparent that although many GIS providers and consumers exist in Tanzania and Zanzibar, a shared and structured directory for accessing geographical information is lacking both in Zanzibar and Tanzania. The lack of such a system leads to inefficient use of data and resources, causes ambiguous use of information sources in management and clouds for a thorough understanding of the current information baseline.

At the moment there are no clear responsibilities on marine and coastal data collection. Each institution collects and uses spatial data that is useful for a particular activity, after which the data is summarised in thematic reports and the raw data is kept by the principal investigator or lost when he/she is moved to another department. A systematic archive of spatial data is required to make available historical and recent data on one side and to minimise duplication of efforts in the collection of new information. GIS for the marine environment is now expanding and there are national plans to harmonise institutions in the collection and sharing of data.

2. Title:

3. Action Reference:

Information System as Decision Support for Coastal Development Management

Tan-S04

4. Justification: Development management decisions in complex settings such as is the case in Tanzania's coastal zone need to be based on a solid information base that enables analyses across many dimensions, including socioeconomic, economic, natural resources, land uses, and climate. Measures to mitigate threats to local communities and ecosystems must be defined based on analyses spanning these dimensions. An overarching and crucial mitigation measure is therefore to ensure that a solid information base is continually available as decision support for planning, that systematic monitoring is carried out to maintain the information base updated and that mechanisms are in place that ensures shared access to information and systematic dissemination of information on the management situation through state reporting. Whereas considerable information may be available from numerous government as well as non-government sources, some is not up-to-date, is incomplete in geographical coverage and is not readily interchanged between information suppliers. Much information is produced as part of studies thus representing one-off focused data acquisition efforts, where data may escape integration into government information management systems. In order to effectively address climate change-related impacts to the shoreline, local communities and natural habitats and species, the integration of accurate and well-coordinated data management is critical. 5. Objective: Shared information management system operational and supporting decision making and planning. 6. Expected • Inter sector technical committee or working group charged with supporting outputs: information management • Baseline on current information management identifying information sources and information uses • Information needs analysis related to existing mandates • Strategy for coastal data infrastructure development aligned with national data infrastructure initiatives • Shared meta data base for coastal data management Development and/update of base themes • Consolidated coastal information system 7. Activities: a) Project design and appraisal. b) Project tendering 1) Establishment of technical committee or working group composed of key users and providers of information for coastal development management 2) Information needs assessment for coastal development management 3) Strategy development 4) Meta database development based on needs for coastal development management and including fields defining means for data exchange 5) Consolidating Data 6) Capacity Building. 8. Assumptions: The Government of Tanzania is committed to engaging in reform processes towards more coordinated and integrated coastal zone management. 9. Risks: Institutional unwillingness to exchange information. Corruption. 10. Means of Logistics, technical, • Venues and budgets for meetings in technical implementation: scientific working group • Budgets for technical assistance • Sharing of information resources • IT infrastructure elements and software

	Human Resources	Participation in technical com	mittee and/or								
	working group from key users and providers of										
		information systems	1								
		and providers of									
		information systems in activit	*								
		• Technical assistance	iles under this action								
44 D 1 4		Technical assistance	T								
11. Budget	Item		Estimate in USD								
estimate:	a) Project design and appr	aisal	50,000								
	b) Project mobilisation		50,000								
	1) Establishment of technic	cal committee	300,000								
	2) Information needs asses	sment	200,000								
	3) Strategy development		400,000								
	4) Meta database developr	ment	400,000								
	5) Updating/consolidating	z shareu uatabase	200,000								
	6) Capacity building		400,000								
	Total		2,000,000								
12. Source of	Government of Tanzania (b	oudget, participation, meeting pre	emises, secretariat)								
funding:	Private IT Sector (participat	ion)									
	Development Partners (Tecl	hnical Assistance budget). AfDB,	WB, EU, Bilateral								
	assistance programmes	0 ,									
13. Responsible		development stakeholder capabl	e of effectively								
for the action:		forts required for sharing experti									
	resources	9h									
	Key users and providers of	information systems									
14. Beneficiary	Key beneficiaries will be:	mornadon systems.									
from the action:	Rey beneficiaries will be.										
moni the action.	decision makers related to	o coastal development to planning	g								
	• users and producers of in										
	Private sector engaged in										
	• Schools	marinimon generamen									
	• Universities										
	Public at large										
		nior management and technical st									
		local levels that have managemen	nt responsibilities								
	related to development in the	he coastal areas.									
	Indirect or long term benefi	ciaries will be the coastal populat	tions at large that								
	© .	one management will have better	O								
		nomic development without comples and environmental manageme									
15. Schedule:	sustamable natural resource										
15. Schedule:	0.41	I I	Year 4								
	Actions and Activities Information Management	Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q	(2 Q3 Q4 Q1 Q2 Q3 Q4								
	a) Project design and appraisal										
	b) Project mobilisation										
	1) Establishment of technical comm	nittee									
	Information needs assessment										
	3) Strategy development										
	4) Meta database development										
	5) Updating/consolidating shared										
	database										
	6) Capacity building										
16. Links to	_	to all other actions in addressing	the need for								
other actions:	updated quality information	n in support of:									
	 Decision making and plan 	nning, locally and overall									
	• Informed dialogues between	een stakeholders									

	Transparency in decision-making
	Of particular relevance and importance would be links to:
	Tan-S01: Integrated Coastal Zone Management Framework
	• Tan-S02: Spatial Planning
	Tan-S03: Shoreline Management
	Tan-S05: Education in Primary and Secondary Schools
	• Tan-S06: Awareness Raising
17. Performance	Updated Metadata from Information management system
indicators:	
18. Comments:	

Tan-S05 Education in Primary and Secondary Schools

	j j							
1. Background:	The coastal zone in Mainland Tanzania is under development pressure from population growth and economic activities and the area is experiencing a range of management problems giving rise to increased concern, including ecosystem encroachment, pollution, and salinization of soils, estuaries and aquifers, degradation of resources, shoreline erosion and conflicts of interest among stakeholders. Climate change will further aggravate this situation due to sea level rise and more frequent extreme weather.							
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.							
2. Title:	For the long term sustainable management and use of coastal areas it is important that the coming generations have an adequate understanding of the issues arising when development imposes pressure on these complex and highly dynamic ecosystems. Hence curricula for primary and secondary education should be reviewed and consolidated to ensure that the development of such an understanding is supported among students. Primary and Secondary Education							
3. Action Reference:	Tan-S05							
4. Justification:	The working group in Dar es Salaam found that in Mainland Tanzania the mitigation of							
	• 75 out of the 120 identified thematic threats to local coastal communities and ecosystems in Mainland Tanzania corresponding to 63%, and							
	• 109 out of the 119 identified district level threats to local coastal communities corresponding to 92 %,							
	would benefit from interaction with education in primary and secondary schools.							
	The working group in these discussion highlighted issues related to							
	Sustainable fisheries and fisheries ecology.							
	 Importance of environmentally sound industrial production Sustainable development in areas under high demographic and economic 							
	development pressure (coastal areas, urban areas).Importance of coasts and coastal habitats and resources.							
	Importance of beaches.							
	Pollution, environment, health.							
	Waste minimisation and recycling.							
	Coastal forest ecology Coastal forest management:							
	Coastal forest management;Hydrologic cycle							
	Importance of disease vector control.							
	Complex requirements in coastal areas (high population and economic							
	pressure).							
	Sustainable development.							
	Spatial planning to service Population requirements.							
	Importance of environmentally sound agriculture production.							

5. Objective:	Education in primary and seconds	ury schools aligned to	dovolon a holistic								
3. Objective.	Education in primary and secondary schools aligned to develop a holist understanding among students of the requirement to sustainable manage th										
	coastal zones of Tanzania										
6. Expected	Needs assessment for coastal dimension in education										
outputs:	A review current curricula for primary and secondary education										
•	Revised curricula incorporating co	-									
	Teaching material for the revised of the revis										
	Trained teachers in schools involv		ting								
	Evaluation of test										
	Programme expansion										
7. Activities:	a) Project design and appraisal.										
	b) Project tendering										
	1. Establish coordination platform be	etween Ministry of Educa	ation and to								
	participate in action	,									
	2. Needs assessment										
	3. Review of existing curricula and i	ts use									
	4. Develop revised curricula incorpo	rating coastal issues									
	5. Develop teaching material										
	6. Train teachers										
	7. Test revised curricula in testing schools										
	8. Evaluate test										
	9. Capacity building										
0. 4.	10. Expansion of programme										
8. Assumptions:	Government of Tanzania willing to revise curriculum for primary and secondary schools to better incorporate a holistic understanding of coastal development										
	I .	stic understanding of co	astai development								
9. Risks:	Schools not willing to engage in deve	loning and tacting parties	d annianta								
9. KISKS.	Schools not winnig to engage in deve	Toping and testing revise	cu curricula								
10. Means of	Logistics, technical,	 Budgets for meeting 									
implementation:	scientific	Budgets for technic									
		Access to curricula	a and schools								
	Human Resources	Staff from Ministry									
		• Staff from schools									
		Technical assistance	ce								
11. Budget	Item		Estimate in USD								
estimate:	a) Project design and appraisal		50,000								
	b) Project mobilisation		50,000								
	1) Establish coordination platform b	5	50,000								
	Education and schools to participate	e in action	F 0.000								
	2) Needs assessment		50,000								
	3) Review of existing curricula and		50,000								
	4) Develop revised curricula incorpo	orating coastal issues	100,000								
	5) Develop teaching material		200,000								
	6) Train teachers	-11.	200,000								
	7) Test revised curricula in testing so	400,000									
	8) Evaluate test	50,000									
	9) Capacity building	500,000									
	10) Expansion of programme	100,000									
10.0	Total		1,800,000								
12. Source of	Government of Tanzania (budget,	participation, meeting p	remises,								
funding:	secretariat)	Assistance level - 1 ACD	D TATO TELL								
	Development Partners (Technical Bilatoral assistance programmes)	Assistance budget). AID	D, WD, EU,								
	Bilateral assistance programmes										

13. Responsible	Ministry of Education in Tanzania																				
for the action:	Schools participating in	de	vel	lop	ing	g a	nd	tes	stiı	ng	cu	rri	cul	a							
14. Beneficiary	Ministry of Education Took are and staff in primary and accordance also also																				
from the action:	Teachers and staff in primary and secondary schools																				
	Students in Primary and Secondary Schools																				
	The population at large.																				
15. Schedule:	Year 1 Year 2 Year 3 Year 4 Year 5										\neg										
	Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Eduaction in Primary and Secondary																				
	a) Project design and appraisal																				
	b) Project mobilisation																				
	1) Establish coordination platform																				
	between Ministry of Education and																				
	schools to participate in action	ļ	ļ					ļ			ļ	ļ	ļ	ļ			ļ	ļ			
	2) Needs assessment					ļ				ļ	ļ	ļ	ļ	ļ	ļ		ļ	ļ			
	3) Review of existing curricula and its	ļ				ļ	ļ			Щ	-	ļ	ļ	ļ	<u> </u>		ļ	ļ			
	Develop revised curricula incorporating coastal issues																				
	5) Develop teaching material	T																l			
	6) Train teachers																				
	7) Test revised curricula in testing schools																				
	8) Evaluate test	Ī											П					1			
	9) Capacity building	ļ																			
	10) Expansion of programme																				
16. Links to	Of particular relevance and	l ir	npo	orta	ano	ce '	wo	ulo	d b	e 1	inŀ	ks t	o:								
other actions:	• Tan-S04: Information Ma	na	ger	nei	nt																
	• Tan-S06: Awareness Rais		0																		
17. Performance	Revised Curricula covering	cc	oas	tal	iss	ue	es														·
indicators:	Schools testing revised curr																				
18. Comments:																					

Tan-S06 Awareness Raising

Tail-500 AW	ateliess Kaisling
1. Background:	The coastal zone in Mainland Tanzania is under development pressure from population growth and economic activities and the area is experiencing a range of management problems giving rise to increased concern, including ecosystem encroachment, pollution, and salinization of soils, estuaries and aquifers, degradation of resources, shoreline erosion and conflicts of interest among stakeholders. Climate change will further aggravate this situation due to sea level rise and more frequent extreme weather.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	An important factor in unsustainable practises among stakeholders in complex and rapidly developing environments is a lack of understanding of the long term consequences of such practises on communities, environment and ecosystems. A key element in development management is therefore to ensure that all stakeholders groups are continuously informed.
2. Title:	Overall Awareness Raising Strategy and Action
3. Action Reference:	Tan-S06
4. Justification:	The working group in Dar es Salaam found that in Mainland Tanzania the mitigation of
	• 93 out of the 120 identified thematic threats to local coastal communities and ecosystems in Mainland Tanzania corresponding to 78%, and
	• 116 out of the 119 identified district level threats to local coastal communities corresponding to 97 %,
	calls for increased awareness concerning coastal issues, in particular vulnerability and complexity of coastal systems facing development pressure and impacts from climate change.
	The working group in these discussion for each threat assessed and outlined target for awareness raising activities and subject areas as comprehensively tabulated in Volume IV of the coastal profile. A comprehensive and very diverse list of targets for awareness raising emerges from these tables while also identifying a wide range of areas where awareness needs to be raised, least of which is issues associated with climate change. There is a requirement to develop and implement a comprehensive awareness raising effort.
5. Objective:	Shared understanding and awareness among coastal stakeholders about issues emerging from development pressure on coastal communities and ecosystems.
6. Expected	Stakeholder/Target Group Identification and Profile
outputs:	Awareness Raising Strategy and Programme
	Trained Staff (Public Relation in key departments)
	Informed/"trained" press
	Awareness Raising Campaigns
	Impact evaluations
	Aware stakeholders
7. Activities:	a) Project design and appraisal.
	b) Project tendering1) Stakeholder identification and profiling (targets for awareness)2) Stakeholder Assessment

stakeholders for more qualified development management	mme mme implementation	articipation in coastal
5) Training of press 6) Training of key staff 7) Awareness raising program 8) Impact evaluation among 9) Capacity building 8. Assumptions: Government of Tanzania stakeholders for more qualified development management 9. Risks: Political pressure/interference 10. Means of implementation: Logistics, technical, scientific	mme implementation target groups committed to empower control dialogue, involvement and particle to influence messages or mess • Audio-visuals • Media • Press • Roadshow • Internet •	articipation in coastal
6) Training of key staff 7) Awareness raising program 8) Impact evaluation among 9) Capacity building 8. Assumptions: Government of Tanzania stakeholders for more qualified development management 9. Risks: Political pressure/interference 10. Means of implementation: Logistics, technical, scientific	committed to empower control dialogue, involvement and particle to influence messages or messes. • Audio-visuals • Media • Press • Roadshow • Internet •	articipation in coastal
6) Training of key staff 7) Awareness raising program 8) Impact evaluation among 9) Capacity building 8. Assumptions: Government of Tanzania stakeholders for more qualified development management 9. Risks: Political pressure/interference 10. Means of implementation: Logistics, technical, scientific	committed to empower control dialogue, involvement and particle to influence messages or messes. • Audio-visuals • Media • Press • Roadshow • Internet •	articipation in coastal
8) Impact evaluation among 9) Capacity building 8. Assumptions: Government of Tanzania stakeholders for more qualified development management 9. Risks: Political pressure/interference 10. Means of implementation:	committed to empower control dialogue, involvement and particle to influence messages or messes. • Audio-visuals • Media • Press • Roadshow • Internet •	articipation in coastal
8) Impact evaluation among 9) Capacity building 8. Assumptions: Government of Tanzania stakeholders for more qualified development management 9. Risks: Political pressure/interference 10. Means of implementation: Logistics, technical, scientific	committed to empower control dialogue, involvement and particle to influence messages or messes. • Audio-visuals • Media • Press • Roadshow • Internet •	articipation in coastal
8. Assumptions: Government of Tanzania stakeholders for more qualifie development management 9. Risks: Political pressure/interference 10. Means of implementation:	e to influence messages or mess • Audio-visuals • Media • Press • Roadshow • Internet •	articipation in coastal
stakeholders for more qualified development management 9. Risks: Political pressure/interference Logistics, technical, scientificing implementation:	e to influence messages or mess • Audio-visuals • Media • Press • Roadshow • Internet •	articipation in coastal
development management 9. Risks: Political pressure/interference 10. Means of implementation: Logistics, technical, scientific	 e to influence messages or mess Audio-visuals Media Press Roadshow Internet 	
9. Risks: Political pressure/interference 10. Means of implementation: Logistics, technical, scientific	Audio-visualsMediaPressRoadshowInternet	sage delivery
10. Means of implementation: Logistics, technical, scientific	Audio-visualsMediaPressRoadshowInternet	sage delivery
implementation:	MediaPressRoadshowInternet	
	PressRoadshowInternet	
Human Resources	RoadshowInternet	
Human Resources	• Internet •	
Human Resources	•	
Human Resources		
Human Resources	• Public relations staff in gov	
		vernment
	departments Awareness ra	ising specialist
I I	Communication specialists	,
	• IT Specialist (internet etc)	
	Journalists and other media	a professionals
	• NGOs with awareness rais	=
	linked to coastal issues	-
	• Technical Assistance	
11. Budget Item	·	Estimate in USD
estimate: a) Project design and apprais	sal.	50,000
b) Project tendering		50,000
1) Establish coordination pla	ntform between for action	50,000
2) Stakeholder identification		50,000
awareness)	1 0 0	
3) Stakeholder Assessment		50,000
4) Awareness raising strateg	y	50,000
5) Awareness raising program	-	50,000
6) Training of press		100,000
7) Training of key staff		300,000
8) Awareness raising program	mme implementation	1,000,000
9) Impact evaluation among	-	200,000
10) Capacity building		500,000
Total		2,450,000
12. Source of • Government of Tanzania (bu	udget, participation, meeting p	
funding: • Press and media (participati		,
	nnical Assistance budget). AfDl	B, WB, EU, Bilateral
assistance programmes	<i>G</i> ,	
10 Paragraphs Community Institute in	1	
_	th stakes or mandates, experien	
for the action: capacity related to coastal dev	velopment planning and manag	gement
14. Beneficiary • Government and non-gover	rnment organisations increasing	g competence in
from the action: addressing coastal developm		. I
	engaging in dialogues with a m	nore qualified public
and private stakeholders	0 0 0 0 4 4	1 F
<u> </u>	to getting more involved and p	articipate in coastal
management activities	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	1

	Actions and Activities	IQ1																		
	Education in Primary and Secondar	У	<u> </u>	43 Q4	· įųı	Ų2	Ų3	Q4	Q1	Ų2	ŲS	Ų4	ĮŲ.	Ų2	Ųs	Ų4	ĮŲΙ	Ų2	Ųз	Q4
	School Awareness Raising	s																		
	a) Project design and appraisal.													ļ	ļ					
	b) Project tendering 1) Establish coordination platform between for action																			
	Stakeholder identification and profiling (targets for awareness)																			
	Stakeholder Assessment Awareness raising strategy Awareness raising programme																			
	6) Training of press 7) Training of key staff																			
	8) Awareness raising programme implementation 9) Impact evaluation among target																			
	groups 10) Capacity building										_		_	_	_					
16. Links to	This action is of importance to all other actions in providing:																			
other actions:	 • More aware stakeholders of the issues in coastal development management 																			
	Of particular relevance and importance would be links to:																			
	Tan-S04: Information ManagementTan-S05: Education in Primary and Secondary Schools																			
	Links to all actions desirable as these may be suppliers of relevant case and experience material in support of awareness raising																			
17. Performance	Awareness raising mater	_								<u> </u>										
indicators:	• Press material																			
	Records of campaignsImpact surveys																			
	• Trained staff																			
18. Comments:																				

Tan-S07 Integrated Legal Review

1. Background:	The coastal zone in Mainland Tanzania is under development pressure from population growth and economic activities and the area is experiencing a range of management problems giving rise to increased concern, including ecosystem encroachment, pollution, and salinization of soils, estuaries and aquifers, degradation of resources, shoreline erosion and conflicts of interest among stakeholders. Climate change will further aggravate this situation due to sea level rise and more frequent extreme weather.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
2. Title:	Integrated Review of Legal Framework for Coastal Development Management
3. Action	Tan-S07
Reference:	
4. Justification:	The working group in Dar es Salaam found that in Mainland Tanzania the mitigation of
	• 55 out of the 120 identified thematic threats to local coastal communities and ecosystems in Mainland Tanzania corresponding to 46%, and
	• 37 out of the 119 identified district level threats to local coastal communities corresponding to 31 %,
	called for review of legal provisions. The work group further found that the mitigation of
	• 91 out of the 120 identified thematic threats to local coastal communities and ecosystems in Mainland Tanzania corresponding to 76%, and
	• 117 out of the 119 identified district level threats to local coastal communities corresponding to 98 %,
	required intervention related to enforcement.
5. Objective:	Harmonised legal framework for sustainable coastal management
	Strengthened enforcement of laws and regulations
6. Expected	Institutional and legal baseline
outputs:	Reform strategy and action plan
-	Draft revision to legal integrated legal framework
7. Activities:	a) Project design and appraisal
	b) Project mobilisation
	1) Establish coordination platform for action
	2) Institutional and Legal Baseline
	3) Participatory assessment
	4) Reform Strategy
	5) Action Plan
	6) Reform preparation
	7) Capacity Building
8. Assumptions:	The Government of Tanzania is committed to engaging in reform processes
F	towards more coordinated and integrated coastal zone management.
9. Risks:	Institutional resistance to legal reform

10. Means of implementation:	Logistics, technical, scientific Human Resources	 Venues and budgets for regular coordination meetings Budgets for technical assistance Access to legal texts Legal specialists Legal and enforcement staff from relevant departments Private legal sector Technical assistance 						
11. Budget	Item		Estimate in USD					
estimate:	a) Project design and appraisal		50,000					
	b) Project mobilisation		50,000					
	1) Establish coordination platform	for action	50,000					
	2) Institutional and Legal Baseline		100,000					
	3) Participatory assessment		200,000					
	4) Reform Strategy		50,000					
	5) Action Plan		50,000					
	6) Reform preparation		500,000					
	7) Capacity Building		200,000					
	Total		1,250,000					
12. Source of	10001	mauticination masting mu						
funding:	Government of Tanzania (budget, Development Partners (Tanksis)		,					
rununig.	• Development Partners (Technical	Assistance budget). AIDb	, WD, EU, bilateral					
13. Responsible	assistance programmesLaw Reform Commission of Tanz							
for the action: 14. Beneficiary from the action:	 Legal officers government institution with mandates and legal instruments related to coastal development management and control Private Legal Sector and Legal NGOs Government institutions gaining access to harmonised legal framework as basis for more effective enforcement 							
15. Schedule:		ear 2 Year 3 Year 4	Year 5 Y6 Y7 Y8 Y9 Y10					
	Awareness Raising Integrated Legal Review a) Project design and appraisal b) Project mobilisation 1) Establish coordination platform for action 2) Institutionaland Legal Baseline 3) Partcipatory assessment 4) Reform Strategy 5) Action Plan 6) Reform preparation 5) Capacity Building	2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1						
16. Links to other actions:	 Tan-S01: Integrated Coastal Zone Tan-S04: Information Managemen Tan-S06: Awareness Raising 	nt						
17. Performance	Minutes of meeting in coordination	-						
indicators:	Proceedings from workshops andInstitutional and legal baseline	validation meetings						
10.0	Reform strategy and action plan							
18. Comments:								

Tan-S08 Support for the NEMC

1. Background:

The coastal zone in Mainland Tanzania is under development pressure from population growth and economic activities and the area is experiencing a range of management problems giving rise to increased concern, including ecosystem encroachment, pollution, and salinization of soils, estuaries and aquifers, degradation of resources, shoreline erosion and conflicts of interest among stakeholders. The latter is particularly relevant with respect to developers and vested interested from diverse parties (including local businesses, institutions, lenders and financial institutions, and development partners).

The National Environment Management Council (NEMC) is the national institution responsible for overseeing the integrity of Tanzanian's environment for sustainable development. The principle piece of legislation that embraces most development activities in the coastal zone is the Environmental Management Act (EMA) 2004. This Act provides a legal and institutional framework for the sustainable management of the environment. All project activities, especially oil and gas exploration, mining projects, ports and harbours must be planned and comply with its relevant provisions, particularly the need to undertake an environmental and social impact assessment (ESIA) depending on the type of activity and scale. The implementation of the EMA 2004 is the responsibility of the NEMC, under the Division of Environment.

The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.

2. Title:

Support for the National Environment Management Council (NEMC)

3. Action Reference:

Tan-S08

4. Justification:

The working group in Dar es Salaam found that in Mainland Tanzania the threats to livelihoods and the environment from impacts from hydrocarbon development, from failure of exploration companies to adhere to environmental and socio-economic safeguards, partly due to weakness in the oversight provided by the NEMC is responsible for issuing licences and monitoring the operations that have been subjected to EIAs, were ranked as very important. Similarly, small-scale mining projects involving reclamation of land requires environmental impact assessments, the NEMC are supposed to approve a project, however, some farmers begin construction prior to receiving permission.

The lack of capacity at the NEMC to follow up, enforce and resolve development issues is seen as the main weakness which would significantly benefit from support, training, and expansion in staff, facilities and expertise.

The working group in Dar es Salaam found that in Mainland Tanzania the mitigation of

- 77 out of the 120 identified thematic threats to local coastal communities and ecosystems in Mainland Tanzania corresponding to 64%, and
- 111 out of the 119 identified district level threats to local coastal communities corresponding to 93 %,

would benefit from an Integrated Coastal Management Framework providing for better coordination within government and between government and non-government organisations. In addition, as seen above,

- 53 out of the 120 identified thematic threats to local coastal communities and ecosystems in Mainland Tanzania corresponding to 44%, and
- 87 out of the 119 identified district level threats to local coastal communities corresponding to 33 %,

would benefit from shoreline management interventions. Furthermore, at the district level,

	91 out of the 120 identified ther in Mainland Tanzania correspo	natic threats to local coastal communities and ecosystems nding to 76%, and								
	• 117 out of the 119 identified district level threats to local coastal communities corresponding to 98 %,									
	required intervention related to enforcement.									
	the capacity of the national regulat	e discussion recognised the need to support and help strengthen regulator of development, the NEMC, whose mandate addresses view and enforcement of findings of environmental and social								
5. Objective:	Capacity of the national regulator of development (NEMC) in Tanzania strengthened, particularly with respect to coastal developments such as oil and gas, mining, salt productions and port development.									
6. Expected outputs:	 NEMC staff capacitated within management of coastal development projects, particular oil and gas exploration and development, ports and harbours and coastal mining. Regional offices of NEMC strengthened. 									
	 NEMC institution strengthened to enable effective management of coastal development projects. Development planning in the coastal areas in line with national structure planning and able to withstand vested interest pressures 									
7. Activities:	 a) Project design and appraisal b) Project mobilisation 1) Establish coordination platform for action 2) Stakeholder identification and profiling (targets for awareness) 3) Awareness raising strategy 4) Awareness raising programme 5) Training of key staff and relevant stakeholder on target areas 6) Impact evaluation among target groups 									
8. Assumptions:	7) Capacity building The Government of Tanzania is committed to engaging in reform processes towards more coordinated and integrated coastal zone management, which includes strengthening of the principle national regulator (NEMC)									
9. Risks:	Institutional resistance to reform in	capacity building								
10. Means of implementation:	Logistics, technical, scientific	 Venues and budgets for regular coordination meetings, at NEMC HQ (in Dar es Salaam) and regional (coastal) offices Budgets for technical assistance Access to information 								
	Human Resources	 High level participation at decision making level from Government and non-Government stakeholders. Legal and enforcement staff from relevant departments Involvement of technical staff on activities of special focus 								

11. Budget		
estimate:	Time	Estimate in LICD
	Item	Estimate in USD
	a) Project design and appraisal	50,000
	b) Project mobilisation	50,000
	1) Establish coordination platform for action	50,000
	2) Stakeholder identification/profiling (targets for awareness)	100,000
	3) Awareness raising strategy	200,000
	4) Awareness raising programme	50,000
	5) Training of key staff and relevant stakeholder on target areas	200,000
	6) Impact evaluation among target groups	500,000
	7) Capacity Building	500,000
	Total	1,700,000
12. Source of	Consumer at of Taganair (but don't neutrinization months a greening	
funding:	Government of Tanzania (budget, participation, meeting premises Development Partners (Tankaisel Assistance Institute of Assistance Institute of Assistance Institute of Institute	·
runung.	Development Partners (Technical Assistance budget). AfDB, WB,	EU, Bilateral assistance
12 Dagmanaihla	programmes	1 - 1 - 1 - 1 1
13. Responsible for the action:	Government departments with stakes or mandates, experience and	technical capacity
for the action:	related to coastal development planning and management	
14. Beneficiary	NEMC increasing competence in addressing coastal development	1991109
from the action:	Government organisations engaging in dialogues with a more quality of the control of the co	
monitude decidin	private stakeholders	annea public and
	Public at large empowered to getting more involved and participations.	ato in coastal
	management activities	ite iii Coastai
15. Schedule:	Year 1 Year 2 Year 3 Year 4	Year 5 Y6 Y7 Y8 Y9 Y10
15. Schedule.		
	Actions and Activities Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3	Q4 Q1 Q2 Q3 Q4
	Support for the NEMC	
	a) Project design and appraisal	
	b) Project mobilisation 1) Establish coordination platform for action	
	2) Stakeholder identification/profiling (targets	
	for awareness)	
	3) Awareness raising strategy 4) Awareness raising programme	
	5) Training of key staff and relevant stakeholder	
	on target areas	
	6) Impact evaluation among target groups 7) Capacity Building	
	7) Capacity building	
16. Links to	This action is of importance to all other actions in providing:	
other actions:		
	More aware high level management of coastal development	
	Of particular relevance and importance would be links to:	
	Tan-S01: Integrated Coastal Zone Management Framework	
	Tan-S04: Information Management	
	• Tan-S06: Awareness Raising	
	Tan-S09: Support for Tourism Management Planning	
17. Performance		
indicators:	• Minutes of meeting in coordination platform for action	
marcators.	Proceedings from training and evaluations among target groups	
18. Comments:		

Tan-S09 Support for Tourism Management Planning

1. Background:

Coastal tourism shows a promising future as evidenced by the number, variety and diversity of accommodation facilities that have been constructed or are planned. Recommendations in the Tourism Master Plan (URT, 2002) relevant to the coast include development of a strong Southern Circuit comprising the coastal areas beach resort tourism including Mafia, offshore islands, Bagamoyo, Saadani Game Reserve and Kilwa.

Under the Ministry of Natural Resources and Tourism, the Division of Tourism aims to implement the National Tourism Policy as well as regulatory functions. The main objective of the Policy is to assist efforts to promote the economy and livelihoods, essentially poverty alleviation, by encouraging development of sustainable and quality tourism that is culturally and socially acceptable, ecologically friendly, environmentally sustainable and economically viable.

The Division is divided into three sections, one of which is Tourism Development, which deals with sectoral policy, national and international cooperation, identification of tourist attraction and diversification of tourism activities, developing and promoting domestic tourism.

The coastal zone in Mainland Tanzania is under development pressure from population growth and economic activities and the area is experiencing a range of management problems giving rise to increased concern, including ecosystem encroachment, pollution, and salinization of soils, estuaries and aquifers, degradation of resources, shoreline erosion and conflicts of interest among stakeholders. Climate change will further aggravate this situation due to sea level rise and more frequent extreme weather.

The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.

2. Title:

Support for Tourism Management Planning

3. Action Reference:

Tan-S09

4. Justification:

There are concerns that the coastal districts of Mafia, Pangani and Kilwa require more urgent management intervention within the tourism sector to safeguard the main attractions at these locations. For example, inadequate sewage infrastructure and waste management resulting in pollution of the coastal zone, from some developments illegally dumping waste and litter, and, reduction in iconic marine life with illegal killing of whale sharks, dolphins, dugongs, turtles and other exotic marine animals that are tourist attractions degrading the value of the experience and creating a poor image of Tanzania as an eco-friendly destination were ranked as very important and important problems respectively.

In addition, the working group in Dar es Salaam found that in Mainland Tanzania the mitigation of

 32 out of the 197 identified thematic threats to local coastal communities and ecosystems in Mainland Tanzania corresponding to 16%,

called for capacity building. Land-use management was the second highest intervention identified, reflected in 28 of the 197 identified threats.

To achieve an effective and speedy action, there is a requirement to develop and implement a comprehensive capacity building effort within the tourism

	management sector, specific Pangani.	cally addressing the coastal site	es of Mafia, Kilwa and					
5. Objective:	Capacity of the Tourism Development section of the Division of Tourism in Tanzania strengthened, particularly with respect to coastal developments in Pangani, Mafia and Kilwa.							
6. Expected outputs:	development projects, pa	ection staff capacitated within rticularly in the identified distr	ricts.					
	• Tourism Development se coastal development proj		fective management of					
	planning and able to with	the coastal areas in line with rastand vested interest pressures	5					
	utilised sustainably	tural features of the three focus	districts protected and					
7. Activities:	a) Project design and appraib) Project mobilisation1) Establish coordination p							
	2) Stakeholder identification	on and profiling (targets for aw	vareness)					
	3) Awareness raising strategy 4) Awareness raising programme							
	4) Awareness raising programme5) Training of key staff and relevant stakeholder on target areas							
	6) Impact evaluation amor	ng target groups						
	7) Capacity building		•					
3. Assumptions:	The Government of Tanzania is committed to engaging in reform processes towards more coordinated and integrated coastal zone management.							
9. Risks:		pacity reform related to sensiti						
· •	features of the coastal zone	pacity reform related to sensit	ive cultural and natural					
0. Means of	Logistics, technical,	Venues and budgets for relationships	egular coordination					
mplementation	scientific	meetings, at Division of T						
		Salaam)						
		Budgets for technical assi	stance					
		Access to information						
	Human Resources	High level participation a from Government and no ctalcheldows	e e					
		stakeholdersLegal and enforcement stadepartments	aff from relevant					
		Involvement of technical special focus	staff on activities of					
11. Budget	Item	special focus	Estimate in USD					
estimate:	a) Project design and appr	aisal	50,000					
	b) Project mobilisation		50,000					
	1) Establish coordination p	latform for action	50,000					
	2) Institutional Baseline		100,000					
	3) Participatory assessmen	t	200,000					
	4) Development of Trainin		50,000					
	5) Action Plan		50,000					
	6) Training preparation		500,000					
	7) Capacity Building		200,000					
	Total		1,250,000					
12. Source of		budget, participation, meeting						
funding:	=	echnical Assistance budget). Af	DB, WB, EU, Bilateral					
	assistance programmes							

13. Responsible for the action:	Government departments with stakes or mandates, experience and technical capacity related to coastal development planning and management.																						
14. Beneficiary from the action:	 Division of Tourism incresissues of the three focus of Government organisation and private stakeholders Public at large empowere management activities 	lis ns (in	tric eng the	ets gag e to	gin ou	g ris	in m	dia se	alo	ogi ors	aes s o	s w f th	ith e t	a hr	mo ee	ore fo	e qu	uali s di	fie str	d p	ouk	olic	2
15. Schedule:			Ye	ar 1			Yea	ar 2			Yea	r 3		Ye	ar 4			Year 5	;	Y6 '	77 Y	8 Y9	Y10
	Actions and Activities	0:	L O2	03	04	01	02	03	04	01 (02 (03 04	1 01	02	03	04	01 (Q2 Q3	3 04				
	Support for Tourism Management Planning	Ť	T		Ϋ.	_	Ī		``		Ī	T	T	Ť		Ì	Ť		<u> </u>		Т		П
	a) Project design and appraisal		,														П				I		
	b) Project mobilisation		-	ļ.,			_				_	_		_	 	_	┝┷┼		4-		_	_	<u> </u>
	1) Establish coordination platform for action		+	\vdash								-		+-	-	_		_	-	-	-	-	-
	2) Institutional Baseline 3) Participatory assessment			-			_			\dashv	-			+-	+	-	-		+	-	-		-
	Development of Training Strategy		+	\vdash							T			+	+		r			1	+		1
	5) Action Plan																						
	6) Training preparation										┚												
	7) Capacity Building																Ш						Ш
16. Links to	T C01 I 1 1 1 C	. 1	7			<u>r</u>									1						—		
	• Tan-S01: Integrated Coast						na	ge	m	en	t F	ran	nev	wc	rĸ								
other actions:	• Tan-S04: Information Mar	na	ger	ne	nt																		
	• Tan-S06: Awareness Raisi	ing	5																				
	• Tan-S08: Support for the l	•	_	C																			
17. Performance	Minutes of meeting in coordinates				On	n	lat	fo	rn	ı fo	٦r	acti	ior										
indicators:						-																	
mulcators.	 Proceedings from training 	g a	na	ev	7a.	ua	ttic	ons	s a	ım	on	g ta	arg	get	gr	ou	ps						
	 Institutional baseline 																						
	 Reform strategy and action 	n	pla	ın																			
18. Comments:	- Si																						

Tan-L01: Rehabilitation and clean-up of four east-flowing rivers in Mkinga District

· ·	
1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Nutrient and chemical pollution discharged through these rivers into the coastal environment on the western shores of the Pemba Channel is well documented, visible especially after heavy rains, with solid wastes and sediments discharged being indicative of degraded and polluted watersheds.
	There are four major river basins plus several much smaller streams, either perennial or semi-seasonal, that extend from the northern border of Kwale Bay (the effective border between Mkinga and Tanga Municipality) to the border with Kenya. Visible from the 1:50,000 topo maps, the larger basins are:
	 Ngole River, with various sources including the longest, Msimbazi River, and the Mkaka and Pangarowe rivers, draining from 20-25 km inland to the west and northwest, and discharging through the Mayumboni mangrove forest, close to Kwale Island. Kombe River, extending for approximately 25 km from the northwest, before emptying at Doda mangrove forested estuary. Ndoyo River, with a source some 20 km to the north, emptying into the same Doda mangrove forested estuary as the Kombe River. Mwambalazi River, draining Changanyiko area for over 30 km, discharging at Vibambani, as the major contributor of freshwater into the mangrove estuary inshore of the Boma Peninsula.
2. Title:	Rehabilitation and clean-up of four east-flowing streams in Mkinga District
3. Action Reference:	Tan-L01
4. Justification:	Beach pollution and marine pollution were identified as severity level 3 and 2 respectively, for Mkinga District, with beach pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Agrochemicals were contributing to marine pollution. Decline in fisheries yields, regarded as a threat of level 4, are also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	The east flowing streams of Mkinga are some of the largest conduits for liquid and solid waste, chemicals and sediment to the north Tanga Region coastline, causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. turtles, fish and habitats), extending many kilometres along the coast (likely affecting nearby small islands and coral reefs, and resulting in negative publicity of this important tourist destinations and neighbouring Coelacanth Marine Park to the south.
	Actions are aimed at improving water quality and flow rates; both being potentially important, especially where there are salinity-sensitive fisheries, as there are associated with most estuaries given the 4 m tidal range.

5. Objective:	By 2025 waters from these four rivers devoid of pollution with riverine and estuarine biodiversity restored.								
6. Expected outputs:		Action to rehabilitate four east-flowing	r etroame in Mkinga						
o. Expected outputs.	District are:	retion to renabilitate four east-nowing	3 streams in wikinga						
	Clean and safe wa	iter in the streams.							
	Greater ability of the river banks to absorb small flooding events.								
	Reduced solid and liquid wastes discharged to sea.								
	• Decreased volume of wastes into the streams.								
	 Reduced wastes washed up along the coast. 								
	Stream sources rehabilitated and protected.								
	Local NGOs capable of managing stream environment.								
7. Activities:	a) Project design and appraisal.								
	b) Project tendering								
		and implement stream management st							
		, implement and enforce relevant legisl							
		ressing riverine environment (e.g. re-lo							
	distances).	residential houses impinging on the riv	er bank set-back						
	′	ıral sources of streams and bank vegeta	tion (including						
	floodplains and i		tion (including						
		ess among households to avoid dumpir	ng waste and						
		nd rivers in streams and rivers.	ig waste and						
	O .	e production pathways.							
		and implement a waste management s	trategy.						
		ate stream management.							
8. Assumptions:	The Tanzania Cover	nmont is committed to supporting the	clean up of the						
o. Assumptions.		nment is committed to supporting the of the contraction relevant laws that impinge							
		t are integral elements of integrated coa							
		residents and businesses are supportive							
		our riverine environment.	01 111111111111111111111111111111111111						
9. Risks:		businesses may object and block the pro	oject.						
10. Means of	Logistics,	Budgets for meetings	•						
implementation:	technical, scientific	Budgets for technical assistance							
		Hydraulic modelling							
		Access to information							
		Green-green infrastructure							
		IWRM planning							
		•							
	Human Resources	Civil and water engineers							
		• Modellers							
		Physical Planners Pallytian above to function and	a aista am d'hatamista						
		Pollution chemists, freshwater ecol Coning appropriate and recently report							
		• Socio-economists and resettlement	specialists						
11. Budget estimate:	Item		Estimate in USD						
11. Daaget estimate.	Project preparation	and mobilisation	100,000						
		eview of river basin influences	200,000						
		gislative/regulatory instruments	300,000						
		ouse commercial and residential	3,000,000						
		ructure affecting basins	3,300,000						
		l sources of streams and bank	8,000,000						
	vegetation	and the second with sum.							
		among households and	600,000						
		nerders to avoid dumping waste in							
	streams	· · · · · · · · · · · · · · · · · · ·							
	1 1								

	Develop, review and implement river basin waste management strategy							,000		
	Design appropriate stream manage partners and secure sustainability	ment ir	nvolving	g loca	1		1,000			
	Total The coarse budget does not provide to		13,500 sociate							
	illegal squatters or illegal land-uses, which are considered a government issue									
12. Source of funding:	 Tanzania Government (budget, participation) Private Sector (participation) NGOs (participation) Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilateral assistance programmes 									
13. Responsible for the action:	Strong Local Government coastal development stakeholder capable of effectively coordinating efforts:									
	Pangani River Basin AuthorityContractorsNGOsetc									
14. Beneficiary from the action:	Local residents (tens of thousand) ploterms of health and safety while swin aspects of the surrounding areas; maresources users (including fishers) from the entering the inshore coastal waters.	mming ngrove	in the se	ea, fro intert	om e idal	nhance and co	ed aest ral ree	hetic fs		
	Indirect or long term beneficiaries withrough improved coastal water qua for socio-economic development with resources and environmental manage	lity wil hout co	l have b	etter	ed th	eir opj	portun	ities		
15. Schedule:		ear 1 2 Q3 Q4	Year :			ear 3 2 Q3 Q4	Yea			
	Rehabilitation of four east-flowing rivers in Mkinga District a) Project preparation and mobilisation b) Mobilisation and review of river basin influences 1) Enforce relevant legislative/regulatory instruments 2) Re-locate and re-house commercial and residential houses and infrastructure affecting basins 3) Rehabilitate natural sources of streams and bank vegetation 4) Increase awareness among households and farmers/livestock herders to avoid dumping waste and agrochemicals in streams 5) Develop, review and implement a river basin waste management strategy 6) Design appropriate stream management involving local partners and secure sustainability									
16. Links to other	Links to following systemic actions v	vould b	e desira	ble:						
actions:	 Tan-S01: Integrated Coastal Zone I Tan-S02: Spatial Planning Tan-S03: Shoreline Management Tan-S04: Information Managemen Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importar actions: 	t		nks to	o foll	owing	local			

	 Tan-L02: Rehabilitation and clean-up of Sigi and Mkulumzi river basins in Tanga Urban and Muheza districts Tan-L12: Sewage collection and treatment facilities for Tanga City Tan-L25: Solid waste collection and processing facility for Tanga City
17. Performance	Water quality (chemistry, BOD, agrochemicals, etc.)
indicators:	Volumes and types of solid wastes on associated beaches
	Records of inundation events
18. Comments:	Relevant initiatives are the World Bank supported "Water sector development
	IWSS [International Water Stewardship Standard] in nine basins", partnered
	with the nine river basin authorities, addressing policy related issues.

Tan-L02: Rehabilitation and clean-up of Sigi and Mkulumzi rivers through Tanga Urban and Muheza Districts

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	There are two major river basins plus several much smaller streams, either perennial or semi-seasonal, that discharge in the vicinity of Tanga Town, within Tanga Urban District. These are:
	 Sigi River, arising in the Amani Nature Reserve in the Eastern Usambara Mountains and Manga Forest Reserve area, for almost 100 km, passing sisal plantations, the Gombero Forest Reserve, the Mabayani Reservoir, and various waterfall stretches, before emptying at Amboni mangrove creek in the western part of Tanga Bay. Mkulumzi River, draining from the eastern Usumbara Mouhtains, for over 40 km to the west passing through sisal plantation areas, close to Muheza town, with numerous long tributaries, before emptying into Udofu Creek, a mangrove forested estuary in the western part of Tanga Bay.
	Nutrient and chemical pollution discharged through these rivers into the coastal environment on the western shores of the Pemba Channel is well-documented (e.g. Yanda and Munishi, 2007), visible especially after heavy rains, with solid wastes and sediments discharged being indicative of degraded and polluted watersheds.
2. Title:	Rehabilitation and clean-up of Sigi and Mkulumzi rivers through Tanga Urban and Muheza Districts
3. Action Reference:	Tan-L02
4. Justification:	Beach pollution and marine pollution were both identified as severity level 4, for Tanga Urban District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Agrochemicals were contributing to marine pollution. Decline in fisheries yields, regarded as a threat of level 5 is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	The two east flowing streams that drain northern Muheza are some of the largest conduits for liquid and solid waste, chemicals and sediment to the north Tanga Region coastline, causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. turtles, fish and habitats), extending many kilometres along the coast (likely affecting nearby small islands and coral reefs, and resulting in negative publicity of this important tourist destinations and neighbouring Coelacanth Marine Park to the south.
	Actions are aimed at improving water quality and flow rates; both being potentially important, especially where there are salinity-sensitive fisheries, as there are associated with most estuaries given the 4 m tidal range.

5. Objective:	By 2025 waters from these two rivers devoid of pollution with riverine and estuarine biodiversity restored.							
(F. (1)		J						
6. Expected outputs:		Action to rehabilitate Sigi and Mkulur	nzi rivers in Tanga					
	Urban and Muheza							
	 Clean and safe water in the streams. Greater ability of the river banks to absorb small flooding events. Poduced solid and liquid waster displayed to see 							
	Reduced solid and liquid wastes discharged to sea.							
	Decreased volume of wastes into the streams. Deduced wastes weeked are along the specific.							
	Reduced wastes washed up along the coast. Stream sources rehabilitated and protected.							
	 Stream sources rehabilitated and protected. Local NGOs capable of managing stream environment 							
7. Activities:	Local NGOs capable of managing stream environment. Project design and apprecial.							
7. Activities:	a) Project design and appraisal.							
	b) Project tendering		wa ka arr					
		and implement stream management st						
		, implement and enforce relevant legisl						
		ressing riverine environment (e.g. re-lo						
	distances).	residential houses impinging on the riv	er bank set-back					
	,	ıral sources of streams and bank vegeta	tion (including					
	floodplains and		tion (including					
		ess among households to avoid dumpir	na wasto and					
		nd rivers in streams and rivers.	ig waste and					
	- C	e production pathways.						
		and implement a waste management s	tratom					
		ate stream management.	uacegy.					
8. Assumptions:		nment is committed to supporting the						
	natural environment, enforcing relevant laws that impinge on the watershed							
		t are integral elements of integrated coa						
		residents and businesses are supportive	e of initiatives to					
		our riverine environment.						
9. Risks:		businesses may object and block the pro	oject.					
10. Means of	Logistics,	 Budgets for meetings 						
implementation:	technical, scientific	Budgets for technical assistance						
		Hydraulic modelling						
		Access to information						
		Green-green infrastructure						
		IWRM planning						
		•						
	Human Resources	Civil and water engineers						
		Modellers						
		Physical Planners						
		Pollution chemists, freshwater ecol	O					
		Socio-economists and resettlement	specialists					
44 D 1 4 4 4		•	T - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -					
11. Budget estimate:	Item	1 111	Estimate in USD					
	Project preparation		100,000					
		eview of river basin influences	200,000					
		gislative/regulatory instruments	300,000					
		ouse commercial and residential	3,000,000					
		ructure affecting basins						
		l sources of streams and bank	8,000,000					
	vegetation							
	Increase awareness among households and farmers/livestock herders to avoid dumping waste in 600,000							
streams								

	Develop, review and implem management strategy	nent riv	er	bas	in '	was	te					300	,000
	Design appropriate stream n	Design appropriate stream management involving local partners and secure sustainability									1,	,000	,000,
	Total									13,	,500	,000	
	The coarse budget does not provide for re-housing or other co illegal squatters or illegal land-uses, which are considered a go										ssoc	ciate	ed wit
12. Source of funding:	Private Sector (participation)NGOs (participation)	• Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilateral											
13. Responsible for the action:	Strong Local Government coastal development stakeholder capable of effectively coordinating efforts:												
	Pangani River Basin AuthorContractorsNGOsetc	rity											
14. Beneficiary from	Local residents (tens of thousa	, .			\sim			`				,	
the action:	terms of health and safety who aspects of the surrounding are resources users (including fish entering the inshore coastal w	eas; ma ners) fr	ngı	rov	e fo	res	t, int	erti	dal a	nd c	oral	ree	efs
	Indirect or long term beneficiathrough improved coastal was for socio-economic developments resources and environmental	ter qua ent wit	lity hou	wi at c	11 h om	ave	e bett	ere	d the	ir o _l	ppoi	tun	ities
15. Schedule:		Yea	r 1	$\overline{}$		Year	.)	_	Year 3	2	Т	Year	4
15. Schedule.	Actions and Activities	Q1 Q2		Q4				Q1					
	Rehabilitation of Zigi and Mkulumzi rivers in Tanga Urban and Muheza districts			Ì									
		1 1		- 1							-		
	(a) Project preparation and mobilisation		******	I					1 1				
	a) Project preparation and mobilisation b) Mobilisation and review of river basin influences												
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	• Tan-S04: Information Management
	Tan-S06: Awareness RaisingTan-S07: Integrated Legal Review
	Of particular relevance and importance would be links to following local actions:
	• Tan-L01: Rehabilitation and clean-up of four east-flowing streams in Mkinga District
	Tan-L12: Sewage collection and treatment facilities for Tanga City
	Tan-L25: Solid waste collection and processing facility for Tanga City
17. Performance	Water quality (chemistry, BOD, agrochemicals, etc.)
indicators:	Volumes and types of solid wastes on associated beaches
	Records of inundation events
	•
18. Comments:	
	Relevant initiatives are the UNDP/GEF support for the project "Securing watershed services through SLM in the Ruvu and Zigi catchments Eastern Arc Region", with the Ministry of Water (2014-19), focused on policy, capacity, implementation and awareness. Also, the World Bank supported "Water sector development IWSS [International Water Stewardship Standard] in nine basins", partnered with the nine river basin authorities, addressing policy related issues.
	References:
	Yanda P.Z. and Munishi, P.K.T. 2007. Hydrologic and land use/cover change analysis for the Ruvu River (Uluguru) and Sigi River (East Usambara) watersheds. For WWF/CARE Dar es Salaam, Tanzania. 80 pp.

Tan-L03: Rehabilitation and clean-up of lower Pangani River, Muheza and Pangani districts

und I ungum uno	
1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	The Pangani River is over 500 km long, with a basin that begins on the slopes of Kilimanjaro Mountain, covering 43,000 km². Several tributaries and smaller streams, either perennial or seasonal, feed the main river - many passing through sisal and other plantation areas. There are five main sub-basins, each with distinctive hydrological characteristics. The lower Pangani River (including the rejuvenated river section and estuary portion) are the focus of this action, all within the Tanga Region, mainly Muheza and Pangani districts.
	Sources of pollution include agrochemicals, uncontrolled solid wastes, and sewage that enter the Pangani River at various locations. Nutrient and chemical pollution discharged through these rivers into the coastal environment on the western shores of the Pemba Channel is well-documented, visible especially after heavy rains, with solid wastes and sediments discharged being indicative of degraded and polluted watersheds. However, the Pangani estuary is also well-document as suffering from severe erosion, believed to be due to the hydroelectric installations in the Tanga Region portion of the river that are preventing sediment transport downstream and from river water abstraction for agriculture, with resulting reduced flow, both needed to supply sediments to the now retreating river mouth.
2. Title:	Rehabilitation and clean-up of lower Pangani River, Pangani District
3. Action Reference:	Tan-L03
4. Justification:	Beach pollution and marine pollution were both identified as severity level 4 and 2 respectively, for Pangani District, with pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Agrochemicals were contributing to marine pollution. Decline in fisheries yields, regarded as a threat of level 4, are also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	The Pangani River is the largest conduit in the region for liquid and solid waste, chemicals and sediment to the Tanga Region coastline, causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. turtles, fish and habitats), extending many kilometres along the coast (likely affecting nearby small islands and coral reefs, and resulting in negative publicity of this important tourist destinations and neighbouring Coelacanth Marine Park to the south.
	Actions are aimed at improving water quality and flow rates; both being potentially important, especially where there are salinity-sensitive fisheries, as there are associated with most estuaries given the 4 m tidal range, and moreso where the Government has a focus on commercial agriculture such as in Wami-Ruvu catchments.

5. Objective:	By 2025 waters from the Pangani River devoid of pollution with riverine and estuarine biodiversity and sediment input restored.							
6. Expected outputs:		ty and sediment input restored. • Action to rehabilitate the Tanga Region	n portion of the					
	Pangani River are:		-					
	Clean and safe water in the main river and tributaries in the Tang							
	Greater ability of the river banks to absorb small flooding events. Deduced called and line identification of the case.							
	 Reduced solid and liquid wastes discharged to sea. Decreased volume of wastes into the main river. 							
	 Reduced wastes washed up along the coast. 							
	Stream sources rehabilitated and protected.							
	Local NGOs capable of managing stream environment.							
7. Activities:	a) Project design and appraisal.							
	b) Project tendering		wataar.					
		and implement stream management stream, implement and enforce relevant legisle						
		ressing riverine environment for the lov						
		angani Basin (e.g. re-locate and re-hous						
		es impinging on the river bank set-back						
		ural sources of streams and bank vegeta	tion (including					
	floodplains and a	marsnes). ess among households to avoid dumpir	ng waste and					
		nd rivers in streams and rivers.	ig waste and					
		and implement a waste management s	trategy.					
		ate river management.						
8. Assumptions:	The Tanzania Government is committed to supporting the clean-up of the natural environment, enforcing relevant laws that impinge on the watersheds and river basins, that are integral elements of integrated coastal zone management. Local residents and businesses are supportive of initiatives to clean-up the neighbour riverine environment.							
9. Risks:		businesses may object and block the pro	niect					
10. Means of implementation:	Logistics, technical, scientific	Budgets for meetingsBudgets for technical assistance						
implementation.	teerinical, scientific	Hydraulic modelling						
		Access to information						
		Green-green infrastructure						
		IWRM planning						
	Harris December	•						
	Human Resources	Civil and water engineersModellers						
		Physical Planners						
		Pollution chemists, freshwater ecolo	ogists and botanists					
		Socio-economists and resettlement	specialists					
44 P 1 4 4 4		•	T					
11. Budget estimate:	Item	and mahilisation	Estimate in USD					
	Project preparation	eview of river basin influences	100,000 200,000					
		gislative/regulatory instruments	300,000					
		ouse commercial and residential	3,000,000					
	1 1	ructure affecting basins	, ,					
	Rehabilitate natura	l sources of streams and bank	8,000,000					
	vegetation							
	Increase awareness among households and 600,000							
	farmers/livestock herders to avoid dumping waste in							
	streams							

	Develop, review and im	ıplement r	iver b	asin	was	ste				3	300,00	00
	management strategy Design appropriate stre			ıt inv	volv	ing lo	ocal			1,0	0,00	00
	partners and secure sus Total	tainability	•							13.5	500,00	00
	Total									10,0	,00,0	50
	The coarse budget does r illegal squatters or illegal											
12. Source of funding:	 Tanzania Government (budget, participation) Private Sector (participation) NGOs (participation) Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilate assistance programmes 								tera			
13. Responsible for the action:	Strong Local Governmen effectively coordinating 6		leveloj	pme	ent s	takeh	olde	er cap	able	e of		
	Pangani River Basin APangani River Basin MContractorsNGOsetc		nt Proj	ject a	and	Pang	ani I	Basin	Wat	ter E	oard	[
14. Beneficiary from the action:	Local residents (tens of thousand) plus foreign visitors (several thousand) terms of health and safety while swimming in the sea, from enhanced aest aspects of the surrounding areas; mangrove forest, intertidal and coral ree resources users (including fishers) from reduced sedimentation and pollut entering the inshore coastal waters. Indirect or long term beneficiaries will be the coastal populations at large through improved coastal water quality will have bettered their opportunitor socio-economic development without compromising sustainable nature.							esthe	etic			
	resources users (includin entering the inshore coas Indirect or long term ben through improved coasta for socio-economic devel	g fishers) tal waters eficiaries val water quopment w	from r . will be ality v ithout	redu e the will t cor	iced e coa hav	sedir stal p e bett	nent opu erec	ation lation l their	and ns at r op	: larg	ge tha uniti	at les
	resources users (includin entering the inshore coas Indirect or long term ben through improved coasta	g fishers) atal waters eficiaries water quopment wental mana	from r . will be uality v rithout	e the will t cor nt.	ced coa hav	sedir stal p e bett omisi	nent opu erec	ation lation l theimustain	and ns at r op	: lar _{ port e na	ge tha uniti tural	at les
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	Tan-S07: Integrated Legal Review
	Of particular relevance and importance would be links to following local actions:
	• Tan-L01: Rehabilitation and clean-up of four east-flowing streams in Mkinga District
	• Tan-L02: Rehabilitation and clean-up of Zigi and Mkulumizi rivers in tanga and Muheza districts
	Tan-L12: Sewage collection and treatment facility Tanga City
	Tan-L13: Sewage collection and treatment facility Pangani Town
	• Tan-L25: Urban solid waste collection and processing facility Tanga City
	• Tan-L26: Urban solid waste collection and processing facility Pangani Town
17. Performance	Water quality (chemistry, BOD, agrochemicals, etc.)
indicators:	 Volumes and types of solid wastes on associated beaches
	Records of inundation events
	•
18. Comments:	Over the recent twenty years there have been a number of initiatives responding to water shortages, river water quality, fisheries, agricultural needs and
	hydroelectric uses of the Pangani River Basin. Impacts of climate change have
	also been more recently investigated. This Action needs to be aligned with on-
	going initiatives related to river flows in the Pangani Basin, for example the
	World Bank supported "Water sector development IWSS [International Water
	Stewardship Standard] in nine basins", partnered with the nine river basin
	authorities, addressing policy related issues, but focus more especially on the
	portions of river and catchments located in the Tanga Region with particular
	emphasis on the quality of the final discharges into the coastal zone.

Tan-L04: Safeguarding of the Wami River, Bagamoyo

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	The Wami River basin is the largest that passes through Bagamoyo District, with tributaries such as the Kangasungwa River beginning in Kondoa District (north of Dodoma), passing through Kilosa District (west of Morogoro) where it is called the Mkondoa River before becoming the Wami River, in all, extending some 350 km before discharging on the coast in the middle of the Saadani National Park.
	Nutrient and chemical pollution associated with the Wami River is not well-documented, and likely to be very little at present, though the expected growth in population and associated land and river water usage are certain to increase pressure on the river and its catchment.

2. Title:	Safeguarding of the Wami River, Bagamoyo District						
3. Action Reference:	Tan-L04						
4. Justification:	Beach pollution was identified as severity level 3, for Bagamoyo District, with pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Agrochemicals were also contributing to marine pollution.						
	While there is no documented evidence of agrochemical or solid wastes discharged from the Wami River, there is strong likelihood that over the coming years, with increasing pressure on the land that the Wami River basin drains that agrochemical and solid wastes will increasingly become disposed of or leach into the tributaries of the Wami, eventually reaching the coast at Saadani National Park.						
	Furthermore, any marine pollution from Bagamoyo District will be transported northwards on the prevailing coastal current where it will negatively affect the Tanga Region coastline, in particular the newly established Coelacanth Marine Park and the sensitive coral reef and other habitat therein.						
	Actions are aimed at improving water quality and flow rates; both being potentially important, especially where there are salinity-sensitive fisheries, as there are associated with most estuaries given the 4 m tidal range, and moreso where the Government has a focus on commercial agriculture such as in Wami-Ruvu catchments.						
5. Objective:	By 2025 waters from the Wami River devoid of pollution with riverine and estuarine biodiversity intact.						
6. Expected outputs:	 The objectives of the Action to safeguard the Wami River are: Maintain the river and stream waters clean and safe. Maintain the ability of the river banks to absorb small flooding events. Keep solid and liquid wastes volumes from being discharged to sea. Keep the volume of wastes dumped into the streams at a minimum. Reduced wastes washed up along the coast. Stream sources protected. Local NGOs capable of managing river basin environment. 						
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Develop, review and implement stream management strategy. 2) Review, develop, implement and enforce relevant legislative/regulatory instruments addressing riverine environment (e.g. re-locate and re-house commercial and residential houses impinging on the river bank set-back distances). 3) Rehabilitate natural sources of streams and bank vegetation (including floodplains and marshes). 4) Increase awareness among households to avoid dumping waste and agrochemicals and rivers in streams and rivers. 5) Develop, review and implement a waste management strategy. 6) Design appropriate stream management. 						
8. Assumptions:	The Tanzania Government is committed to supporting the clean-up of the natural environment, enforcing relevant laws that impinge on the watersheds and river basins, that are integral elements of integrated coastal zone management. Local residents and businesses are supportive of initiatives to clean-up the neighbour riverine environment.						
9. Risks:	Local residents and businesses may object and block the project.						
10. Means of implementation:	Logistics, technical, scientific • Budgets for meetings • Budgets for technical assistance						

	Human Resources	 Hydraulic modelling Access to information Green-green infrastructure IWRM planning Civil and water engineers Modellers Physical Planners Pollution chemists, freshwater ecol Socio-economists and resettlement 	O				
11. Budget estimate:	Item	1 111	Estimate in USD				
	Project preparation		100,000				
		eview of river basin influences	200,000				
		gislative/regulatory instruments ouse commercial and residential	300,000				
		1,000,000					
	houses and infrastr Rehabilitate natura	4,000,000					
	vegetation	4,000,000					
	Increase awareness farmers/livestock	600,000					
	Develop, review as management strate	300,000					
	Design appropriate stream management involving local 1,000,00 partners and secure sustainability						
	Total 7,500,000						
12. Source of funding:	Illegal squatters or iTanzania GovernnPrivate Sector (parNGOs (participation)	on) ners (Technical Assistance budget). AfI	a government issue.				
13. Responsible for the action:	Strong Local Govern effectively coordina	nment coastal development stakeholder ting efforts:	capable of				
	Wami-Ruvu RiveContractorsNGOsetc	r Basin Authority					
14. Beneficiary from the action:	foreign visitors (seving the sea, from enhance) forest, intertidal and	r three hundred thousand) plus Saadan eral thousand) in terms of health and sa anced aesthetic aspects of the surround l coral reefs resources users (including f pollution entering the inshore coastal w	afety while swimming ing areas; mangrove fishers) from reduced				
	through improved of for socio-economic of	n beneficiaries will be the coastal popul- coastal water quality will have bettered development without compromising su conmental management.	their opportunities				

15. Schedule:		Year 1 Year 2 Year 3 Year 4						r 4	Year 5									
	Actions and Activities Q1		Q3 Q4	Q1			Q4	Q1			Q4	Q1			4 Q			
	Safeguarding the Wami River,														Τ			
	a) Project preparation and mobilisation		İ	ļ													-	
	b) Mobilisation and review of river basin	1		†														
	influences																	
	Enforce relevant legislative/regulatory					l												
	instruments 2) Re-locate and re-house commercial		ļ	-		Ш												
	and residential houses and infrastructure																	
	affecting basins																	
	3) Rehabilitate natural sources of																	
	streams and bank vegetation		ļ	ļl														
	4) Increase awareness among households and farmers/livestock																	
	herders to avoid dumping waste and																	
	agrochemicals in streams														_			
	5) Develop, review and implement a								- 1						L			
	river basin waste management strategy (6) Design appropriate stream						_		_						-		-	
	management involving local partners														L			
	and secure sustainability																	
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16. Links to other	Links to following systemic	ac	tions	wo	ul	d b	e c	les	ira	ble	2:							
actions:																		
	• Tan-S01: Integrated Coas		Zone	M	an	age	m	ent	:									
	Tan-S02: Spatial Planning																	
	Tan-S03: Shoreline Management	gen	nent															
	• Tan-S04: Information Man	nag	geme	nt														
	• Tan-S06: Awareness Raising																	
		Tan-S00: Awareness Raising Tan-S07: Integrated Legal Review																
								_		_								
	Of particular relevance and	im	porta	nce	e v	vot	ıld	be	lir	nks	s to	fc	ollo	wir	ıg I	loc	al	
	actions:																	
	• Tan-L05: Rehabilitation a	nd	clear	1_111	n (ıf R	113	1	Riv	or	Вa	σa	m	wo	Di	ctri	cte	
	• Tan-L27: Urban solid was			-	-							\sim						
	Tail-L27. Ofbail solid was	sie	Cone	LIIO	111	aric	ıР	roc	es	5111	gı	Jaş	301	поу	0 1	OV	/11	
17. Performance	TA7 , 1', / 1 ',	D/	<u> </u>		1			1		_								
	Water quality (chemistry,																	
indicators:	 Volumes and types of sol 			es o	n a	ass	oci	ate	ed l	bea	ach	es						
	 Records of inundation ev 	ent	S															
	•																	
18. Comments:																		
	Note: There are a number of	of ii	nitiat	ives	s r	esp	on	diı	ng	to	Ru	νt	ı aı	nd V	Va	mi		
	RiverBasins, especially with																ecia	ally
	given the importance of this		-						•	_			-			-		-
	Impacts of climate change h							_		_								011110
	Action needs to be aligned w																	n the
	wider river basins, for exam																	11 (11)
		-							-	-								-: <i>-</i> /
	development IWSS [Interna																	
	partnered with the nine rive																	
	but focused more especially															pa	rtic	ular
	emphasis on the quality of t	he	final	dis	ch	arg	ges	in	to 1	the	cc	oas	tal	ZOI	ıe.			
	References:																	
	ILICN Factorn and Southern	. Δ	frice	Pro	\CTP	am	m	٠ ٦	001	o '	Th	ے T.	2117	711 R	ae:	in:	Δ	
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	watersheds. For WWF/	CA	KE I)ar	es	Sal	aa	m,	Та	ınz	an	ía.	80	pp				
	Situation Analysis., xvi + Yanda P.Z. and Munishi, P. analysis for the Ruvu Riv watersheds. For WWF/	⊦ 96 K.T ver	pp. 200 (Ulu)7. gui	H ru)	ydı) an	ol id :	ogi Sig	ic a	ınd live	l la er (nd (Ea	l us	se/o Usa	ov ml	er	cha	inge

Tan-L05: Rehabilitation and clean-up of the Ruvu River, Bagamoyo District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	The Ruvu River basin is the second largest that passes through Bagamoyo District, with tributaries extending from the southwest, over 270 km from beyond Morogoro. The Ruvu River originates in the Uluguru mountains, where small streams combine to form three main tributaries: Mgeta and Ruvu rivres that drain the south side and the Ngerengere River drains the north, in total covering a catchment area of 25,000 km².
	Nutrient and chemical pollution discharged through the Ruvu River into the coastal environment on the western shores of the Zanzibar Channel is well-documented, visible especially after heavy rains, with solid wastes and sediments discharged being indicative of degraded and polluted watershed. There are deforestation issues in the upper catchment, water abstraction throughout the river's length and pollution in certain areas.
2. Title:	Rehabilitation and clean-up of Ruvu River, Bagamoyo District
3. Action Reference:	Tan-L05
4. Justification:	Beach pollution was identified as severity level 3, for Bagamoyo District, with pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Agrochemicals were also contributing to river and marine pollution.
	Equally important, the Ruvu River accounts for over 90 % of Dar es Salaam's daily water supply, which in recent times has reduced its capacity to meet the growing demand. There are reports of deteriorating volumes and water quality
	(e.g. Yanda and Munishi 2007; IUCN, 2010) and evidence of agrochemical and solid wastes discharged into the Ruvu River, that reach the coast. Furthermore, there is strong likelihood that over the coming years, with increasing pressure on the land that the Ruvu River basin drains that agrochemical and solid wastes will increasingly become disposed of or leach into the tributaries of the Ruvu, eventually reaching the coast at Saadani National Park and beyond.
	Furthermore, marine pollution from the Bagamoyo District will be transported northwards on the prevailing coastal current where it will negatively affect the Tanga Region coastline, in particular the newly established Coelacanth Marine Park and the sensitive coral reef and other habitat therein.
	Actions are aimed at improving water quality and flow rates; both being potentially important, especially where there are salinity-sensitive fisheries, as there are associated with most estuaries given the 4 m tidal range, and moreso where the Government has a focus on commercial agriculture such as in Wami-Ruvu catchments.

5. Objective:	-	these the Ruvu River devoid of pollut	ion with riverine and					
C F 1	estuarine biodiversit	1	Districts					
6. Expected	,	Action to rehabilitate Ruvu River Baga	amoyo Districts are:					
outputs:	Clean and safe wa Creater ability of the		a arranda					
		the river banks to absorb small flooding	g events.					
		d liquid wastes discharged to sea. e of wastes into the streams.						
		vashed up along the coast.						
		habilitated and protected.						
7 A - (! ! (!	•	ble of managing stream environment.						
7. Activities:	a) Project design an	11						
	b) Project tendering		Luc Lo					
		and implement stream management s						
	_ ·	, implement and enforce relevant legis						
		ressing riverine environment (e.g. re-lo						
		residential houses impinging on the riv	ver bank set-back					
	distances).	1						
		aral sources of streams and bank vegeta	ation (including					
	floodplains and i		maruracho J					
		4) Increase awareness among households to avoid dumping waste and						
	O	nd rivers in streams and rivers.	shua ka a					
		and implement a waste management s	strategy.					
	6) Design appropria	ate stream management.						
8. Assumptions:	The Tanzania Govern	nment is committed to supporting the	clean-up of the natural					
-	environment, enforcing relevant laws that impinge on the watersheds and river							
		ral elements of integrated coastal zone						
	residents and businesses are supportive of initiatives to clean-up the neighbour							
	riverine environmen		1 0					
9. Risks:	Local residents and b	businesses may object and block the pr	oject.					
10. Means of	 	· · ·						
	Logistics technical	Budgets for meetings						
	Logistics, technical,	Budgets for meetings Budgets for technical assistance						
	Logistics, technical, scientific	Budgets for technical assistance						
		Budgets for technical assistanceHydraulic modelling						
		Budgets for technical assistanceHydraulic modellingAccess to information						
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	scientific	 Budgets for technical assistance Hydraulic modelling Access to information Green-green infrastructure IWRM planning Civil and water engineers Modellers 						
	scientific	 Budgets for technical assistance Hydraulic modelling Access to information Green-green infrastructure IWRM planning Civil and water engineers Modellers Physical Planners 						
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implementation:	Scientific Human Resources Item	 Budgets for technical assistance Hydraulic modelling Access to information Green-green infrastructure IWRM planning Civil and water engineers Modellers Physical Planners Pollution chemists, freshwater ecc Socio-economists and resettlemen 	t specialists Estimate in USD					
11. Budget estimate:	Human Resources Item Project preparation	 Budgets for technical assistance Hydraulic modelling Access to information Green-green infrastructure IWRM planning Civil and water engineers Modellers Physical Planners Pollution chemists, freshwater ecc Socio-economists and resettlemen 	Estimate in USD 100,000					
implementation:	Human Resources Item Project preparation Mobilisation and re	 Budgets for technical assistance Hydraulic modelling Access to information Green-green infrastructure IWRM planning Civil and water engineers Modellers Physical Planners Pollution chemists, freshwater ecc Socio-economists and resettlemen 	Estimate in USD 100,000 200,000					
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implementation:	Item Project preparation Mobilisation and re Enforce relevant leg Re-locate and re-ho houses and infrastr Rehabilitate natural	 Budgets for technical assistance Hydraulic modelling Access to information Green-green infrastructure IWRM planning Civil and water engineers Modellers Physical Planners Pollution chemists, freshwater ecc Socio-economists and resettlemen and mobilisation eview of river basin influences gislative/regulatory instruments ouse commercial and residential	Estimate in USD 100,000 200,000 300,000					
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implementation:	Item Project preparation Mobilisation and re Enforce relevant leg Re-locate and re-ho houses and infrastr Rehabilitate natural vegetation Increase awareness farmers/livestock h streams	Budgets for technical assistance Hydraulic modelling Access to information Green-green infrastructure IWRM planning Civil and water engineers Modellers Physical Planners Pollution chemists, freshwater ecces Socio-economists and resettlemen and mobilisation eview of river basin influences gislative/regulatory instruments buse commercial and residential fucture affecting basins I sources of streams and bank among households and	Estimate in USD 100,000 200,000 300,000 3,000,000 8,000,000					

	Design appropriate stream man	ageme	nt i	nv	olv	ing	loc	al				1,00	0,00	0	
	partners and secure sustainabili														
	Total											13,50	0,00	0	
	The coarse budget does not proviillegal squatters or illegal land-us														ı
12. Source of funding:	 Tanzania Government (budget, Private Sector (participation) NGOs (participation) Development Partners (Technic assistance programmes 	_				ıdg	et).	Af	DB,	, W	Ъ, І	EU, B	ilate	eral	
13. Responsible for the action:	Strong Local Government coastal coordinating efforts:	devel	opn	ner	nt s	tak	eho	lde	r ca	apa	ble	of eff	ecti	vely	y
	Wami-Ruvu River Basin AuthorContractorsNGOsetc	ority													
14. Beneficiary from the action:	Local residents (over three hundred Bagamoyo Town foreign visitors while swimming in the sea, from areas; mangrove forest, intertidal fishers) from reduced sedimentat waters.	(severa enhan and co	al tl ced oral	nou ae re	isa esth	nd) etic res	in c as our	teri pec	ns o	of t of th ers	neal ne s (ind	th an urrou cludin	d sa ind ng	afety ing	7
15. Schedule:	Indirect or long term beneficiarie through improved coastal water socio-economic development wit and environmental management.	quality hout co	wi omj	11 ł	nav	e b	ette	red	the	eir (opp na	ortu	nitie reso	es fo	
	Actions and Activities	Q1 Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4 Q1	Q2	Q3	Q4
	Rehabilitation of Ruyu River.														
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	Bagamoyo District a) Project preparation and mobilisation													i	T
	Bagamoyo District a) Project preparation and mobilisation b) Mobilisation and review of river basin														- 1
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16. Links to other actions:	Bagamoyo District a) Project preparation and mobilisation b) Mobilisation and review of river basin influences 1) Enforce relevant legislative/regulatory instruments 2) Re-locate and re-house commercial and residential houses and infrastructure affecting basins 3) Rehabilitate natural sources of streams and bank vegetation 4) Increase awareness among households and farmers/livestock herders to avoid dumping waste and agrochemicals in streams 5) Develop, review and implement a river basin waste management strategy 6) Design appropriate stream management involving local partners and secure sustainability Links to following systemic action	ns wou					ble:								
16. Links to other actions:	Bagamoyo District a) Project preparation and mobilisation b) Mobilisation and review of river basin influences 1) Enforce relevant legislative/regulatory instruments 2) Re-locate and re-house commercial and residential houses and infrastructure affecting basins 3) Rehabilitate natural sources of streams and bank vegetation 4) Increase awareness among households and farmers/livestock herders to avoid dumping waste and agrochemicals in streams 5) Develop, review and implement a river basin waste management strategy 6) Design appropriate stream management involving local partners and secure sustainability	ns wou					ble:								

	 Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review
	Of particular relevance and importance would be links to following local actions:
	 Tan-L04: Safeguarding of Wami River Bagamoyo District Tan-L27: Urban solid waste collection and processing Bagamoyo Town
17. Performance indicators:	 Water quality (chemistry, BOD, agrochemicals, etc.) Volumes and types of solid wastes on associated beaches Records of inundation events
18. Comments:	Note: There are a number of initiatives responding to Ruvu River water shortages and quality, especially given the importance of this source for the burgeoning Dar es Salaam consumer. Impacts of climate change have also been more recently investigated. This Action needs to be aligned with on-going initiatives related to river flows in the Ruvu Basin, but focus more especially on the portions of river and catchments located in the Bagamoyo District portion, with particular emphasis on the quality of the final discharges into the coastal zone.
	Relevant initiatives are the UNDP/GEF support for the project "Securing watershed services through SLM in the Ruvu and Zigi catchments Eastern Arc Region", with the Ministry of Water (2014-19), focused on policy, capacity, implementation and awareness. Also, the World Bank supported "Water sector development IWSS [International Water Stewardship Standard] in nine basins", partnered with the nine river basin authorities, addressing policy related issues.
	References:
	IUCN Eastern and Southern Africa Programme, 2010. The Ruvu Basin: A Situation Analysis., xvi + 96 pp.
	Yanda P.Z. and Munishi, P.K.T. 2007. Hydrologic and land use/cover change analysis for the Ruvu River (Uluguru) and Sigi River (East Usambara) watersheds. For WWF/CARE Dar es Salaam, Tanzania. 80 pp.

Tan-L06: Rehabilitation and clean-up of Mkuza and Mpiji rivers, Bagamoyo and Kinondoni districts

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Nutrient and chemical pollution discharged through these rivers into the coastal environment on the western shores of the Zanzibar Channel is well-documented, visible especially after heavy rains, with solid wastes and

	T
	sediments discharged being indicative of degraded and polluted watersheds.
2. Title:	Southern Bagamoyo District is drained by two large rivers, both of 25-30 km length: the Mkuza River with sources in the streams The Mpiji River forms the seaward part of the district border between Bagamoyo and Kinondoni. Both rivers begin in the higher ground around the forest reserves of Pande. These water sources are threatened from overharvest and land changes and are in need on continued support to ensure their contributions to the flows of the Mkuza and Mpijii rivers. Rehabilitation and clean-up of Mkuza and Mpiji rivers, Bagamoyo and Kinondoni districts
3. Action Reference:	Tan-L06
4. Justification:	Beach pollution and marine pollution were both identified as severity level 4, for Kinondoni District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Agrochemicals were contributing to marine pollution. Beach pollution was also identified as severity level 3, for Bagamoyo District, with pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Agrochemicals were also contributing to river and marine pollution.
	Decline in fisheries yields, regarded as a threat of level 4, in both districts that share the Mpiji River, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	The two east flowing rivers (Mkuza and Mpiji) that drain western Kinondoni are some of the largest conduits for liquid and solid waste, chemicals and sediment to the north Dar es Salaam coastline, causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. turtles, fish and habitats), extending many kilometres along the coast (likely affecting nearby small islands and coral reefs, and resulting in negative publicity of this important tourist destinations in northern Dar es Salaam.
	Protecting the sources of these two rivers, particularly in the Pange area is a high priority, especially protection from fire (e.g. Doggart, 2003), while other areas of focus identified include water user association formulation and capacity building essential to secure water sources for most of the district towns in the basin to ensure water supply, a borehole inventory in Dar es Salaam, investment to construct more storage facilities (reservoirs, ground water storage) and human resource development, among others (IUCN 2010).
	Actions are aimed at improving water quality and flow rates; both being potentially important, especially where there are salinity-sensitive fisheries, as there are associated with most estuaries given the 4 m tidal range.
5. Objective:	By 2025 waters from these two rivers devoid of pollution with riverine and
6. Expected outputs:	 estuarine biodiversity restored. The objectives of the Action to rehabilitate Mkuza and Mpijii rivers in Bagamoyo and Kinondoni districts are: Clean and safe water in the streams. Greater ability of the river banks to absorb small flooding events. Reduced solid and liquid wastes discharged to sea.
7. Activities:	 Decreased volume of wastes into the streams. Reduced wastes washed up along the coast. Stream sources rehabilitated and protected. Local NGOs capable of managing stream environment. a) Project design and appraisal.
/. / ICH VILLES.	u) Troject design and appraisa.

	 b) Project tendering 1) Develop, review and implement stream management str 2) Review, develop, implement and enforce relevant legislatinstruments addressing riverine environment (e.g. re-loc commercial and residential houses impinging on the rive distances). 3) Rehabilitate natural sources of streams and bank vegetate floodplains and marshes). 4) Increase awareness among households to avoid dumping agrochemicals and rivers in streams and rivers. 5) Develop, review and implement a waste management stream appropriate stream management. 	ative/regulatory cate and re-house er bank set-back tion (including g waste and
8. Assumptions:	The Tanzania Government is committed to supporting the contact and river basins, that are integral elements of integrated coamanagement. Local residents and businesses are supportive clean-up the neighbour riverine environment.	on the watersheds stal zone
9. Risks:	Local residents and businesses may object and block the pro-	oject.
10. Means of implementation:	Logistics, technical, scientific Budgets for meetings Budgets for technical assistance Hydraulic modelling Access to information Green-green infrastructure IWRM planning Human Resources Civil and water engineers Modellers Physical Planners Pollution chemists, freshwater ecolo	noists and hotanists
	Socio-economists and resettlement s	
11. Budget estimate:	Item Project preparation and mobilisation Mobilisation and review of river basin influences Enforce relevant legislative/regulatory instruments Re-locate and re-house commercial and residential houses and infrastructure affecting basins Rehabilitate natural sources of streams and bank vegetation Increase awareness among households and farmers/livestock herders to avoid dumping waste in streams Develop, review and implement river basin waste management strategy Design appropriate stream management involving local partners and secure sustainability Total The coarse budget does not provide for re-housing or other illegal squatters or illegal land-uses, which are considered a	
12. Source of funding:	Tanzania Government (budget, participation) Private Sector (participation) NGOs (participation)	

13. Responsible for the action:	Strong Local Government coastal development stakeholder capable of effectively coordinating efforts:																				
	• Wami-Ruvu River Bas	in	A	uth	101	rity															
	• Wami Ruvu Basin Wa					,															
	 Contractors 																				
	• NGOs																				
	• etc																				
14. Beneficiary from	Local residents (over two																				
the action:	terms of health and safet																				
	aspects of the surrounding																				
	resources users (includir entering the inshore coas						m r	ea	uce	ea	se	an	ne	nta	at1(n	an	ıa	ро	111	itioi
	Indirect or long term ber											_	_							\sim	
	through improved coasts for socio-economic devel																				
	resources and environme	-	-						,111	ν.	0111	131	118	, 30	1311	411	uı	/IC	110	110	ıuı
15. Schedule:			Yea		_		ear 2		_	Vo	ar 3			Voc	ar 4	_	_	Vo	3r F		T,
15. Schedule:		Q1			Q4	Q1 C			Q1			Q4	Q1			Q4	Q1		ar 5 Q3	Q4	
	Rehabilitation of Mkuza and Mpiji rivers, Kinondoni District																				
	a) Project preparation and mobilisation																ļ			<u> </u>	İ
	b) Mobilisation and review of river basin influences																				
	1) Enforce relevant legislative/regulatory								ļ												†
	instruments 2) Re-locate and re-house commercial					П	_	-	ļ											-	ł
	and residential houses and infrastructure					ш															
	affecting basins 3) Rehabilitate natural sources of									<u> </u>								-		-	ŀ
	streams and bank vegetation					_ _	-										ļ	ļ	ļ	ļ	ļ
	4) Increase awareness among households and farmers/livestock																				
	herders to avoid dumping waste and agrochemicals in streams																				
	5) Develop, review and implement a							I	Π								 			ļ	†
	river basin waste management strategy 6) Design appropriate stream							_											ļ	-	ł
	management involving local partners																				
16. Links to other	and secure sustainability Links to following system			atio	010	0.747	011	41	20.6	100	21.00	.bl	٥.							<u> </u>	<u>L</u>
actions:												וטו	e.								
	Tan-S01: Integrated Coastal Zone Management																				
	• Tan-S02: Spatial Planning																				
	• Tan-S03: Shoreline Management																				
	 Tan-S04: Information Management Tan-S06: Awareness Raising 																				
	Tan-S07: Integrated Legal Review																				
	Of particular relevance and importance would be links to following local																				
	actions:																				
	• Tan-L05: Rehabilitation	n	an	d c	cle	an-	up	of l	Ru	vu	Ri	ve	r E	Baş	gan	10	yo	D	ist	ric	t
	Tan-L27: Urban solid waste collection and processing Bagamoyo Town																				
	Tan-L28: Urban solid waste collection and processing Kinondoni																				
17 Danie	- TA7-tor1tr / 1	L.		201	<u> </u>		. 1			_ 1		L - \									
17. Performance	Water quality (chemis Volumes and types of													ha	c						
indicators:	 Volumes and types of solid wastes on associated beaches 										cu	νe	ac.	ııe	9						
	Records of inundation	e	ver	nts																	
	Records of inundation	e	ver	ıts																	

Note: There are a number of initiatives responding to problems in the Ruvu and Wami River Basins, focused on water shortages and quality, especially given the importance of this source for the burgeoning Dar es Salaam consumer. Impacts of climate change have also been more recently investigated and the Surface Water Drainage Project which covers the Municipalities of Kinondoni, Ilala and Temeke aims to prepare the investments for a comprehensive Surface Water Drainage System for the Dar es Salaam City. This Action needs to be aligned with on-going initiatives related to river flows in the Wami-Ruvu Basin, in particular the the UNDP/GEF support for the project "Securing watershed services through SLM in the Ruvu and Zigi catchments Eastern Arc Region", with the Ministry of Water (2014-19), focused on policy, capacity, implementation and awareness, and the World Bank supported "Water sector development IWSS [International Water Stewardship Standard] in nine basins", partnered with the nine river basin authorities, addressing policy related issues. Effort however should remain focused in on the portions of the smaller rivers and catchments located in the Bagamoyo and Kinondoni districts, with particular emphasis on the quality of the final discharges into the coastal zone from the Mkuza and Mpiji rivers.

References:

Doggart, N. 2003. Pande Game Reserve: A Biodiversity Survey. TFCG Technical Paper 7. DSM, Tz. 1-100 pp

IUCN Eastern and Southern Africa Programme, 2010. The Ruvu Basin: A Situation Analysis., xvi + 96 pp.

Tan-L07: Rehabilitation and clean-up of seven rivers, Kinondoni District

4 P 1	
1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Within Kinondoni District, excluding border rivers such as Mpiji (see previous action Tan: L06) and Msimbazi (see next action Tan: L08) There are seven principle, each with several much smaller streams, that discharge into the coastal waters between Ras Kankadya (Msasani Peninsula) and Ras Kiromoni. This stretch of coast, approximately 20 km long, is one of the most polluted in the country. From Ras Kiromoni southwards, with the approximate length of the rivers, these are Nyakasangwe (22 km), Tegeta 28 km, Manyema (17 km), Ndumbwi (3 km), Mbezi (18 km), Mlalakuwa (16 km) and Kijitonyama (25 km).
2. Title:	Nutrient and chemical pollution discharged through these rivers into the coastal environment on the western shores of the Zanzibar Channel is well-documented, visible especially after heavy rains, with solid wastes and sediments discharged being indicative of degraded and polluted watersheds. These water are important marine biodiversity and fisheries areas, reflected by the presence of the dare s Salaam Marine Reserves (that include the islands and reefs of Bongoyo, Mbudya, Fungu Yasin), Rehabilitation and clean-up of seven east flowing rivers, Kinondoni District
3. Action Reference:	Tan-L07
4. Justification:	Beach pollution and marine pollution were both identified as severity level 4, for Kinondoni District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Agrochemicals were contributing to marine pollution. Pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Agrochemicals were also contributing to river and marine pollution.
	Decline in fisheries yields, regarded as a threat of level 4 in both Kinondoni Districts, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	The seven relatively short-lengthed east-flowing rivers that drain Kinondoni are some of the largest conduits for liquid and solid waste, chemicals and sediment to the north Dar es Salaam coastline, causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. turtles, fish and habitats), extending many kilometres along the coast (likely affecting nearby small islands and coral reefs, and resulting in negative publicity of this important tourist destinations in northern Dar es Salaam.
	Protecting the sources of these rivers, particularly in western higher ground areas is a high priority, especially protection from fire if Pande Forest Reserve (e.g. Doggart, 2003). Other areas of focus for intervention include water user association formulation and capacity building essential to secure water sources

	inventory in Dar es s (reservoirs, ground	ict towns in the basin to ensure water su Salaam, investment to construct more st water storage) and human resource dev nela, 2005; IUCN, 2010).	torage facilities
	potentially importar	t improving water quality and flow rate nt, especially where there are salinity-se with most estuaries given the 4 m tidal	nsitive fisheries, as
5. Objective:		these seven rivers devoid of pollution	
6. Expected outputs:	The objectives of the Clean and safe wa Greater ability of Reduced solid and Decreased volume Reduced wastes wa Stream sources re	Action to rehabilitate seven rivers in K	
7. Activities:	 a) Project design ar b) Project tendering 1) Develop, review 2) Review, develop instruments add commercial and distances). 3) Rehabilitate nature floodplains and selection of the sel	nd appraisal. g and implement stream management stream implement and enforce relevant legislaressing riverine environment (e.g. re-loweresidential houses impinging on the riveral sources of streams and bank vegeta	ative/regulatory cate and re-house er bank set-back tion (including ng waste and
8. Assumptions:	natural environmen and river basins, tha management. Local	rnment is committed to supporting the orange of the control of the	on the watersheds astal zone
9. Risks:	Local residents and	businesses may object and block the pro	oject.
10. Means of implementation:	Logistics, technical, scientific	 Budgets for meetings Budgets for technical assistance Hydraulic modelling Access to information Green-green infrastructure IWRM planning 	
	Human Resources	 Civil and water engineers Modellers Physical Planners Pollution chemists, freshwater ecole Socio-economists and resettlement 	
11. Budget estimate:	Item		Estimate in USD
	Project preparation	and mobilisation	100,000
		eview of river basin influences	200,000
		gislative/regulatory instruments	300,000
		ouse commercial and residential	3,000,000
	nouses and intrastr	ructure affecting basins	

	Rehabilitate natural sour	ces of strea	ams and b	ank	8,000,000
	vegetation Increase awareness amor farmers/livestock herder streams	600,000			
	Develop, review and imp	olement riv	ver basin v	vaste	300,000
	Design appropriate streat partners and secure susta		ement invo	lving local	1,000,000
	Total	amabinty			13,500,000
	The coarse budget does not illegal squatters or illegal				
12. Source of funding:	 Tanzania Government (I Private Sector (participa NGOs (participation) Development Partners (Tanzania) assistance programmes 	tion)	_		AfDB, WB, EU, Bilatera
13. Responsible for the action:	Strong Local Government effectively coordinating ef		velopmen	t stakehold	ler capable of
	Wami-Ruvu River BasinContractorsNGOsetc	n Authorit	y		
14. Beneficiary from the action:	Local residents (almost tw terms of health and safety aspects of the surrounding resources users (including entering the inshore coasts Indirect or long term bene through improved coastal for socio-economic develo resources and environment	while swi g areas; ma fishers) fr al waters. ficiaries w water qua pment wit	mming in angrove for reducer the the callity will he thout comp	the sea, from the sea, from the sed intertion of the sedimer oastal popave bettere	om enhanced aesthetic idal and coral reefs itation and pollution ulations at large that ed their opportunities
15. Schedule:		Year 1	Year 2	Year 3	Year 4 Year 5
	Actions and Activities Rehabilitation of seven rivers, Kinondoni District a) Project preparation and mobilisation b) Mobilisation and review of river basin influences 1) Enforce relevant legislative/regulatory instruments 2) Re-locate and re-house commercial and residential houses and infrastructure affecting basins 3) Rehabilitate natural sources of streams and bank vegetation 4) Increase awareness among households and farmers/livestock herders to avoid dumping waste and agrochemicals in streams 5) Develop, review and implement a river basin waste management strategy 6) Design appropriate stream management involving local partners and secure sustainability	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4	Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4
16. Links to other actions:	Links to following system • Tan-S01: Integrated Coa				

- Tan-S02: Spatial Planning
- Tan-S03: Shoreline Management
- Tan-S04: Information Management
- Tan-S06: Awareness Raising
- Tan-S07: Integrated Legal Review

Of particular relevance and importance would be links to following local actions:

Of particular relevance and importance would be links to following local actions:

- Tan-L05: Rehabilitation and clean-up of Ruvu River Bagamoyo District
- Tan-L15: Sewage treatment facility Kinondoni District
- Tan-L15: Sewage treatment facility Ilala District
- Tan-L28: Urban solid waste collection and processing Kinondoni
- Tan-L29: Urban solid waste collection and processing Ilala District

17. Performance indicators:

- Water quality (chemistry, BOD, agrochemicals, etc.)
- Volumes and types of solid wastes on associated beaches
- Records of inundation events
- ..

18. Comments:

Note: There are a number of initiatives responding to problems in the Ruvu and Wami River Basins, focused on water shortages and quality, especially given the importance of this source for the burgeoning Dar es Salaam consumer. Impacts of climate change have also been more recently investigated and the Surface Water Drainage Project which covers the Municipalities of Kinondoni, Ilala and Temeke aims to prepare the investments for a comprehensive Surface Water Drainage System for the Dar es Salaam City. This Action needs to be aligned with on-going initiatives related to river flows in the Wami-Ruvu Basin, but focus more especially on the smaller rivers and catchments located in the Kinondoni District, with particular emphasis on the quality of the final discharges into the coastal zone.

Relevant initiatives are the UNDP/GEF support for the project "Securing watershed services through SLM in the Ruvu and Zigi catchments Eastern Arc Region", with the Ministry of Water (2014-19), focused on policy, capacity, implementation and awareness. Also, the World Bank supported "Water sector development IWSS [International Water Stewardship Standard] in nine basins", partnered with the nine river basin authorities, addressing policy related issues.

References:

Babyebonela, T.W. 2005. Solid waste management and river bank stabilization along Nalung'ombe River in Kinondoni Municipality Dar-es-Salaam.

Doggart, N. 2003. Pande Game Reserve: A Biodiversity Survey. TFCG Technical Paper 7. DSM, Tz. 1-100 pp

IUCN Eastern and Southern Africa Programme, 2010. The Ruvu Basin: A Situation Analysis., xvi + 96 pp.

Tan-L08: Rehabilitation and clean-up of Msimbazi River Basin, Kinondoni and Ilala districts

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	The Mzimbazi River is the major river basin that drains the Ilala District, bordering to the north in places with Kinondoni District. The Msimbazi River is about 25 km long, with head waters in Pugu Hills Forest Reserve, but includes a basin with at least eight major tributaries on the north banks, themselves mostly 15-25 km long, that feed into the main river. Upriver from the mouth the tributaries are the Sinza, Minyonyoni, Mborohadi, Ubungo, Mgigawa, Makulamula, Luhanga and Kimanga.
	Msimbazi Creek is the most studied area of Dar es Salaam. A comprehensive body of literature (e.g. Machiwa, 1992; Mwandya, 1993; Lyantagaye, 1996; Kondoro, 1997; Othman 2002) documents the nutrients, chemical, faecal and solid waste pollution discharged through this rivers into the coastal environment as it passes under Selander Bridge, visible especially after heavy rains.
2. Title:	Rehabilitation and clean-up of the Msimbazi River, Kinondoni and Ilala districts
3. Action Reference:	Tan-L08
4. Justification:	Beach pollution and marine pollution were both identified as severity level 4, for Kinondoni District, with sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Pollution of the beach and nearshore, industrial, sewage and heavy metal were all forms of pollution ranked as level 3 threats in Ilala District. Pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems.
	Decline in fisheries yields, regarded as a threat of level 4 in both Kinondoni and Ilala districts, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats. Disease outbreaks was ranked at severity level 4 and 3 respectively for Ilala and Kinondoni, with causes linked to flooding and sewage.
	The Msimbazi River basin is the largest conduit for liquid and solid waste, chemicals and sediment to the north Dar es Salaam coastline, causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. turtles, fish and habitats), extending many kilometres along the coast (likely affecting nearby small islands and coral reefs, and resulting in negative publicity of this important tourist destinations in northern Dar es Salaam.
	1

		nge facilities (reservoirs, ground water s ent, among others (e.g. Babyebonela, 200						
	Actions are aimed at improving water quality and flow rates; both being potentially important, especially where there are salinity-sensitive fisheries there are associated with most estuaries given the 4 m tidal range.							
F. Ohi a diam		there are associated with most estuaries given the 4 m tidal range.						
5. Objective:		the Msimbazi River devoid of pollution	n with riverine and					
6 Francisco di carterartes	estuarine biodiversi	J						
6. Expected outputs:	 Clean and safe was 	e Action to rehabilitate the Msimbazi Ri	ver basın are:					
			r arramba					
		the river banks to absorb small flooding d liquid wastes discharged to sea.	g events.					
		e of wastes into the streams.						
		vashed up along the coast.						
		habilitated and protected.						
		ble of managing stream environment.						
7. Activities:	a) Project design ar							
7. Activities.	b) Project tendering							
	, ,	s and implement stream management st	rategy					
		, implement and enforce relevant legisl						
		ressing riverine environment (e.g. re-lo						
		residential houses impinging on the riv						
	distances).	residential inches military and on the in-	er summer set such					
	,	ıral sources of streams and bank vegeta	tion (including					
	floodplains and		(
		ess among households to avoid dumpir	ng waste and					
		nd rivers in streams and rivers.	O					
		and implement a waste management s	trategy.					
	6) Design appropriate stream management.							
8. Assumptions:	The Tanzania Cover	nment is committed to supporting the	clean up of the					
o. Assumptions.		t, enforcing relevant laws that impinge						
		t are integral elements of integrated coa						
		residents and businesses are supportive						
	_	our riverine environment.						
0 D:-1			• ,					
9. Risks:	Local residents and	businesses may object and block the pro	oject.					
10. Means of	Logistics,	Budgets for meetings						
implementation:	technical, scientific	Budgets for technical assistance						
		Hydraulic modelling						
		Access to information						
		Green-green infrastructure						
		IWRM planning						
		•						
	Human Resources	Civil and water engineers						
		• Modellers						
		Physical Planners						
		Pollution chemists, freshwater ecol	O					
		Socio-economists and resettlement	specialists					
11 D. 1-1 C	Tr.	•	E (') LICD					
11. Budget estimate:	Item	and mobilioation	Estimate in USD					
	Project preparation		100,000					
		eview of river basin influences	200,000					
		gislative/regulatory instruments	300,000					
		ouse commercial and residential	5,000,000					
		ructure affecting basins	10,000,000					
		l sources of streams and bank	10,000,000					
	vegetation							

	=1 -1														1
	Increase awareness am farmers/livestock herd streams						aste	in						800,	.000
	Develop, review and in management strategy	nplen	nent :	river	basir	ı wa	ste						,	300,	.000
	Design appropriate stre				nt in	volv	ing	loca	al				1,0	000,	.000
	Total												17,	700,	.000
	The coarse budget does illegal squatters or illega														
12. Source of funding:	 Tanzania Government Private Sector (particip NGOs (participation) Development Partners assistance programmes 	ation (Tech)		-	,	ıdge	et)	AfI	ЭΒ,	W	В, 1	EU,	, Bil	ateral
13. Responsible for the action:	Strong Local Government effectively coordinating			level	opm	ent s	take	ehol	deı	r ca	pa	ble	of		
	Wami-Ruvu River BasContractorsNGOsetc	sin Au	ıthor	ity											
14. Beneficiary from the action:	Local residents (over one terms of health and safet aspects of the surroundiresources users (includirentering the inshore coast Indirect or long term ber through improved coast for socio-economic deversources and environmenter the socio-economic deversor and environmenter the socio-economic deversor d	ty who ng are ng fish stal w neficia al wa lopme	ile sveas; reas; raters aries aries ter quent w	vimm nang from will k uality vithou	rove reduce the will at con	in th fores aced e coa hav	e se st, ii sed istal e be	a, fr nter ime pop	om tida enta pul red	n er al a atio atio	nha nd n a	nce co ind s at	ed a ral po lar	ree llut ge t	hetic fs ion hat ities
15. Schedule:		Yea			ir 2		ear 3			ar 4			/ear		
	Actions and Activities Rehabilitation of Msimbazi River	Q1 Q2	Q3 Q4	Q1 Q2	Q3 Q4	Q1 Q	2 Q3	Q4 Q	1 Q2	2 Q3	Q4	Q1 (12 Q	3 Q4	l I
	Kinondoni - Ilala districts														
	a) Project preparation and mobilisation b) Mobilisation and review of river basin														
	influences														
	1) Enforce relevant legislative/regulatory														
	instruments 2) Re-locate and re-house commercial					1									
	and residential houses and infrastructure														
	affecting basins 3) Rehabilitate natural sources of					L	ightharpoonup								
	streams and bank vegetation														
	Increase awareness among households and farmers/livestock														
	herders to avoid dumping waste and														
	agrochemicals in streams 5) Develop, review and implement a					I i		_							
	river basin waste management strategy														
	6) Design appropriate stream														
	management involving local partners														
16 Links to other	management involving local partners and secure sustainability	mic ac	rtion	3 74701	ıld h	e do	ziral	nle:							
16. Links to other actions:	management involving local partners and secure sustainability Links to following system							ole:							
16. Links to other actions:	management involving local partners and secure sustainability Links to following system Tan-S01: Integrated Co	oastal						ole:							
	management involving local partners and secure sustainability Links to following system Tan-S01: Integrated Co Tan-S02: Spatial Plann	oastal ing	Zon	е Ма				ole:				***************************************			
	management involving local partners and secure sustainability Links to following system Tan-S01: Integrated Company of the system of the sys	oastal ning nnage:	Zon ment	e Ma				ole:				***************************************			
	management involving local partners and secure sustainability Links to following system Tan-S01: Integrated Co Tan-S02: Spatial Plann	oastal iing inage: Mana	Zon ment gem	e Ma				ole:				***************************************	***************************************		

• Tan-S07: Integrated Legal Review

Of particular relevance and importance would be links to following local actions:

- Tan-L05: Rehabilitation and clean-up of Ruvu River Bagamoyo District
- Tan-L15: Sewage treatment facility Kinondoni District
- Tan-L15: Sewage treatment facility Ilala District
- Tan-L28: Urban solid waste collection and processing Kinondoni
- Tan-L29: Urban solid waste collection and processing Ilala District

17. Performance indicators:

- Water quality (chemistry, BOD, agrochemicals, etc.)
- Volumes and types of solid wastes on associated beaches
- Records of inundation events

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18. Comments:

Note: There are a number of initiatives responding to problems in the Ruvu and Wami River Basins, focused on water shortages and quality, especially given the importance of this source for the burgeoning Dar es Salaam consumer. Impacts of climate change have also been more recently investigated and the Surface Water Drainage Project which covers the Municipalities of Kinondoni, Ilala and Temeke aims to prepare the investments for a comprehensive Surface Water Drainage System for the Dar es Salaam City. This Action needs to be aligned with on-going initiatives related to river flows in the Wami-Ruvu Basin, but focused exclusively on the Msimbazi River, and catchments, located in the Kinondoni and Ilala districts, with particular emphasis on the quality of the final discharges into the coastal zone.

Also of relevance are the UNDP/GEF support for the project "Securing watershed services through SLM in the Ruvu and Zigi catchments Eastern Arc Region", with the Ministry of Water (2014-19), focused on policy, capacity, implementation and awareness; and the World Bank supported "Water sector development IWSS [International Water Stewardship Standard] in nine basins", partnered with the nine river basin authorities, addressing policy related issues.

References:

Babyebonela, T.W. 2005. Solid waste management and river bank stabilization along Nalung'ombe River in Kinondoni Municipality Dar-es-Salaam.

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Kondoro, J.W.A., 1997. Dispersion of heavy metals along Msimbazi River basin in Dar es Salaam, Tanzania. Tanzania Journal of Science, 23: 1-10.

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Othman, O.C. Speciation of cadmium, copper, lead and zinc in waters of river Msimbazi, Dar es Salaam, Tanzania. Tanz. J. Sci. 28(1): 25-35.

Tan-L09: Rehabilitation and clean-up of Kizinga and Mzinga river basins, Ilala and Temeke districts

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	The Dar es Salaam Harbour is the seaward portion of Mzinga Creek, fed by two main tributaries, the Kizinga and Mzinga rivers, of 17 km and 10 km in length respectively. The Kizinga and Mzinga river systems originate from the Pugu/Kisarawe hills with the Kizinga having a catchment area of 432 km², and the Mzinga 41 km² (IUCN, 2004). The water in the Mzinga and Kizinga rivers meets domestic standards for drinking water, notably in the upper reaches. Mzinga is not perennial while Kizinga flows throughout the year and support domestic water supply in the Mbagala area (Mjemah, 2007).
	The outflows from the two rivers that drain southern Dar es Salaam are well documented sources of various pollutants (e.g. Machiwa, 1992; Mwandya, 1993; Lyantagaye, 1996; Othman, 2002; Abbu and Lyimo, 2007), including nutrients, chemicals, oils, faecal and solid waste pollution, that are carried into coastal environment as these waters discharge through Mzinga Creek and pass the Dar es Salaam Port.
2. Title:	Rehabilitation and clean-up of Kizinga and Mzinga river basins, Ilala and Temeke districts
3. Action Reference:	Tan-L09
4. Justification:	Pollution of the beach and nearshore, industrial, sewage and heavy metal were all forms of pollution ranked as level 3 threats in Ilala District. Beach and marine pollution from heavy metals, industrial and oil pollution were all identified as severity level 3, for Temeke District, with sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems, industry and garages dumping into the Kizinga and Mzinga rivers.
	Decline in fisheries yields, regarded as a threat of level 4 in both Ilala and Temeke districts, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats. Disease outbreaks was ranked at severity level 4 for Ilala, with causes linked to flooding and sewage.
	The Kizinga and Mzinga rivers are the largest conduit for liquid and solid waste, chemicals and sediment to the central Dar es Salaam coastline, causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. turtles, fish and habitats), extending many kilometres along the coast, likely affecting nearby small islands and coral reefs, and resulting in negative publicity of this important tourist destinations in northern Dar es Salaam.
	Cleaning up and rehabilitating these two rivers that converge at Mzinga Creek is a high priority. As with other rivers in the Wami-Ruvu Basin, additional areas of focus for intervention include water user association formulation and capacity

~	Project preparation	and mobilisation	100,000
11. Budget estimate:	Item	 Civil and water engineers Modellers Physical Planners Pollution chemists, freshwater ecolo Socio-economists and resettlement s 	O
10. Means of implementation:	Logistics, technical, scientific Human Resources	 Budgets for meetings Budgets for technical assistance Hydraulic modelling Access to information Green-green infrastructure IWRM planning Civil and water engineers 	
9. Risks:	Local residents and	businesses may object and block the pro	oject.
8. Assumptions:	natural environment and river basins, tha management. Local	rnment is committed to supporting the color, enforcing relevant laws that impinge of the are integral elements of integrated coaresidents and businesses are supportive our riverine environment.	on the watersheds astal zone
7. Activities:	 Local NGOs capal a) Project design ar b) Project tendering 1) Develop, review 2) Review, develop instruments addicommercial and distances). 3) Rehabilitate natural floodplains and all lincrease awarend agrochemicals ar 5) Develop, review 	and implement stream management stream implement and enforce relevant legislaressing riverine environment (e.g. re-loc residential houses impinging on the riveral sources of streams and bank vegetal	ative/regulatory cate and re-house er bank set-back tion (including
6. Expected outputs:	 and Temeke districts Clean and safe wa Greater ability of Reduced solid and Decreased volume Reduced wastes was 	ater in the streams. the river banks to absorb small flooding d liquid wastes discharged to sea. e of wastes into the streams. vashed up along the coast.	
5. Objective:	estuarine biodiversit	J	
	potentially importar there are associated	t improving water quality and flow rate nt, especially where there are salinity-se with most estuaries given the 4 m tidal ent has a focus on commercial agricultu	nsitive fisheries, as range, and moreso
	basin to ensure water to construct more sto	secure water sources for most of the diser supply, a borehole inventory in Dar exprage facilities (reservoirs, ground water relopment, among others (e.g. Babyebor	s Salaam, investment r storage) and

		200,000				
	Mobilisation and review of river basin influences	200,000				
	Enforce relevant legislative/regulatory instruments	300,000				
	Re-locate and re-house commercial and residential	3,000,000				
	houses and infrastructure affecting basins					
	Rehabilitate natural sources of streams and bank	8,000,000				
	vegetation					
	Increase awareness among households and	600,000				
	farmers/livestock herders to avoid dumping waste in					
	streams					
	Develop, review and implement river basin waste management strategy	300,000				
	Design appropriate stream management involving local partners and secure sustainability	1,000,000				
	Total	13,500,000				
	1000	10,000,000				
	The coarse budget does not provide for re-housing or other illegal squatters or illegal land-uses, which are considered a					
funding:	 Tanzania Government (budget, participation) Private Sector (participation) NGOs (participation) Development Partners (Technical Assistance budget). AfD assistance programmes 	B, WB, EU, Bilateral				
13. Responsible for the action:	Strong Local Government coastal development stakeholder effectively coordinating efforts:	capable of				
	 Wami-Ruvu River Basin Authority Contractors NGOs etc 					
14. Beneficiary from the action:	Local residents (over one million) plus foreign visitors (several thousand) in terms of health and safety while swimming in the sea, from enhanced aesthetic aspects of the surrounding areas; mangrove forest, intertidal and coral reefs resources users (including fishers) from reduced sedimentation and pollution entering the inshore coastal waters.					
	Indirect or long term beneficiaries will be the coastal populations at large that through improved coastal water quality will have bettered their opportunities for socio-economic development without compromising sustainable natural resources and environmental management.					

15. Schedule:	Actions and Activities	01		ar 1 2 Q3	04	01		ar 2	04	01		ar 3		01		ar 4	04	01		n 5	04
	Rehabilitation of Kizinga and Mzinga	-	· QZ		Q4	41	Q2	<u> </u>	Q4	<u> </u>	Q2	<u> </u>	- Q4	41	- QZ	Q.	Q4	Į QI	Q2	Q3	4
	rivers IIala - Temeke districts	L															<u> </u>				
	a) Project preparation and mobilisation			ш		ļ		ļ		ļ		ļ		ļ		ļ	<u>.</u>				
	b) Mobilisation and review of river basin					l															
	influences	-		lacksquare		_		i	ļ	ļ	ļ		ļ	ļ	ļ	ļ	ļ	ļ	ļ		
	Enforce relevant legislative/regulatory instruments							l													
	2) Re-locate and re-house commercial	·		-		г				l			-	·			-				
	and residential houses and infrastructure									l											
	affecting basins									ᆫ	<u> </u>				ļ	ļ	ļ		ļ		
	3) Rehabilitate natural sources of												ı								
	streams and bank vegetation 4) Increase awareness among	.		ļ		ļ							ł	ļ		ļ			ļ		
	households and farmers/livestock												ı								
	herders to avoid dumping waste and												ı								
	agrochemicals in streams																				
	5) Develop, review and implement a					1												l			
	river basin waste management strategy			ļ		ᆫ				ᆫ								ļ			
	6) Design appropriate stream																				
	management involving local partners and secure sustainability																				
	and secure sustainability			-														_			
										_											
16. Links to other	Links to following system	nic	ac	tio	ns	W	oul	ld l	Эe	de	sir	ab.	le:								
actions:	Tan SO1: Integrated Co		t-1	70	no	. 1./	22	20	012	or	.+										
	• Tan-S01: Integrated Co			ZU	HE	: 101	lan	ag	еп	lei	ιι										
	Tan-S02: Spatial Planni																				
	Tan-S03: Shoreline Man		_																		
	 Tan-S04: Information N 	Λа	na	ger	ne	nt															
	• Tan-S06: Awareness Ra	ais	ing	3																	
	• Tan-S07: Integrated Le		_	_	ew	7															
		_																			
	Of particular relevance as	nd	im	npo	rta	anc	e v	NO.	ulo	l b	e l	ink	s t	o f	oll	οv	vin	g l	oca	ıl	
	actions:																				
	• Tan-L08: Rehabilitation	ı a	nd	cle	ear	ı-u	po	of N	Иs	im	ba	zi i	Riv	<i>z</i> er	Ва	si	n				
	Tan-L10: Safeguarding																	Di	istr	ict	
	• Tan-L16: Sewage treatr																				
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	• Tan-L17: Sewage treatr													т1	1	ъ.					
	• Tan-L29: Urban solid w								-				_								
	• Tan-L30: Urban solid v	vas	ste	col	le	ctio	on	an	d p	oro	ce	ssi	ng	Τe	eme	eke	e D	ist	ric	t	
17. Performance	 Water quality (chemist 	ry	, B	OD), a	gr	ocł	ner	nic	als	s, e	etc.)								
indicators:	Volumes and types of s	-				\sim							,	he	s						
	• Records of inundation	ev	en	ts																	
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18. Comments:	Note: There are a numbe																				
	Wami River Basins, focus																				
	importance of this source	fc	r t	he	bu	rg	eor	nin	g l	Da:	r e	s S	ala	ar	n c	on	su	ne	r. I	mp	oacts
	of climate change have al	so	be	en	m	ore	e re	ece	ntl	y i	nv	est	tiga	ate	d a	ano	l tl	neS	ur	fac	e
	Water Drainage Project w									-			_								
	Temeke aims to prepare t																				
	Drainage System for the I										-	-									
								-												_	
	with on-going initiatives																				
	focused exclusively on th			_					_												
	with particular emphasis	OI	n tł	ne c	lua	alit	y	of t	he	fir	nal	di	scl	าลเ	ge	s i	ntc	th	e c	oa	stal
	zone.																				
	Other relevant initiatives	ar	e t	he	Uľ	ND	P/	'GI	EF	รบ	pn	or	t fo	or f	he	pr	oie	ect	"S	ect:	ring
	watershed services throu																				
	Region", with the Ministr	-													_	-		_		-	
	implementation and awa																				
	development IWSS [Inter											_									
	partnered with the nine r	iv	er l	bas	in	au	tho	orit	ties	s, a	dc	lre	ssi	ng	po	olic	y 1	ela	ate	d is	ssues.
	References:													_							
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Tan-L10: Safeguarding Nguva River and other rivers, Temeke District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	The Nguva River basin is the largest in Temeke District, extending some 30 km from the raised plateau in the west and to the south, traversing some 20 km of farmland and shrub area before discharging on the coast in the mangrove creek at Gezaulole. There are five other, small rivers in the district, mostly between 3-10 km in length. The Mbasi River forms the border with Mkuranga District to the south.
	The outflows from rivers in northern Temeke (associated with Mzinga Creek and the harbour) and two other Dar es Salaam districts are well documented sources of various pollutants (e.g. Machiwa, 1992; Mwandya, 1993; Lyantagaye, 1996; Othman, 2002), including nutrients, chemicals, oils, faecal and solid waste pollution, that are carried into coastal environment as these waters discharge through Mzinga Creek and pass the Dar es Salaam Port.
	With the exception of these northern rivers (see Tan-L09), Temeke's other10-12 principle rivers and streams are clean (see Abbu and Lyimo, 2007). Existing threats are minor in the present day and include river sand and water abstraction in a few places. As the city of Dar es Salaam expands south, following completion of the Kurasini Bridge, the pressure on the smaller Temeke catchments is bound to increase dramatically. Development of new settlements and industry has already begun in Temeke and is projected to accelerate once the Kurasini Bridge is completed, expected by June 2015.
2. Title:	Safeguarding the Nguva River and other rivers in Temeke District
3. Action Reference:	Tan-L10
4. Justification:	Beach and marine pollution from heavy metals, industrial and oil pollution were all identified as severity level 3, for Temeke District, with sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems, industry and garages dumping into the Kizinga and Mzinga rivers.
	Decline in fisheries yields, regarded as a threat of level 4 in both Ilala and Temeke districts, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats. Disease outbreaks was ranked at severity level 4 for Ilala, with causes linked to flooding and sewage.
	The Nguva River is the largest potential conduit for liquid and solid waste, chemicals and sediment to the central Dar es Salaam coastline, that would cause beach and sea pollution which affects health and marine life, likely affecting nearby small islands and coral reefs (including the Sinda Island Marine Reserve), an important tourist destination in southern Dar es Salaam.

	While there is no documented evidence of agrochemical or solid wastes discharged from the Nguva River, there is strong likelihood that over the coming years, with increasing pressure on the land that the Nguva River basin drains that agrochemical and solid wastes will increasingly become disposed of or leach into its tributaries, eventually reaching the coast. The emphasis of this action is to prevent the degradation and pollution to the 10-12 principle watercourse in Temeke (excluding Mzinga and Mzinga rivers) that has been witnessed in the neighbouring districts of Ilala and Kinondoni. Actions are aimed at improving water quality and flow rates; both being
	potentially important, especially where there are salinity-sensitive fisheries, as there are associated with most estuaries given the 4 m tidal range.
5. Objective:	By 2025 waters from Temeke rivers continue to be devoid of pollution with riverine and estuarine biodiversity restored.
6. Expected outputs:	The objectives of the Action to safeguard the Nguva River and other rivers (10-12) in Temeke District are: • Maintain rivers clean and safe water in the streams. • Maintain greater ability of the river banks to absorb small flooding events. • Prevent solid and liquid wastes discharged into rivers and then to sea. • Prevent volume of wastes into the streams. • Reduced wastes washed up along the coast. • Stream sources rehabilitated and protected. • Local NGOs capable of managing stream environment.
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Develop, review and implement stream management strategy. 2) Review, develop, implement and enforce relevant legislative/regulatory instruments addressing riverine environment (e.g. re-locate and re-house commercial and residential houses impinging on the river bank set-back distances). 3) Rehabilitate natural sources of streams and bank vegetation (including floodplains and marshes). 4) Increase awareness among households to avoid dumping waste and agrochemicals and rivers in streams and rivers. 5) Develop, review and implement a waste management strategy. 6) Design appropriate stream management.
8. Assumptions:	The Tanzania Government is committed to supporting the clean-up of the natural environment, enforcing relevant laws that impinge on the watersheds and river basins, that are integral elements of integrated coastal zone management. Local residents and businesses are supportive of initiatives to clean-up the neighbour riverine environment.
9. Risks:	Local residents and businesses may object and block the project.
10. Means of implementation:	Logistics, technical, scientific Budgets for meetings Budgets for technical assistance Hydraulic modelling Access to information Green-green infrastructure IWRM planning
	Human ResourcesModellersPhysical Planners

	D.H	1
	Pollution chemists, freshwater ecolSocio-economists and resettlement	
	•	specialists
11. Budget	Item	Estimate in USD
estimate:	Project preparation and mobilisation	100,000
	Mobilisation and review of river basin influences	200,000
	Enforce relevant legislative/regulatory instruments	300,000
	Re-locate and re-house commercial and residential	1,000,000
	houses and infrastructure affecting basins	
	Rehabilitate natural sources of streams and bank vegetation	2,000,000
	Increase awareness among households and	600,000
	farmers/livestock herders to avoid dumping waste in	
	streams	
	Develop, review and implement river basin waste	300,000
	management strategy	1 222 222
	Design appropriate stream management involving local partners and secure sustainability	1,000,000
	Total	5,500,000
	1000	3,000,000
	The coarse budget does not provide for re-housing or other	costs associated with
	illegal squatters or illegal land-uses, which are considered a	
12. Source of	Tanzania Government (budget, participation)	
funding:	Private Sector (participation)	
· ·	NGOs (participation)	
	• Development Partners (Technical Assistance budget). AfD	OB, WB, EU, Bilateral
	assistance programmes	
13. Responsible for	Strong Local Government coastal development stakeholder	capable of effectively
the action:	coordinating efforts:	
	Wami-Ruvu River Basin Authority	
	Contractors	
	• NGOs	
	• etc	
14. Beneficiary	Local residents (tens of thousand) plus foreign visitors (seve	eral thousand) in
from the action:	terms of health and safety while swimming in the sea, from	
	aspects of the surrounding areas; mangrove forest, intertida	
	resources users (including fishers) from reduced sedimenta	tion and pollution
	entering the inshore coastal waters.	
	Indirect or long term beneficiaries will be the coastal popula	ations at large that
	through improved coastal water quality will have bettered	_
	socio-economic development without compromising sustain	
	resources and environmental management.	

15. Schedule:		_	Yea	ar 1		Π	Ve	ar 2		Т	Ye	ar	3	T	_	/ear	4	<u> </u>		Year	r.5	
201 0 0210 010101	Actions and Activities	Q1		Q3	Q4	Q1				Q				ı o				Q4	Q1			Q 4
	Safeguarding Nguva River and other	Г								Т				T				T				T
	rivers - Temeke District a) Project preparation and mobilisation			1						-		-			-		-					
	b) Mobilisation and review of river basin	Н	1			l			-	·												
	influences																					
	1) Enforce relevant legislative/regulatory							1		l				1								
	instruments							_		-		-										
	Re-locate and re-house commercial and residential houses and infrastructure									L												
	affecting basins	l								L												
	3) Rehabilitate natural sources of	l												1								
	streams and bank vegetation							_	_				4	-	_	-		-				
	Increase awareness among households and farmers/livestock	l																				
	herders to avoid dumping waste and																					
	agrochemicals in streams	ļ	ļ											\perp				┙				
	5) Develop, review and implement a	l								l												
	river basin waste management strategy 6) Design appropriate stream	ļ	ļ	ļļ		Н		_	_	_	_	_										
	management involving local partners	l																				
	and secure sustainability																					
		_																				
16. Links to other	Links to following systemic	c a	ctic	ons	w	ou	ld	be	de	siı	ab	le:										
actions:																						
	Tan-S01: Integrated Coast		ΙZ	one	N	lar	nag	gen	nei	nt												
	• Tan-S02: Spatial Plannin	g																				
	• Tan-S03: Shoreline Mana	ige	me	ent																		
	• Tan-S04: Information Ma	ana	ige	me	nt																	
	• Tan-S06: Awareness Rais	sin	g																			
	• Tan-S07: Integrated Lega		_	iew	7																	
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	Of particular relevance and	l ir	npo	orta	n	ce v	W(oul	d b	e l	inŀ	S	to f	ol	lov	vi1	ιg	loc	cal	act	ioı	ıs:
	• Tan-L09: Rehabilitation a	anc	1 c1	ear	1-11	ın (of	Ki	zin	σa	an	d	Мz	in	σa	riv	701	r ha	asi	กร		
	Tan-L16: Sewage treatments					-				_	a.	·	1112	111	6 ^u	11	v Cı		uoi	110		
	<u> </u>				•																	
	Tan-L17: Sewage treatments Tan-L20: Halana and Halana				-								т1.	1.	Ъ		• .					
	• Tan-L29: Urban solid wa							-				_	-									
	• Tan-L30: Urban solid wa	ste	e cc	olle	cti	on	ar	nd]	pro	oce	SSI	ng	ς Τε	m	ek	e I)is	tri	ct			
17. Performance	Water quality (chemistry)	7, B	3OI), a	gr	oc]	he	mi	cal	s,	etc.)										
indicators:	 Volumes and types of so 	lid	w	aste	es	on	as	SO	cia	tec	l be	eac	che	s								
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18. Comments:	Note: There are a number	of:	ini	tiat	νe	es r	es	po	nd	in	g to) r	rol	ole	m	s iı	n t	he	Rι	ıvu	ar	d
	Wami River Basins (that in							-			_	-										
	water shortages and qualit																					
	burgeoning Dar es Salaam																					
	more recently investigated																					
	the Municipalities of Kinor												_		_				CII	CO	V CI	3
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	investments for a compreh												_	-								
	Salaam City. This Action no					-	-					_		_							uι	O
	river flows in the Wami-Ru													-								1
	rivers, and their catchment			_	ar	t1C1	ula	ar e	m	ph	ası	s c	n t	he	qı	ıa.	ıty	7 O	t ti	ne f	ına	ıI
	discharges into the coastal	ZOI	ne.																			
	Relevant initiatives are the	UI	ND	P/	GF	EF :	SU	pp	ort	fc	or t	he	pro	oie	ect	"S	eci	uri	nø			
	watershed services through												_	-					_		rc	
	Region", with the Ministry										_											
	implementation and aware													_		-	-	_	-		to:	
	implementation and aware	116	33.	z 115	ω,	ul	ا ن	, v O	110	ιυ	uill	. 3	μp	μυ	יו נל	u	V	v al	ıC1	SCC	.101	:

development IWSS [International Water Stewardship Standard] in nine basins", partnered with the nine river basin authorities, addressing policy related issues.

References

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- Mjemah, I.C. 2007. Hydrogeological and Hydrogeochemical Investigation of a Coastal Aquifer in Dar-es-Salaam, Tanzania. Dissertation submitted in fulfillment of the requirements for the award of the degree of Doctor in Sciences: Geology. Laboratory for Applied Geology and Hydrogeology, Geological Institute, Ghent University.
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Tan-L11: Rehabilitation and clean-up of lower Rufiji River and safeguarding the Mohoro River, Rufiji District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	One major water body, the Rufiji River, drains approximately 30 % of Tanzania area (some177,000 sq. km) and is the largest river in the country, penetrates the district. Numerous tributaries exist on both banks of the Rufiji River and other four small coastal rivers drain directly into the sea, the largest being the Mohoro River in the southern section of the Rufiji delta. The Rufijii delta is the largest estuarine mangrove forest in East Africa, with an estimated surface area of 53 km². The Mohoro River extends from the wooded hills of Kilwa District to the south, for some 70 km in length, discharging in the southern part of the Rufiji delta.
	Large plantations in the highland drain into Rufiji basin and hence fertilizers, pesticides, herbicides and fungicides may pose a threat. Organochlorine pesticides are reportedly used to control crab pest in rice paddies in the lower Rufiji River portion (Stadlinger et al 2003), potentially affecting carapace formation in prawn and other shellfish. The Mohoro River has not been studies in terms of water quality or threats, but given the increasing development in the southern part of the Rufiji District since the completion of the Mkapa Bridge across the Rufiji River, it is anticipated that catchment and pollution problems associated with the Mohoro River are potential future threats.
	Any sediment, nutrient or chemical pollution discharged through these rivers into the coastal environment on the western shores of the Mafia Channel could potentially impact on the Mafia island Marine Park, as well as the population of whale sharks now know to be attracted to the feeding grounds in the Mafia Channel.
2. Title:	Rehabilitation and clean-up of lower Rufiji River and safeguarding the Mohoro River, Rufiji District
3. Action Reference:	Tan-L11
4. Justification:	Beach pollution and marine pollution were both identified as severity level 4 for Rufiji District, with pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Agrochemicals were contributing to marine pollution. Decline in fisheries yields, was also regarded as a threat of level 4, attributed in part to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	The Rufiji River (and to a much lesser extent the Mohoro River) is the largest conduit for liquid and solid waste, chemicals and sediment into the Mafia Channel, potentially causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. turtles, fish and habitats). Pollution and sediment from these rivers extend many kilometres along the

	Island Marine Park), and important tourist destine The need to address the and delta) and safeguare Mohoro River combined Actions are aimed at impotentially important, exthere are associated with	small islands and coral reefs that are part of the Mafia d potentially resulting in negative publicity of this ation. use of pesticides in the lower Rufiji River (floodplain d the catchment and land uses that impact on the urgent action and mitigation of future impacts. proving water quality and flow rates; both being specially where there are salinity-sensitive fisheries, as a most estuaries given the 4 m tidal range, and moreso has a focus on commercial agriculture such as in Rufiji
5. Objective:	By 2025 waters from the estuarine biodiversity re	ese two rivers devoid of pollution with riverine and estored.
6. Expected outputs:	 the Mohoro River are: Clean and safe water Greater ability of the results of the res	river banks to absorb small flooding events. Juid wastes discharged to sea. wastes into the streams. ned up along the coast.
7. Activities:	 a) Project design and a b) Project tendering 1) Develop, review and 2) Review, develop, im instruments address commercial and residistances). 3) Rehabilitate natural floodplains and mar 4) Increase awareness a agrochemicals and residences. 	I implement stream management strategy. I plement and enforce relevant legislative/regulatory ing riverine environment (e.g. re-locate and re-house dential houses impinging on the river bank set-back sources of streams and bank vegetation (including shes). I mong households to avoid dumping waste and ivers in streams and rivers. I implement a waste management strategy.
8. Assumptions:	natural environment, en and river basins, that are	ent is committed to supporting the clean-up of the aforcing relevant laws that impinge on the watersheds integral elements of integrated coastal zone dents and businesses are supportive of initiatives to riverine environment.
9. Risks:	Local residents and busi	inesses may object and block the project.
10. Means of implementation:	technical, scientific Human Resources Human Resources	Budgets for meetings Budgets for technical assistance Hydraulic modelling Access to information Green-green infrastructure IWRM planning Civil and water engineers Modellers Physical Planners Pollution chemists, freshwater ecologists and botanists
		Socio-economists and resettlement specialists

11. Budget estimate:	Item	Estimate in USD
O	Project preparation and mobilisation	100,000
	Mobilisation and review of river basin influences	200,000
	Evaluate agrochemical use and enforce relevant	1,000,000
	legislative/regulatory instruments	
	Re-locate and re-house commercial and residential	1,000,000
	houses and infrastructure affecting basins	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	Rehabilitate natural sources of streams and bank	5,000,000
	vegetation	
	Increase awareness among households and	600,000
	farmers/livestock herders to avoid dumping waste in	
	streams	
	Develop, review and implement river basin waste	300,000
	management strategy	300,000
	Design appropriate stream management involving local	1,000,000
	partners and secure sustainability	1,000,000
	Total	9,200,000
	Town	3)200)000
funding:	 Private Sector (participation) NGOs (participation) Development Partners (Technical Assistance budget). Aflassistance programmes 	DB, WB, EU, Bilateral
13. Responsible for the action:	Strong Local Government coastal development stakeholder effectively coordinating efforts:	capable of
	 Rufiji River Basin Authority Rufiji River Water Board Contractors NGOs etc 	
14. Beneficiary from the action:	Local residents (tens of thousand) plus foreign visitors (sev terms of health and safety while swimming in the sea, from aspects of the surrounding areas; mangrove forest, intertidates resources users (including fishers) from reduced sedimentate entering the inshore coastal waters. Indirect or long term beneficiaries will be the coastal population.	enhanced aesthetic al and coral reefs tion and pollution

1F C-11-1		_
15. Schedule:	Year 1	
	Rehabilitation of lower Rufiji River	
	and safeguarding Mohoro River, Rufriji District	
	a) Project preparation and mobilisation	
	b) Mobilisation and review of river basin influences	
	1) Evaluate agrochemical usage and	
	enforce relevant legislative/regulatory linstruments	
	2) Re-locate and re-house commercial	
	and residential houses and infrastructure	
	affecting basins 3) Rehabilitate natural sources of	
	streams and bank vegetation	
	4) Increase awareness among households and farmers/livestock	
	herders to avoid dumping waste and	
	agrochemicals in streams 5) Develop, review and implement a	
	river basin waste management strategy	
	6) Design appropriate stream	
	management involving local partners and secure sustainability	
16. Links to other	Links to following systemic actions would be desirable:	_
actions:		
	Tan-S01: Integrated Coastal Zone Management	
	Tan-S02: Spatial Planning	
	Tan-S03: Shoreline Management	
	Tan-S04: Information Management	
	Tan-S06: Awareness Raising	
	Tan-S07: Integrated Legal Review	
	Of particular relevance and importance would be links to following local	
	actions:	
	Tan-L46: Prawn fisheries support programme for Rufiji District	
17. Performance	Water quality (chemistry, BOD, agrochemicals, etc.)	_
indicators:	Volumes and types of solid wastes on associated beaches	
	Records of inundation events	
	•	
18. Comments:	Note: There are a number of initiatives responding to problems in the Rufiji	_
10. Comments.	River Basin, focused on water quality and flows, hydroelectric power potential,	
	fisheries, irrigation of small-scale and commercial scale rice and other	
	agricultural uses, wildlife needs, the Selous Game Reserve, among others. This	
	Action needs to be aligned with on-going initiatives related to river flows in the	
	Rufiji River, but focused exclusively on the lower floodplain and deltas areas,	
	and their catchments, with particular emphasis on the quality of the final	
	discharges into the coastal zone and on the little-studied Mohoro River basin.	
	Relevant initiatives are the Kilombero and loer Rufiji wetlands ecosyetm project,	,
	supported by Belgium with Min. Nat. Res. Tourism (2012-2017); the DFID-	
	supported water resources and climate change project, with the Rufiji River	
	Basin Organisation (RBO), focused on capacity and implementation (2013-2015).	
	World Bank supported "Water sector development IWSS [International Water	
	Stewardship Standard] in nine basins", partnered with the nine river basin	
	authorities, addressing policy related issues.	
	References:	
	Stadlinger, N., Gyllbäck, E., Tuomaala, S., Porseryd, T., Kumblad, L., Kautsky,	
	N., Mmochi, A. and Mwaipopo, R. 2009. Pesticide use among small-scale rice)
	farmers in Tanzania -risk awareness and possible effects on adjacent marine	
	ecosystems. Sixth WIOMSA Scientific Symposium, St. Denis, La Réunion.	

Tan-L12: Sewage collection and treatment facilities for Tanga City, Tanga Urban District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	A body of literature documents high nutrient and faecal coliform bacteria levels in waters off the Tanga City, discharged through the city sewerage system with only primary screening, and from seepage of sewage into small rivers and streams, directly into the coastal environment, Tanga Bay and western shores of the Pemba Channel.
2. Title:	Sewage collection and treatment facilities for Tanga City, Tanga Urban District
3. Action Reference:	Tan-L12
4. Justification:	Beach pollution and marine pollution were both identified as severity level 4, for Tanga Urban District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Decline in fisheries yields, regarded as a threat of level 5, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	Sewage from over 50,000 households in Tanga City (almost 300,000 people) is treated only to primary (screening) level and sewage pollution to the marine environment is continuous; causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. fish and habitats), extending many kilometres along the west coast of Pemba Channel (likely affecting nearby small islands and coral reefs, and resulting in negative publicity to the city. Further, inadequate urban sanitation, also causes health problems from contaminated ground and surface water as well as from water-borne diseases.
5. Objective:	By 2025 at least 80% of Tanga City households connected to sewage collection and treatment system.
6. Expected outputs:	The outputs of the action to upgrade the sewage system of the Tanga City in Tanga Urban District are:
	 Fully operational sewage treatment plants where appropriate. Effective and sustainable sewage collection systems in place. Clean and safe water in coastal waters. Reduced sewage wastes discharged to sea. Reduced wastes and pathogens washed up along the coast. Local LGA capable of managing sewage system.
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering, 2) Project management (includes construction management) 3) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. 4) Sewage collection system

8. Assumptions:	6) Construction: civi 7) Supplies, personr The Tanzania Gover and natural environ	Demolishing, ground work, rerouting p il, mechanical, etc., Contingency. nel (hiring and training/capacity buildin nment is committed to supporting the clent. Local residents and businesses are p their urban environment.	g) ean-up of the urban
9. Risks:	Local residents and l	businesses may object and manage to blo	ock the project.
10. Means of implementation:	Logistics, technical, scientific Human Resources	 Budgets for meetings Budgets for technical assistance Access to information Green-green Project managers Civil and water engineers Spatial planners 	infrastructure
11. Budget	Item	1	Estimate in USD
estimate:	Project preparation	and mobilisation	100,000
	Initial studies, design	gn and engineering,	200,000
	Project managemen	nt (includes construction management)	1,000,000
	Site acquisition: Ac notaries, taxes.	equisition of building plot, brokers,	-
		g sewage collection system	5,000,000
		Demolishing, ground work, rerouting	1,000,000
		mechanical, etc., Contingency.	15,000,000
	Supplies, personne building)	l (hiring and training/capacity	2,000,000
	Total		24,300,000
	acres), re-housing or which are considered	oes not provide for land acquisition for to other costs associated with illegal squated a government issue.	3 .
12. Source of funding:		nent (budget, participation) ners (Technical Assistance budget). AfDI nmes	B, WB, EU, Bilateral
13. Responsible for the action:	coordinating efforts.	infrastructure development stakeholder er Supply and Sanitation (Tanga UWAS.	•
14. Beneficiary from the action:	in terms of health an aspects of the surrou	e hundred thousand) plus foreign visitored safety while swimming in the sea, from the sea; mangrove forest, intertidal uding fishers) from reduced sewage policis.	m enhanced aesthetic and coral reefs
	through improved co	n beneficiaries will be the coastal popular oastal water quality will have bettered tl elopment without compromising sustain management.	neir opportunities for

Actions and Activities Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1
Project preparation and mobilisation Initial studies, design and engineering, Project management (includes construction management) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. Sewage collection system Site preparation: Demolishing, ground work, rerouting pipes & cables, roads Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building) Links to other citons: Links to other citons: 1 Tan-S01: Integrated Coastal Zone Management 1 Tan-S02: Spatial Planning 1 Tan-S04: Information Management 1 Tan-S06: Awareness Raising 1 Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
Initial studies, design and engineering, Project management (includes construction management) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. Sewage collection system Site preparation: Demolishing, ground work, rerouting pipes & cables, roads Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building) Links to other ions: Links to following systemic actions would be desirable: Tan-S01: Integrated Coastal Zone Management Tan-S02: Spatial Planning Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
Project management (includes construction management) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. Sewage collection system Site preparation: Demolishing, ground work, rerouting pipes & cables, roads Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building) Links to other in Tan-S01: Integrated Coastal Zone Management Tan-S02: Spatial Planning Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
construction management) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. Sewage collection system Site preparation: Demolishing, ground work, rerouting pipes & cables, roads Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building) Links to other citons: • Tan-S01: Integrated Coastal Zone Management • Tan-S02: Spatial Planning • Tan-S04: Information Management • Tan-S06: Awareness Raising • Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
Site acquisition: Acquisition of building plot, brokers, notaries, taxes. Sewage collection system Site preparation: Demolishing, ground work, rerouting pipes & cables, roads Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building) Links to other tions: Links to following systemic actions would be desirable: Tan-S01: Integrated Coastal Zone Management Tan-S02: Spatial Planning Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
plot, brokers, notaries, taxes. Sewage collection system Site preparation: Demolishing, ground work, rerouting pipes & cables, roads Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building) Links to other tions: Links to following systemic actions would be desirable: Tan-S01: Integrated Coastal Zone Management Tan-S02: Spatial Planning Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
Sewage collection system Site preparation: Demolishing, ground work, rerouting pipes & cables, roads Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building) Links to other cions: Links to following systemic actions would be desirable: Tan-S01: Integrated Coastal Zone Management Tan-S02: Spatial Planning Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
Site preparation: Demolishing, ground work, rerouting pipes & cables, roads Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building) Links to other etions: Tan-S01: Integrated Coastal Zone Management Tan-S02: Spatial Planning Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
work, rerouting pipes & cables, roads Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building) Links to other etions: • Tan-S01: Integrated Coastal Zone Management • Tan-S02: Spatial Planning • Tan-S04: Information Management • Tan-S06: Awareness Raising • Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building) Links to other citons: • Tan-S01: Integrated Coastal Zone Management • Tan-S02: Spatial Planning • Tan-S04: Information Management • Tan-S06: Awareness Raising • Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
Contingency. Supplies, personnel (hiring and training/capacity building) Links to other tions: Links to other tions: Links to following systemic actions would be desirable: Tan-S01: Integrated Coastal Zone Management Tan-S02: Spatial Planning Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
Links to other tions: Links to other tions: Links to other tions: Links to other tions: Links to following systemic actions would be desirable: Tan-S01: Integrated Coastal Zone Management Tan-S02: Spatial Planning Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
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 Tan-S01: Integrated Coastal Zone Management Tan-S02: Spatial Planning Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
 Tan-S02: Spatial Planning Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
 Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
 Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
 Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
• Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to:
Of particular relevance and importance would be links to:
• Tan I 01: Robabilitation and clean up of four east flavoing rivers in Meine
Tail-Lot. Reliabilitation and clean-up of four east-nowing rivers in withing
District
• Tan-L02: Rehabilitation and clean-up of Zigi and Mkulumzi rivers through
Tanga Urban and Muheza districts
Tan-L26: Domestic waste treatment facility Pangani Town
Performance • Water quality (chemistry, BOD, etc.)
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
• Volumes and types of solid wastes on associated beaches
Households connected to sewerage system
Comments:

Tan-L13: Sewage collection and treatment facilities for Pangani town, Pangani District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Currently there is no evidence of high nutrient and faecal coliform bacteria levels in waters off the Pangani town, despite there being no sewage treatment system other that simple soak-aways. Low level but constant sewage and nutrient seepage into the marine environment is likely taking place though not documented. The projected increase in population in this important coastal town is likely to be accompanied by more seepage of sewage into small rivers and streams, directly into the coastal environment, the western shores of the Pemba Channel and drifting north to the Coelacanth Marine Park.
2. Title:	Sewage collection and treatment facilities for Pangani town, Pangani District
3. Action Reference:	Tan-L13
4. Justification:	Beach pollution was identified as severity level 4, for Tanga Urban District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Marine pollution was ranked with severity level 2. Decline in fisheries yields, regarded as a threat of level 5, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats. Agrochemicals were contributing to marine pollution. Sewage from over 8,000 inhabitants in Pangani Town is not treated and ultimately enters local aquifers and the marine environment is continuous; causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. fish and habitats), extending many kilometres along the west coast of Pemba Channel (likely affecting nearby small islands and coral reefs, and resulting in negative publicity to the city.
5. Objective:	By 2025 at least 80% of Pangani town households connected to sewage collection and treatment system.
6. Expected outputs:	 The outputs of the action to install a sewage system of Pangani town are: Fully operational sewage treatment plants where appropriate. Effective and sustainable sewage collection systems in place. Clean and safe water in coastal waters. Reduced sewage wastes discharged to sea. Reduced wastes and pathogens washed up along the coast. Local LGA capable of managing sewage system.
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering, 2) Project management (includes construction management) 3) Site acquisition: Acquisition of building plot, brokers, notaries, taxes.

	6) Construction: civi	system Demolishing, ground work, rerouting pill, mechanical, etc., Contingency. lel (hiring and training/capacity building	•								
8. Assumptions:	The Tanzania Governand natural environr	nment is committed to supporting the cl ment. Local residents and businesses are p their urban environment.	ean-up of the urban								
9. Risks:	Local residents and b	ousinesses may object and manage to blo	ock the project.								
10. Means of implementation:	Logistics, technical, scientific	 Budgets for meetings Budgets for technical assistance Access to information Green-green i 	n infrastructure								
	Human Resources	Project managersCivil and water engineersSpatial planners									
11. Budget	Item		Estimate in USD								
estimate:	Project preparation	and mobilisation	100,000								
	Initial studies, desig	gn and engineering,	200,000								
	Project managemen	nt (includes construction management)	1,000,000								
	Site acquisition: Ac notaries, taxes.	equisition of building plot, brokers,	-								
	Installation of sewage collection system 10,000,000										
	Site preparation: D pipes & cables, road	emolishing, ground work, rerouting ds	1,000,000								
	Construction: civil,	mechanical, etc., Contingency.	10,000,000								
	Supplies, personnel building)	(hiring and training/capacity	2,000,000								
	Total		24,300,000								
	The coarse budget does not provide for land acquisition for the facility (5-10 acres), re-housing or other costs associated with illegal squatters or land-users, which are considered a government issue.										
12. Source of funding:		ent (budget, participation) ners (Technical Assistance budget). AfDI mes	3, WB, EU, Bilateral								
13. Responsible for the action:	coordinating efforts.Tanga Urban Wate	infrastructure development stakeholder er Supply and Sanitation (Tanga UWASA ater Supply and Sanitation Authority									
14. Beneficiary from the action:	health and safety wh the surrounding area	ve 8,000) plus foreign visitors (several the ile swimming in the sea, from enhanced as; mangrove forest, intertidal and coral om reduced sewage pollution entering t	aesthetic aspects of reefs resources users								
	through improved co	beneficiaries will be the coastal populat pastal water quality will have bettered the lopment without compromising sustaina nanagement.	neir opportunities for								

15. Schedule:			ear 1			ar 2			Year		Т		/ear				ar 5		
	Actions and Activities	Q1 (Q2 Q3	Q4	Q1 Q2	Q3	Q4	Q1	Q2 (Q3 (Q4 (Q1 (Q2 (Q3 Q	4 Q1	Q2	Q3	Q4	
	Sewage facilities for Pangani Town	<u> </u>	,			,					_				_	:	,		
	Sewage facilities for Bagamoyo Town															ļ	ļ		
	Project preparation and mobilisation	-	-			-											ļ		
	Initial studies, design and engineering,					_					_				-	ļ	ļ		
	Project management (includes construction management)																		
	Site acquisition: Acquisition of building									-	┱	-	-		۹		ļ		
	plot, brokers, notaries, taxes.																		
	Sewage collection system	-		-		1						Ė	÷		-	<u> </u>	 		
	Site preparation: Demolishing, ground					·									-		-		
	work, rerouting pipes & cables, roads																		
	Construction: civil, mechanical, etc.,						T								-	·	<u> </u>		
	Contingency.																		
	Supplies, personnel (hiring and																		
	training/capacity building)	ш																	
16. Links to other	Links to following system	mic	act	ion	s w	oul	d b	e o	des	ira	ble	e:							
actions:																			
actions.	• Tan-S01: Integrated C	oas	tal 2	Zor	e M	ana	age	em	ent	t									
	• Tan-S02: Spatial Planr						()												
	-	•	•																
	• Tan-S04: Information		. ,	em	ent														
	• Tan-S06: Awareness F	Rais	ing																
	• Tan-S07: Integrated Lo	eσa	1 Re	vie	w														
	- Tuli 507. Integrated Ex	-Su	1110	VIC	••														
	Of particular relevance a	ind	imp	or	tanc	e w	70t	ıld	be	li1	nk	s to):						
	Tan-L12: Sewage colle	ectio	on a	nd	trea	tm	ent	t fa	cil	itie	es f	for	Ta	nσ	a C	'itv	7		
														···6	uC	.1 t y			
	• Tan-L25: Domestic w									٠,									
	• Tan-L26: Domestic w	aste	e tre	atr	nent	tac	cili	ty	Pa:	ng	an	i T	ow	'n					
17. Performance	Water quality (chemis	try	, BĊ	D,	etc.) _													
indicators:	 Volumes and types of 	-, -					166	oc:	iate	d.	he	acl	100						
marcators.									iait	·u	De	uCI	ies	,					
	Households connected	d to	sev	ver	age	sys	ter	n											
18. Comments:																			

Tan-L14: Sewage collection and treatment facilities for Bagamoyo town, Bagamoyo District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers. The Government of Tanzania with World Bank assistance has through the project
	"Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Currently there is no evidence of high nutrient and faecal coliform bacteria levels in waters off Bagamoyo town, despite there being no sewage treatment system other that simple soak-aways. Low level but constant sewage and nutrient seepage into the marine environment is likely taking place though not documented. The projected increase in population in this important coastal town is likely to be accompanied by more seepage of sewage into small rivers and streams, directly into the coastal environment, the western shores of the Pemba Channel and drifting north to the Saadani National Park.
2. Title:	Sewage collection and treatment facilities for Bagamoyo town, Bagamoyo District
3. Action Reference:	Tan-L14:
4. Justification:	Beach pollution was both identified as severity level 3 for Bagamoyo District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Decline in fisheries yields, regarded as a threat of level 4, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	Sewage from over households in Bagamoyo Town (two hundred thousand people) have only primary sewage treatment systems and sewage pollution to the marine environment is continuous; causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. fish and habitats), extending many kilometres along the west coast of Zanzibar Channel (likely affecting nearby small islands and coral reefs), and resulting in negative publicity to the city. Sewage and water are also responsible for water-borne disease in Bagamoyo (e.g. Mattioli et al 2012).
	The district has experienced a high average annual growth rate between 2002 and 2012 of 3.45 % leading to more than 42.30 % increase of the population over the ten- year period and documenting a significant in-migration. The population density in the district has grown to 37 persons/km2 in 2012 from 26 persons/km2 of 2002. Bagamoyo town and surrounding urban and peri-urban areas witness the greatest impacts from increasing population. The absence of a suitable sewage collection and treatment facility will over time lead to greater pollution and health issues if not addressed.
5. Objective:	By 2025 at least 80% of Bagamoyo Town households connected to sewage collection and treatment system.
6. Expected outputs:	 The outputs of the action to upgrade the sewage system of the Bagamoyo Town are: Fully operational sewage treatment plants where appropriate. Effective and sustainable sewage collection systems in place. Clean and safe water in coastal waters.

	• Paduard corregor	vanton dischaused to see			
		vastes discharged to sea. nd pathogens washed up along the coast			
		e of managing sewage system.	•		
7. Activities:	a) Project design and				
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	b) Project tendering	, mp p 1 m 2 m 1			
		sign and engineering,			
	,	ent (includes construction management)			
	3) Site acquisition: A	Acquisition of building plot, brokers, not	aries, taxes.		
	4) Sewage collection				
		., .,	pes & cables, roads		
			`		
Q Assumptions					
8. Assumptions:					
			supportive of		
9. Risks:	Local residents and b	ousinesses may object and manage to blo	ck the project.		
10. Means of	Logistics, technical,	Budgets for meetings			
implementation:	scientific	.,			
		Access to information Green-green	infrastructure		
	Human Resources	•			
	Truman Resources				
		•			
11. Budget	Item		Estimate in USD		
estimate:	Project preparation	and mobilisation	100,000		
	Initial studies, design	gn and engineering,	200,000		
	· ·		1,000,000		
			-		
	notaries, taxes.	, , , , , , , , , , , , , , , , , , ,			
	Installation of sewa	ge collection system	15,000,000		
	Site preparation: D	Extimate in USD on and mobilisation sign and engineering, ent (includes construction management) 1,000,000 ent (includes construction m			
	pipes & cables, road	77 77			
	Construction: civil,	mechanical, etc., Contingency.	15,000,000		
	Supplies, personne	l (hiring and training/capacity	2,000,000		
	building)				
	Total		34,300,000		
			<u>. </u>		
			and-users, which are		
	considered a govern	ment issue.			
12. Source of	Tanzania Governm	ent (budget, participation)			
funding:	• Development Partr	ners (Technical Assistance budget). AfDE	B, WB, EU, Bilateral		
	assistance program	imes			
13. Responsible	Strong Government	infrastructure development stakeholder	capable of effectively		
for the action:	coordinating efforts.		,		
	• Contractors				
	• etc				
14. Beneficiary	Local residents (two	hundred thousand) plus foreign visitors	(several thousand) in		
from the action:		safety while swimming in the sea, from e			
		nding areas; mangrove forest, intertidal			
		0 , - 0			

	resources users (including finishore coastal waters.	she	rs) f	rom	re	duc	ed s	se	waş	де р	ollı	ıtic	n en	teri	ing	the	<u> </u>
	Indirect or long term benefic through improved coastal w socio-economic developmen and environmental manager	ateı t w	qua itho	ality	/ W	ill ŀ	ave	e k	ette	ered	the	eir	oppo	rtu	ınit	ies	
15. Schedule:			Year:	1		Yea	r 2	Т	Υ	ear 3			Year 4	ı	Т	Yea	ır 5
	Actions and Activities	Q1	Q2 Q	3 Q4	Q1	Q2	Q3 Q	24	Q1 C	2 Q3	3 Q4	Q1	Q2 Q	3 Q4	Q1	Q2	Q3 Q
	Sewage facilities for Bagamoyo Town							T				П			П		
	Project preparation and mobilisation											1			1		
	Initial studies, design and engineering,																
	Project management (includes																
	construction management)																
	Site acquisition: Acquisition of building														T		
	plot, brokers, notaries, taxes.														<u>.</u>		
	Sewage collection system				ļ										_	ļ	
	Site preparation: Demolishing, ground							١									
	work, rerouting pipes & cables, roads	ļļ			ļ										.	ļ	
	Construction: civil, mechanical, etc.,							١									
	Contingency. Supplies, personnel (hiring and	ļ					_	_							-	ļ	
	training/capacity building)																
	training/capacity building)							-								!	
46 71 1 4 41	T: 1				1 1	1	1 .		1 1								
16. Links to other	Links to following systemic a	act1	ons	W01	ala	be	aesi	ıra	abie	:							
actions:	• Tan-S01: Integrated Coast	a1 7	one	Ma	nac	7em	ent										
	• Tan-S02: Spatial Planning	<i>u</i> 1 <i>Z</i>	OTIC	1110	iiu	5011	iciii	•									
				. 1													
	• Tan-S04: Information Man		emei	nt													
	• Tan-S06: Awareness Raisin																
	• Tan-S07: Integrated Legal	Rev	<i>iew</i>														
	Of particular relevance and i	mp	orta	nce	w	oulo	l be	li	nks	to:							
	• Tan-L05: Rehabilitation at	nd a	-1001	2 111	3 of	: D.,	X711	D:	17.0 r	Bac	in						
				-													
	• Tan-L27: Domestic waste							ga	mo	yo i	LOW	/n					
	• Tan-L57: Urban planning	tor	Baga	amo	oyo	10	wn										
17. Performance	Water quality (chemistry,	BO	D e	tc)													
indicators:	 Volumes and types of soli 					2000	ista	J	haa	cho							
mulcators.							ıate	·u	Ded	CHE	3						
	Households connected to	sew	erag	ge s	yst	em											
18. Comments:	References:																
10. Comments.		.d -	472±0	r oc	170	cto	re al	f /	lion	rhac	1	ath	0000	. i.	1		
	Mattioli et al 2012. Hands ar										-		_				
	Bagamoyo, Tanzania. Env						ice d	X	1 ec.	nno	iog	у (.	ımpa	ict l	гас	tor	
	5.48). 11/2012; DOI: 10.10)21/	es3	038	/8d	l											

Tan-L15: Sewage collection and treatment facilities for Kinondoni Municipality

<u></u>	
1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Nutrient and chemical pollution discharged through local rivers into the coastal environment on the western shores of the Zanzibar Channel is well-documented, visible especially after heavy rains, with solid wastes and sediments discharged being indicative of degraded and polluted watersheds. These water are important marine biodiversity and fisheries areas, reflected by the presence of the dare s Salaam Marine Reserves (that include the islands and reefs of Bongoyo, Mbudya, Fungu Yasin).
	Currently there is low level but constant sewage and nutrient seepage into the marine environment though not documented. The projected increase in population is likely to be accompanied by more seepage of sewage into small rivers and streams, directly into the coastal environment. The need exists for a comprehensive treatment of sewage for inhabitants of Kinondoni.
2. Title:	Sewage collection and treatment facilities for Kinondoni Municipality
3. Action Reference:	Tan-L15
4. Justification:	Beach pollution and marine pollution were both identified as severity level 4, for Kinondoni District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Agrochemicals were contributing to marine pollution. Pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems.
	Untreated sewage presently enters the marine environment from seven relatively short-lengthed east-flowing rivers that drain Kinondoni. Together with stormn drains, these are some of the largest conduits for liquid and solid waste, chemicals and sediment to the north Dar es Salaam coastline, causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. turtles, fish and habitats), extending many kilometres along the coast (likely affecting nearby small islands and coral reefs, and resulting in negative publicity of this important tourist destinations in northern Dar es Salaam.
5. Objective:	Decline in fisheries yields, regarded as a threat of level 4 in Kinondoni District, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats. The absence of a suitable sewage collection and treatment facility will over time lead to greater pollution and health issues if not addressed. By 2025 at least 80% of Kinondoni Municipality households connected to sewage
	collection and treatment system.
6. Expected outputs:	The outputs of the action to upgrade the sewage system of the Kinondoni Municipality are:

7. Activities: 8. Assumptions:	 Effective and susta Clean and safe wa Reduced sewage w Reduced wastes ar Local LGA capable a) Project design and b) Project tendering 1) Initial studies, des 2) Project manageme 3) Site acquisition: A 4) Sewage collection 5) Site preparation: 6) Construction: civit 7) Supplies, personn The Tanzania Governand natural environmental initiatives to clean-up 	vastes discharged to sea. Ind pathogens washed up along the coast of managing sewage system. Independent appraisal. Independent (includes construction management) Indepen	aries, taxes. pes & cables, roads can-up of the urban supportive of
9. Risks:	Local residents and b	ousinesses may object and manage to blo	ck the project.
10. Means of implementation:	Logistics, technical, scientific Human Resources	 Budgets for meetings Budgets for technical assistance Access to information Green-green i Project managers Civil and water engineers 	nfrastructure
		• Spatial planners	
11. Budget	Item		Estimate in USD
estimate:	Project preparation	and mobilisation	100,000
	Initial studies, desig	gn and engineering,	200,000
	Project managemen	t (includes construction management)	1,000,000
	Site acquisition: Ac notaries, taxes.	quisition of building plot, brokers,	-
	Installation of sewa	ge collection system	15,000,000
	pipes & cables, road		1,000,000
		mechanical, etc., Contingency.	15,000,000
	Supplies, personnel building)	(hiring and training/capacity	2,000,000
	Total		34,300,000
	acres), re-housing or	oes not provide for land acquisition for the other costs associated with illegal squatted a government issue.	3 1
12. Source of funding:		ent (budget, participation) ers (Technical Assistance budget). AfDE mes	3, WB, EU, Bilateral
13. Responsible for the action:	Strong Government i coordinating efforts. • Contractors • etc	nfrastructure development stakeholder	capable of effectively
14. Beneficiary from the action:	health and safety wh	million) plus foreign visitors (several the ile swimming in the sea, from enhanced s; mangrove forest, intertidal and coral i	aesthetic aspects of

	(including fishers) from re waters.																			
	Indirect or long term benefithrough improved coastal socio-economic development and environmental manage	wate ent w	er qu vitho	ıali	ty v	vill	ha	ve	bet	tere	ed 1	thei	r op	poi	rtu	niti	es f			
15. Schedule:		Year 1 Year 2 Year 3 Year 4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1														Year 5				
	Actions and Activities Sewage facilities for Kinondoni Municipality	Q1 Q	2 Q3	Q4	Q1 C)2 C	Q3 C	4 Q1	Q2	Q3	Q4	Q1 (Q2 Q:	3 Q4	Q1	Q2	Q3 (24		
	Project preparation and mobilisation	-							<u> </u>					-	ļ					
	Initial studies, design and engineering,		Т			T							***							
	Project management (includes														l					
	construction management)								Ļ						ļ					
	Site acquisition: Acquisition of building																			
	plot, brokers, notaries, taxes.					-	_	٠.	<u> </u>		_				ļ					
	Sewage collection system Site preparation: Demolishing, ground														ļ					
	work, rerouting pipes & cables, roads														l					
	Construction: civil, mechanical, etc.,							Н							l					
	Contingency.														l					
	Supplies, personnel (hiring and	 													l			,		
	training/capacity building)																	\sqcup		
16. Links to other	Links to following systemi	c act	ions	w	oulc	l be	e d	esir	abl	e:										
actions:	T C01 I-11-1 C	-1-1-5	7	- 1. /	r			1												
	• Tan-S01: Integrated Coa		Lone	5 IV	iana	ige	me	nt												
	• Tan-S02: Spatial Plannin																			
	Tan-S04: Information Management																			
	• Tan-S06: Awareness Raising																			
	 Tan-S07: Integrated Leg 	al Re	viev	V																
	Of particular relevance and	d im	port	anc	e w	ou	ld	be 1	ink	s to):									
	• Tan I 07: Pahahilitation	and:	alaa.	n	n a	foo	1770	n 4:	T70**	c I	/i	ond	lon:	Di	+4:	cŧ				
	• Tan-L07: Rehabilitation				•				ver	5, P	ш	OHC	iOIII		Sul	Cl				
	• Tan-L15: Sewage treatm												1 .							
	• Tan-L28: Urban solid wa																			
	• Tan-L29: Urban solid wa					nd	pr	oce	ssiı	ng I	lal	a D	istri	ct						
· — · -	Water quality (chemistry)	y, BC)D, 6	etc.)															
17. Performance																				
		olid v	vast	es (on a	SSC	ocia	ited	l be	ach	ıes									
17. Performance indicators:	Volumes and types of soHouseholds connected t							ited	l be	ach	ies									

Tan-L16: Sewage collection and treatment facilities for Ilala Municipality

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Msimbazi Creek is the most studied area of Dar es Salaam (see Tan-L08). Nutrients, chemical, faecal and solid waste pollution discharged through this rivers into the coastal environment as it passes under Selander Bridge, visible especially after heavy rains. Despite there being no sewage treatment system other that simple soak-aways, low level but constant sewage and nutrient seepage into the marine environment is likely taking place. The projected increase in population is likely to be accompanied by more seepage of sewage into small rivers and streams, directly into the coastal environment.
2. Title:	Sewage collection and treatment facilities for Ilala Municipality
3. Action Reference:	Tan-L16
4. Justification:	Beach pollution and marine pollution were both identified as severity level 4, for Kinondoni District, with sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Pollution of the beach and nearshore, industrial, sewage and heavy metal were all forms of pollution ranked as level 3 threats in Ilala District. Pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Decline in fisheries yields, regarded as a threat of level 4 in both Kinondoni and Ilala districts, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats. Disease outbreaks was ranked at severity level 4 and 3 respectively for Ilala and
	Kinondoni, with causes linked to flooding and sewage. Establishing a sewage collection and treatment facility is the greatest measure to reducing pollution into the coastal waters of Dar es Salaam.
5. Objective:	By 2025 at least 80% of Ilala Municipality households connected to sewage collection and treatment system.
6. Expected outputs:	 The outputs of the action to upgrade the sewage system of the Ilala Municipalityare: Fully operational sewage treatment plants where appropriate. Effective and sustainable sewage collection systems in place. Clean and safe water in coastal waters. Reduced sewage wastes discharged to sea. Reduced wastes and pathogens washed up along the coast. Local LGA capable of managing sewage system.
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering, 2) Project management (includes construction management) 3) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. 4) Sewage collection system 5) Site preparation: Demolishing, ground work, rerouting pipes & cables, roads

	6) Construction: civil mechanical etc. Contingency									
		ıg)								
8. Assumptions:	The Tanzania Government is committed to supporting the cl	lean-up of the urban and								
9. Risks:	•	ock the project.								
10. Means of implementation:	Logistics, technical, scientific Budgets for meetings Budgets for technical assistance Access to information Green-green Human Resources Project managers Civil and water engineers Spatial planners	n infrastructure								
11. Budget	natural environment. Local residents and businesses are supportive of i clean-up their urban environment. Local residents and businesses may object and manage to block the project continuous project and manage to block the project meetings. Logistics, technical, scientific Budgets for meetings Budgets for technical assistance Access to information Green-green infrastruce. Item Project managers Civil and water engineers Spatial planners Item Project preparation and mobilisation Initial studies, design and engineering, Project management (includes construction management) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. Installation of sewage collection system Site preparation: Demolishing, ground work, rerouting pipes & cables, roads Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building) Total The coarse budget does not provide for land acquisition for the facility thousing or other costs associated with illegal squatters or land-users, we considered a government issue. 1 Tanzania Government (budget, participation) Development Partners (Technical Assistance budget). AfDB, WB, EU, assistance programmes Strong Government infrastructure development stakeholder capable of coordinating efforts. Contractors etc Local residents (two million) plus foreign visitors (several thousand) in									
estimate:	Project preparation and mobilisation	100,000								
	Initial studies, design and engineering,	200,000								
	Project management (includes construction management)	1,000,000								
		-								
	Installation of sewage collection system	15,000,000								
	Installation of sewage collection system Site preparation: Demolishing, ground work, rerouting pipes & cables, roads									
	Construction: civil, mechanical, etc., Contingency.	15,000,000								
		2,000,000								
	Total	34,300,000								
	housing or other costs associated with illegal squatters or lar									
12. Source of funding:	Development Partners (Technical Assistance budget). AfD	B, WB, EU, Bilateral								
13. Responsible for the action:	coordinating efforts. • Contractors	capable of effectively								
14. Beneficiary from the action:	health and safety while swimming in the sea, from enhanced surrounding areas; mangrove forest, intertidal and coral reel	l aesthetic aspects of the fs resources users								
	improved coastal water quality will have bettered their oppo- economic development without compromising sustainable r	ortunities for socio-								

15. Schedule:			Yea	ar 1			Yea	ar 2			Ye	ar 3			Yea	r 4	T	Ye	ar 5	
	Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3 C	4 Q	1 Q	2 Q3	Q4
	Sewage facilities for Ilala Municipality																			
	Project preparation and mobilisation																I			
	Initial studies, design and engineering,																			
	Project management (includes	1															-			
	construction management)																			
	Site acquisition: Acquisition of building	I								Г							7'''			
	plot, brokers, notaries, taxes.																			
	Sewage collection system																			
	Site preparation: Demolishing, ground																T			
	work, rerouting pipes & cables, roads																			
	Construction: civil, mechanical, etc.,	1															-			
	Contingency.																			
	Supplies, personnel (hiring and																T			
	training/capacity building)																			
16. Links to	Links to following systemic ac	tior	าร ง	WO	uld	l be	e de	esir	ab	le:										
other actions:	0 ,																			
	Tan-S01: Integrated Coastal	Zo	ne	Ma	ına	gei	me	nt												
	Tan-S02: Spatial Planning																			
	• Tan-S04: Information Manag	gen	nen	ıt																
	• Tan-S06: Awareness Raising	. ,																		
	• Tan-S07: Integrated Legal R	,	OT47																	
	Tail-307. Integrated Legal K	CVI	CVV																	
	Of particular relevance and im	po	rta	nce	w	oul	ld ł	oe 1	inl	ks t	o:									
	• Tan-L05: Rehabilitation and	cle	an.	-11r	of	Rı	17/1	ı Ri	ive	r B	аσ	am	οv	οD)istr	ict				
	Tan-L15: Sewage treatment													ر ک	1001	100				
														:						
	• Tan-L28: Urban solid waste						•													
	• Tan-L29: Urban solid waste	col	lec	tio	n ai	nd	pro	oce	SSI	ng	Ha	la l	Dis	stric	ct					
17. Performance	Water quality (chemistry, Bo	$\overline{\Omega}$	ρŧ	·c)																
indicators:						000		ا ما	1 la		ha	_								
mulcators:	Volumes and types of solid							iea	ı De	eac	ne	5								
	Households connected to se	we	rag	ge s	yst	em	1													
18. Comments:																				
	1																			

Tan-L17: Sewage collection and treatment facilities for Temeke Municipality

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	The Dar es Salaam Harbour is the seaward portion of Mzinga Creek, fed by two main tributaries, the Kizinga and Mzinga rivers that drain southern Dar es Salaam. Pollution is well documented, including nutrients, chemicals, oils, faecal and solid waste pollution, that are carried into coastal environment as these waters discharge through Mzinga Creek and pass the Dar es Salaam Port.
	Low level but constant sewage and nutrient seepage into the marine environment is likely taking place though not documented. The projected increase in population in this important coastal town is likely to be accompanied by more seepage of sewage into small rivers and streams, directly into the coastal environment, drifting into the Dar es Salaam Marine Reserves (both north and south areas).
2. Title:	Sewage collection and treatment facilities for Temeke Municipality
3. Action Reference:	Tan-L17
4. Justification:	Pollution of the beach and nearshore, industrial, sewage and heavy metal were all forms of pollution ranked as level 3 threats in Ilala District. Beach and marine pollution from heavy metals, industrial and oil pollution were all identified as severity level 3, for Temeke District, with sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems, industry and garages dumping into the Kizinga and Mzinga rivers.
	Decline in fisheries yields, regarded as a threat of level 4 in both Ilala and Temeke districts, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats. Disease outbreaks was ranked at severity level 4 for Ilala, with causes linked to flooding and sewage. Installing a complete sewage system for Temeke is a high priority.
5. Objective:	By 2025 at least 80% of Temeke Municipality households connected to sewage collection and treatment system.
6. Expected outputs:	The outputs of the action to upgrade the sewage system of the Temeke Municipality are:
	 Fully operational sewage treatment plants where appropriate. Effective and sustainable sewage collection systems in place. Clean and safe water in coastal waters. Reduced sewage wastes discharged to sea. Reduced wastes and pathogens washed up along the coast. Local LGA capable of managing sewage system.
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering, 2) Project management (includes construction management)

8. Assumptions:	 3) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. 4) Sewage collection system 5) Site preparation: Demolishing, ground work, rerouting pipes & cables, roads 6) Construction: civil, mechanical, etc., Contingency. 7) Supplies, personnel (hiring and training/capacity building) The Tanzania Government is committed to supporting the clean-up of the urban and natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment. 									
9. Risks:	Local residents and b	Local residents and businesses may object and manage to block the project.								
10. Means of implementation:	Logistics, technical, scientific	 Budgets for meetings Budgets for technical assistance Access to information Green-green 	infrastructure							
	Human Resources	Project managersCivil and water engineersSpatial planners								
11. Budget	Item		Estimate in USD							
estimate:	Project preparation	and mobilisation	100,000							
	Initial studies, desig	n and engineering,	200,000							
	Project management	1,000,000								
	Site acquisition: Accordance notaries, taxes.	-								
	Installation of sewas	15,000,000								
	Site preparation: De pipes & cables, road	1,000,000								
	Construction: civil, 1	15,000,000								
	Supplies, personnel building)	2,000,000								
	Total	34,300,000								
	The coarse budget does not provide for land acquisition for the facility (5-10 acres), re-housing or other costs associated with illegal squatters or land-users, which are considered a government issue.									
12. Source of funding:		ent (budget, participation) ers (Technical Assistance budget). AfDI mes	3, WB, EU, Bilateral							
13. Responsible for the action:	Strong Government infrastructure development stakeholder capable of effectively coordinating efforts. • Contractors • etc									
14. Beneficiary from the action:	Local residents (two hundred thousand) plus foreign visitors (several thousand) in terms of health and safety while swimming in the sea, from enhanced aesthetic aspects of the surrounding areas; mangrove forest, intertidal and coral reefs resources users (including fishers) from reduced sewage pollution entering the inshore coastal waters.									
	Indirect or long term beneficiaries will be the coastal populations at large that through improved coastal water quality will have bettered their opportunities for socio-economic development without compromising sustainable natural resources and environmental management.									

15. Schedule:			Year 1			Yea	ır 2			Yea	ar 3			Yea	r 4			Yea	r 5	<u> </u>
	Actions and Activities	Q1 (Q2 Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Sewage facilities for Temeke																			\Box
	Municipality							<u>.</u>												
	Project preparation and mobilisation				L				ļ		<u>.</u>									
	Initial studies, design and engineering,			<u> </u>																
	Project management (includes																			
	construction management)																			
	Site acquisition: Acquisition of building	l																		
	plot, brokers, notaries, taxes.			ļ					ᆫ											,
	Sewage collection system				ļ															
	Site preparation: Demolishing, ground	l																		
	work, rerouting pipes & cables, roads			ļ		ļ		ļ												,
	Construction: civil, mechanical, etc.,	l																		
	Contingency.	ļļ.			L			<u> </u>												
	Supplies, personnel (hiring and	l																		
	training/capacity building)																			
16. Links to other	Links to following systemic	acti	ons v	NO1	uld	l be	de	esiı	ab	le:										
actions:	· .																			
uctions.	 Tan-S01: Integrated Coast 	al Z	one	Ma	ına	ger	nei	nt												
	• Tan-S02: Spatial Planning																			
	• Tan-S04: Information Mar	age	men	t																
	• Tan-S06: Awareness Raisi		.11101																	
		.,																		
	• Tan-S07: Integrated Legal	Kev	71ew																	
	Of particular relevance and	imp	orta	nce	w	oul	d ł	oe l	linl	ks 1	o:									
	• Tan-I 08: Rehabilitation ar	d c	loan.	.111	of	M	cin	h	71	Ris	70 r	Вa	ein							
	 Tan-L08: Rehabilitation and clean-up of Msimbazi River Basin Tan-L10: Safeguarding Nguva River and other rivers in Temeke District 																			
									ive	15	111	rei	пеі	Ke I	<i>J</i> 18	1110	υl			
	Tan-L16: Sewage treatment facility Ilala District																			
	 Tan-L29: Urban solid was 	te co	ollec	tioı	n ai	nd	pro	oce	essi	ng	Ila	la	Dis	tri	ct					
	 Tan-L30: Urban solid was 	te co	ollec	tioı	n ai	nd	pro	oce	essi	ng	Te	me	ke	Di	str	ict				
17. Performance	• Water quality (chemistry,	BO	D. et	c.)																
indicators:	 Volumes and types of soli 			,	n a	cco	cia	toc	l h	220	ho	0								
mulcators.								iec	1 00	cac	TIC	9								
	 Households connected to 	sew	erag	e s	yst	.em	l													
18. Comments:																				
10. Comments.																				

Tan-L18: Sewage collection and treatment facilities for Kilindoni Town, Mafia District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The coastal population has reached its highest and pollution of beaches and the marine environment have reached unprecedented levels. Sources include drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Mafia District's economy relies on agricultural cultivation and fisheries, with a substantial amount of revenue also contributed by trade and, increasingly by tourism. Although Mafia ecology offers one of the best diving and snorkeling center in East Africa the number of tourists is still low. This is expected to change dramatically once the 1.4 km Kilindoni jetty is inaugurated, allowing ferries, transporters and tourist vessels to dock with safety.
	The settlement and built-up portion of Mafia is very small, concentrated in the western district headquarters town of Kilindoni, where the airport and docks are situated. Most remaining villages are within the Mafia Island Marine Park (MIMP).
	Responding to the recognised need to address waste development and the MIMP General Management Plan (2001) includes recommendations to develop solid waste (and sewage) disposal. With local town inhabitants reliant on informal and inadequate solid waste collection and processing services, large amounts of waste directly enter the natural environment including coastal waters. This affects productivity and tourism potential.
2. Title:	Sewage collection and treatment facilities for Kilindoni town, Mafia District
3. Action Reference:	Tan-L18
4. Justification:	Beach pollution was identified as severity level 3 for Mafia Island, with sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Marine pollution was ranked as severity level 2.
	Uncontrolled solid and liquid waste disposal, lack of toilets for public as well as residential houses. Disease outbreaks in Kilindoni was also ranked at severity level 3. Based on 2002 census data, the under five years of age mortality was 176 per 1,000 live births.
	The projected increase in population accompanied by development tourism, is certain to aggravate the problem of solid waste collection and treatment. The local NGO Seasense, reports that Mafia Island is Tanzania's most important sea turtle nesting site, with over 250 green turtle nests laid each year, and the critically endangered hawksbill turtle is also known to nest on the tiny islands around Mafia. A small but developing sea turtle ecotourism initiative is generating much needed income for communities near to the nesting beaches and is helping to raise awareness of the importance of sea 2 of 3 turtle conservation. However, nesting beaches are on the east coast of the island and are continually covered in large amounts of plastic waste that washes in on the east African current from as far away as Indonesia and the Philippines. The amount of plastic debris on the nesting beaches poses a significant threat to sea turtles in Mafia and also threatens the long term sustainability of the ecotourism project. Complaints from visitors are becoming increasingly common.

	formally gazetted under Importance', and referrisland, together with the (Kilwa District) was ide important biodiversity was the focus of the Withat ended in 2010. The and coastal biodiversity the issue of solid (and distributed)		of Wetlands of Global e Ramsar Site. The o Songo Archipelago as having globally farine Ecoregion, and ramme (or RUMAKI), e in terms of marine hensively addressing					
5. Objective:	By 2025 at least 80% of Kilindoni Town households connected to sewage collection and treatment system.							
6. Expected outputs:	 The outputs of the action to upgrade the sewage system of the Kilindoni Town are Fully operational sewage treatment plants where appropriate. Effective and sustainable sewage collection systems in place. Clean and safe water in coastal waters. Reduced sewage wastes discharged to sea. Reduced wastes and pathogens washed up along the coast. Local LGA capable of managing sewage system. 							
7. Activities:	 a) Project design and a b) Project tendering 1) Initial studies, desig 2) Project managemen 3) Site acquisition: Ac 4) Sewage collection s 5) Site preparation: D 6) Construction: civil, 	ppraisal. gn and engineering, at (includes construction management) equisition of building plot, brokers, not	aries, taxes. ipes & cables, roads					
8. Assumptions:	and natural environme	nent is committed to supporting the cle ent. Local residents and businesses are their urban environment.						
9. Risks:	Local residents and but	sinesses may object and manage to blo	ck the project.					
10. Means of implementation:	Logistics, technical, scientific Human Resources	 Budgets for meetings Budgets for technical assistance Access to information Green-green Project managers Givil and water engineers 	infrastructure					
		Civil and water engineersSpatial planners						
11. Budget estimate:	Item Project preparation an Initial studies, design	nd mobilisation	Estimate in USD 100,000 200,000					
	Project management (includes construction management) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. Installation of sewage collection system Site preparation: Demolishing, ground work, rerouting pipes & cables, roads Construction: civil, mechanical, etc., Contingency. 1,000,000							
	Supplies, personnel (hiring and training/capacity 2,000,000 building) Total 24,300,000							

	The coarse budget does not provide for land acquisition for the facility (5-10 a re-housing or other costs associated with illegal squatters or land-users, which considered a government issue.	,				
12. Source of funding:	 Tanzania Government (budget, participation) Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilate assistance programmes 	eral				
13. Responsible for the action:	Strong Government infrastructure development stakeholder capable of effectively coordinating efforts. • Contractors • Mafia Island Marine Park • etc					
14. Beneficiary from the action:	Local residents (tens of thousands) plus foreign visitors (several thousand) in terms of health and safety while swimming in the sea, from enhanced aesther aspects of the surrounding areas; mangrove forest, intertidal and coral reefs resources users (including fishers) from reduced sewage pollution entering the inshore coastal waters. Indirect or long term beneficiaries will be the coastal populations at large that through improved coastal water quality will have bettered their opportunities socio-economic development without compromising sustainable natural resonand environmental management.	tic he t es for				
15. Schedule:	Year 1 Year 2 Year 3 Year 4 Yea Actions and Activities Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q1 Q2 Q3 Q4 Q1 Q3 Q4 Q1 Q2 Q1 Q2 Q3 Q4 Q1 Q2 Q1 Q2 Q3 Q4 Q1 Q2 Q1 Q2 Q1 Q2 Q3 Q4 Q1 Q2 Q1 Q2 Q1 Q2 Q1 Q2 Q1 Q2 Q1 Q2 Q1 Q2 Q1 Q1 Q2 Q1 Q1 Q2 Q1 Q1 Q2 Q1 Q1 Q2 Q1 Q1 Q1 Q2 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1					
	Sewage facilities for Kilindoni Town, Mafia District Project preparation and mobilisation Initial studies, design and engineering, Project management (includes construction management) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. Sewage collection system Site preparation: Demolishing, ground work, rerouting pipes & cables, roads Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building)					
16. Links to other actions:	 Links to following systemic actions would be desirable: Tan-S01: Integrated Coastal Zone Management Tan-S02: Spatial Planning Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to: Tan-L24: Safe toilet facilities for Bwejuu and Jibondo islands, Mafia Distriction. Tan-L31: Urban solid waste treatment facility Kilindoni Town, Mafia Distriction. 					
17. Performance indicators:	 Water quality (chemistry, BOD, etc.) Volumes and types of solid wastes on associated beaches Households connected to sewerage system 					
18. Comments:						

Tan-L19: Sewage collection and treatment facilities for Kilwa Kivinje, Kilwa District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers. The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal
	Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Currently there are no reports of high nutrient and faecal coliform bacteria levels in waters off Kilwa Kivinje coastal waters, despite there being no sewage treatment system other that simple soak-aways. Low level but constant sewage and nutrient seepage into the marine environment is likely taking place though not documented. The projected increase in population in this important coastal town is likely to be accompanied by more seepage of sewage into small rivers and streams, directly into the coastal environment, drifting north to the Ramsar site (that includes the Songo Songo Archipelago).
2. Title:	Sewage collection and treatment facilities for Kilwa Kivinje town, Kilwa District
3. Action Reference:	Tan-L19
4. Justification:	Beach and marine pollution were both identified as severity level 2 for Kilwa District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Decline in fisheries yields, regarded as a threat of level 4, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	Sewage from over households in Kilwa Kivinje Town (tens of thousands) causes beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. fish and habitats), extending many kilometres into the Songo Songo Archipelago (Ramsar site), likely affecting nearby small islands and coral reefs, and resulting in negative publicity to the city. Sewage and water are also responsible for water-borne disease. The absence of a suitable sewage collection and treatment facility will over time lead to greater pollution and health issues if not addressed.
5. Objective:	By 2025 at least 80% of Kilwa Kivinje Town households connected to sewage collection and treatment system.
6. Expected outputs:	The outputs of the action to upgrade the sewage system of the Kilwa Kivinje Town are:
	 Fully operational sewage treatment plants where appropriate. Effective and sustainable sewage collection systems in place. Clean and safe water in coastal waters. Reduced sewage wastes discharged to sea. Reduced wastes and pathogens washed up along the coast. Local LGA capable of managing sewage system.
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering, 2) Project management (includes construction management) 3) Site acquisition: Acquisition of building plot, brokers, notaries, taxes.

8. Assumptions:	 4) Sewage collection system 5) Site preparation: Demolishing, ground work, rerouting pipes & cables, roads 6) Construction: civil, mechanical, etc., Contingency. 7) Supplies, personnel (hiring and training/capacity building) The Tanzania Government is committed to supporting the clean-up of the urban and natural environment. Local residents and businesses are supportive of 								
9. Risks:	initiatives to clean-up their urban environment. Local residents and businesses may object and manage to block the project.								
10. Means of implementation:	Logistics, technical, • Budgets for meetings								
		Civil and water engineersSpatial planners							
11. Budget	Item		Estimate in USD						
estimate:	Project preparation a	and mobilisation	100,000						
	Initial studies, design	n and engineering,	200,000						
	Project management	1,000,000							
	Site acquisition: Acquisition of building plot, brokers, notaries, taxes.								
	Installation of sewag	10,000,000							
	Site preparation: De pipes & cables, road	1,000,000							
	Construction: civil, r	10,000,000							
	Supplies, personnel building)	2,000,000							
	Total	24,300,000							
	The coarse budget does not provide for land acquisition for the facility (5-10 acres), re-housing or other costs associated with illegal squatters or land-users, which are considered a government issue.								
12. Source of funding:		ent (budget, participation) ers (Technical Assistance budget). AfDE nes	3, WB, EU, Bilateral						
13. Responsible for the action:	Strong Government infrastructure development stakeholder capable of effectively coordinating efforts. • Contractors • etc								
14. Beneficiary from the action:	Local residents (tens of thousands) plus foreign visitors (several thousand) in terms of health and safety while swimming in the sea, from enhanced aesthetic aspects of the surrounding areas; mangrove forest, intertidal and coral reefs resources users (including fishers) from reduced sewage pollution entering the inshore coastal waters.								
	Indirect or long term beneficiaries will be the coastal populations at large that through improved coastal water quality will have bettered their opportunities for socio-economic development without compromising sustainable natural resources and environmental management.								

15. Schedule:			Yea	ır 1			Yea	ar 2		П	Year 3				Ye	ar 4			Yea	ar 5	
	Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q/	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Sewage facilities for Kilwa Kivinje Town																				
	Project preparation and mobilisation																				
	Initial studies, design and engineering,																				
	Project management (includes																	l			
	construction management)	ļ																ļ			
	Site acquisition: Acquisition of building									L											
	plot, brokers, notaries, taxes.						:		,	ш			<u> </u>	上	<u> </u>	_	<u> </u>	ļ			ļ
	Sewage collection system	ļ						ļ										ļ			
	Site preparation: Demolishing, ground																	l			
	work, rerouting pipes & cables, roads	ļ						ļ		H								ļ			
	Construction: civil, mechanical, etc.,																	l			
	Contingency. Supplies, personnel (hiring and	ļ						1		_								ļ			
	training/capacity building)																	l			
	transing/capacity banang/	_																_			_
16. Links to other	Links to following systemic a	cti	ons	s w	ดน	1d 1	be	de	sira	abl	e:										
actions:	0 ,																				
actions.	 Tan-S01: Integrated Coasta 	1Z	one	e N	1ar	nag	en	ner	ıt												
	 Tan-S02: Spatial Planning 																				
	• Tan-S04: Information Mana	age	eme	ent																	
	• Tan-S06: Awareness Raisir																				
		.,	7101	A7																	
	Tan-S07: Integrated Legal Review																				
	Of particular relevance and importance would be links to:																				
	Tan-L20: Sewage waste treatment facility Kilwa Masoko Town																				
	• Tan-L32: Urban solid waste collection and processing facility for Kilwa Kivinje																				
	• Tan-L33: Urban solid was							-			_			_						,	,
17. Performance	Water quality (chemistry, I					ı aı	101	PT	occ	.001	116	, ra	CIII	Ly .	101	1 (1)	. * * * *	1 17.	ab	JIC	
	. 3				,				. 1	1		1									
indicators:	 Volumes and types of solice 							ciai	tea	be	eac.	nes	3								
	 Households connected to s 	ew	era	age	sy	ste	m														
18. Comments:																					

Tan-L20: Sewage collection and treatment facilities for Kilwa Masoko, Kilwa District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Currently there are no reports of high nutrient and faecal coliform bacteria levels in waters off Kilwa Kivinje coastal waters, despite there being no sewage treatment system other that simple soak-aways. Low level but constant sewage and nutrient seepage into the marine environment is likely taking place though not documented. The projected increase in population in this important coastal town is likely to be accompanied by more seepage of sewage into small rivers and streams, directly into the coastal environment, drifting north to the Ramsar site (that includes the Songo Songo Archipelago).
2. Title:	Sewage collection and treatment facilities for Kilwa Masoko town, Kilwa District
3. Action Reference:	Tan-L20
4. Justification:	Beach and marine pollution were both identified as severity level 2 for Kilwa District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Decline in fisheries yields, regarded as a threat of level 4, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	Sewage from over households in Kilwa Masoko Town (tens of thousands) causes beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. fish and habitats), extending many kilometres into the Songo Songo Archipelago (Ramsar site), likely affecting nearby small islands and coral reefs, and resulting in negative publicity to the city. Sewage and water are also responsible for water-borne disease. The absence of a suitable sewage collection and treatment facility will over time lead to greater pollution and health issues if not addressed.
5. Objective:	By 2025 at least 80% of Kikwa Masoko Town households connected to sewage collection and treatment system.
6. Expected outputs:	The outputs of the action to upgrade the sewage system of the Kilwa Masoko Town are:
	 Fully operational sewage treatment plants where appropriate. Effective and sustainable sewage collection systems in place. Clean and safe water in coastal waters. Reduced sewage wastes discharged to sea. Reduced wastes and pathogens washed up along the coast. Local LCA capable of managing sowage system.
7. Activities:	 Local LGA capable of managing sewage system. a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering,

8. Assumptions: 9. Risks: 10. Means of implementation:	aries, taxes. ipes & cables, roads g) ean-up of the urban supportive of ock the project. nfrastructure								
		Civil and water engineersSpatial planners							
11. Budget	Item	1	Estimate in USD						
estimate:	Project preparation	100,000							
	Initial studies, desig	200,000							
	Project managemen	1,000,000							
	Site acquisition: Ac notaries, taxes.	-							
	Installation of sewa	10,000,000							
	Site preparation: D pipes & cables, road	1,000,000							
	Construction: civil,	10,000,000							
	Supplies, personnel building)	2,000,000							
	Total	24,300,000							
10.0	The coarse budget does not provide for land acquisition for the facility (5-10 acres), re-housing or other costs associated with illegal squatters or land-users, which are considered a government issue.								
12. Source of funding:		ent (budget, participation) ners (Technical Assistance budget). AfDE mes	3, WB, EU, Bilateral						
13. Responsible for the action:	Strong Government infrastructure development stakeholder capable of effective coordinating efforts. • Contractors • etc								
14. Beneficiary from the action:	terms of health and s aspects of the surrou	of thousands) plus foreign visitors (seve safety while swimming in the sea, from e nding areas; mangrove forest, intertidal uding fishers) from reduced sewage poll rs.	nhanced aesthetic and coral reefs						
	through improved co	beneficiaries will be the coastal populat pastal water quality will have bettered the lopment without compromising sustaina nanagement.	eir opportunities for						

15. Schedule:			Yea	ar 1			Yea	ar 2			Yea	ar 3			Yea	ar 4			Year 5		
	Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Sewage facilities for Kilwa Masoko	丅				İ				İ				İ				İ			Ī
	Town									l								l			
	Project preparation and mobilisation																				
	Initial studies, design and engineering,																				
	Project management (includes																				
	construction management) Site acquisition: Acquisition of building			ļ			-	-	-	_								ļ			
	plot, brokers, notaries, taxes.																				
	Sewage collection system	·	1	<u> </u>		Г												l			
	Site preparation: Demolishing, ground	T		.		ļ												l			
	work, rerouting pipes & cables, roads																				
	Construction: civil, mechanical, etc., Contingency.																				
	Supplies, personnel (hiring and	1	<u> </u>	ļ														l			
	training/capacity building)																	l			
		_	_	•																	
16. Links to other	Links to following system	ic a	acti	on	s w	70U	ıld	be	de	esiı	ab	le:									
actions:	• Tan-S01: Integrated Coa																				
	Tan-S02: Spatial Planning					, 101		-CI													
	*	_																			
	• Tan-S04: Information M		_	em	ent	t															
	• Tan-S06: Awareness Ra	isiı	ng																		
	• Tan-S07: Integrated Leg	gal	Re	vie	w																
	Of particular relevance an	d i	mr	or	tan		TA7.0	Na 1	<i>a</i> 1	3 0 1	lin1	co f	٠.								
	-		-											T							
	Tan-L19: Sewage waste							_					,								
	• Tan-L32: Urban solid w	vas	te d	coll	lect	tioı	n a	nd	pr	OC.	ess	ing	g fa	ıcil	ity	fo	r K	ilv	va :	Kiv	/inj
	• Tan-L33: Urban solid w	vas	te d	coll	lect	tioı	n a	nd	pr	OC.	ess	ing	g fa	cil	ity	fo	r K	ilv	va i	Ma	sol
17. Performance	Water quality (chemistr																				
indicators:	Volumes and types of se	-				-	1 20	:e0	cia	tor	l h	220	he	c							
	3 1									iec	ıDt	cac	116	3							
		to 9	ATAS	TOT	$a\sigma a$	2 ST	vste	2m													
	Households connected) C V 1	CI	ug		,														
18. Comments:	Households connected		JC V1	CI	uge		,		-												
18. Comments:	Households connected to the connect		3C V	V CI	ugv	<u> </u>	,		-												

Tan-L21: Sewage collection and treatment facilities for Lindi town, Lindi Urban District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Currently there is no evidence of high nutrient and faecal coliform bacteria levels in waters off Lindi town, despite there being no sewage treatment system other that simple soak-aways. Low level but constant sewage and nutrient seepage into the marine environment is likely taking place though not documented. The projected increase in population in this important coastal town is likely to be accompanied by more seepage of sewage into small rivers and streams, directly into the coastal environment.
2. Title:	Sewage collection and treatment facilities for Lindi town, Lindi Urban District
3. Action Reference:	Tan-L21
4. Justification:	Beach pollution was identified as severity level 2 for Lindi Urban District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Decline in fisheries yields, regarded as a threat of level 4, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	Sewage from over households in Lindi Urban town (tens of thousands) causes beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. fish and habitats), extending many kilometres coastal waters, likely affecting nearby small islands and coral reefs, and resulting in negative publicity to the city. Sewage and water are also responsible for water-borne disease. The absence of a suitable sewage collection and treatment facility will over time lead to greater pollution and health issues if not addressed.
5. Objective:	By 2025 at least 80% of Lindi Town households connected to sewage collection and treatment system.
6. Expected outputs:	 The outputs of the action to upgrade the sewage system of the Lindi Town are: Fully operational sewage treatment plants where appropriate. Effective and sustainable sewage collection systems in place. Clean and safe water in coastal waters. Reduced sewage wastes discharged to sea. Reduced wastes and pathogens washed up along the coast. Local LGA capable of managing sewage system.
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering, 2) Project management (includes construction management) 3) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. 4) Sewage collection system

	5) Site preparation: Demolishing, ground work, rerouting pipes & cables, roads6) Construction: civil, mechanical, etc., Contingency.7) Supplies, personnel (hiring and training/capacity building)									
8. Assumptions:	and natural environr	nment is committed to supporting the cl nent. Local residents and businesses are o their urban environment.								
9. Risks:	Local residents and b	ousinesses may object and manage to blo	ock the project.							
10. Means of implementation:	Logistics, technical, scientific	 Budgets for meetings Budgets for technical assistance Access to information Green-green in 	infrastructure							
	Human Resources • Project managers • Civil and water engineers • Spatial planners •									
11. Budget	Item		Estimate in USD							
estimate:	Project preparation	and mobilisation	100,000							
	Initial studies, desig	gn and engineering,	200,000							
	, ,	t (includes construction management)	1,000,000							
	Site acquisition: Ac notaries, taxes.	quisition of building plot, brokers,	-							
	Installation of sewa	ge collection system	10,000,000							
	Site preparation: D pipes & cables, roac	1,000,000								
		Construction: civil, mechanical, etc., Contingency.								
	Supplies, personnel (hiring and training/capacity 2,000,0 building)									
	Total 24,300,000 The coarse budget does not provide for land acquisition for the facility (5-10 acres), re-housing or other costs associated with illegal squatters or land-users, which are considered a government issue.									
12. Source of funding:		ent (budget, participation) ers (Technical Assistance budget). AfDI mes	3, WB, EU, Bilateral							
13. Responsible for the action:	Strong Government infrastructure development stakeholder capable of effectively coordinating efforts. • Contractors • etc									
14. Beneficiary from the action:	terms of health and s aspects of the surrou	of thousands) plus foreign visitors (severafety while swimming in the sea, from ending areas; mangrove forest, intertidal ading fishers) from reduced sewage polles.	enhanced aesthetic and coral reefs							
	through improved co	beneficiaries will be the coastal populat pastal water quality will have bettered the lopment without compromising sustain management.	neir opportunities for							

15. Schedule:			Year	1		Year 2				Ye	ar 3		1	Year 4				Year 5			ĺ
	Actions and Activities	Q1	Q2 Q	3 Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q 3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	1
	Sewage facilities for Lindi Town	$oxed{oxed}$							<u> </u>	<u> </u>			<u> </u>								1
	Project preparation and mobilisation																		ļ		1
	Initial studies, design and engineering,																				1
	Project management (includes	1																			
	construction management)																		ļ		1
	Site acquisition: Acquisition of building	1							l				l								
	plot, brokers, notaries, taxes.	.	ļļ			,	,	Ţ	_	<u> </u>		<u> </u>	ᆫ	<u> </u>	<u> </u>				ļ		1
	Sewage collection system	ļ				ļ	ļ												ļ		1
	Site preparation: Demolishing, ground																				
	work, rerouting pipes & cables, roads		ļļ		ļ	ļ													ļ		1
	Construction: civil, mechanical, etc.,																				
	Contingency. Supplies, personnel (hiring and	·	-																ļ		ŀ
	training/capacity building)																				
16. Links to other	<u> </u>	mi	2 0.04	ion	0.14	701	u1d	1 h	- d	00		1 .1.	٠.					_	-		<u> </u>
201 2111110 10 011101	Links to following system	ш	act	1011	S W	voi	uic	I D	e a	es	II a	DI	₫:								
actions:	• Tan-S01: Integrated C			Zon	e l	Ma	ına	ıge	me	ent	:										
	Tan-S02: Spatial Planning																				
	• Tan-S04: Information	Ma	nag	em	ent	t															
	• Tan-S06: Awareness R					-															
	Tan-S07: Integrated Le	ega	ıı Ke	evie	W																
	Of particular relevance a	anc	lim	por	tar	ıce	w	ou	ld	be	liı	nk	s to):							
	Tan-L2: Seawage wasTan-L35: Urban solid															Fx7	for	· 1\/	lik	inc	dani and
	Mtwara towns	***	iste	COL	icc	110	11.0	л	1 P	10	CC		"h	ıu	.111	Ly .	101	14.	1110	1110	aum una
17. Performance	Water quality (chemis	stry	, BC	DD,	eto	2.)															
indicators:	Volumes and types of					,	n a	SSC	oci:	ate	ď	he	acl	es							
	Households connected											~	ac1								
	- Households confidence	a ii	301	v CI	ug	C S	ysi	ıCII	LL												
18. Comments:																					

Tan-L22: Sewage collection and treatment facilities for Mikindani town, Mtwara Urban District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Currently there are no reports of high nutrient and faecal coliform bacteria levels in waters off Mikindani coastal waters, despite there being no sewage treatment system other that simple soak-aways. Low level but constant sewage and nutrient seepage into the marine environment is likely taking place though not documented. The projected increase in population in this important coastal town is likely to be accompanied by more seepage of sewage into small rivers and streams, directly into the coastal environment, potentially affecting the Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP).
2. Title:	Sewage collection and treatment facilities for Mikindani town, Mtwara Urban District
3. Action Reference:	Tan-L22
4. Justification:	Beach pollution was both identified as severity level 4 for Mtwara Urban District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Decline in fisheries yields, regarded as a threat of level 4, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	Sewage from over households in Mtwara Urban Town (tens of thousands) enters the marine environment continuously, at low levels, causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. fish and habitats), extending many kilometres and resulting in negative publicity to the city. Sewage and water are also responsible for water-borne disease, ranked at severity level 2. The absence of a suitable sewage collection and treatment facility will over time lead to greater pollution and health issues if not addressed.
5. Objective:	By 2025 at least 80% of Mikindani Town households connected to sewage collection and treatment system.
6. Expected outputs:	The outputs of the action to upgrade the sewage system of the Mikindani Town are:
	 Fully operational sewage treatment plants where appropriate. Effective and sustainable sewage collection systems in place. Clean and safe water in coastal waters. Reduced sewage wastes discharged to sea. Reduced wastes and pathogens washed up along the coast. Local LGA capable of managing sewage system.
7. Activities:	a) Project design and appraisal. b) Project tendering

8. Assumptions:	 Initial studies, design and engineering, Project management (includes construction management) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. Sewage collection system Site preparation: Demolishing, ground work, rerouting pipes & cables, roads Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building) The Tanzania Government is committed to supporting the clean-up of the urban 									
•	and natural environs	ment. Local residents and businesses are p their urban environment.	-							
9. Risks:	Local residents and b	ousinesses may object and manage to blo	ock the project.							
10. Means of implementation:	Logistics, technical, scientific	 Budgets for meetings Budgets for technical assistance Access to information Green-green infrastructure 								
	Human Resources	Project managersCivil and water engineersSpatial planners								
11. Budget	Item	1 ***	Estimate in USD							
estimate:	Project preparation	100,000								
	Initial studies, desig	200,000								
	Project managemen	1,000,000								
	Site acquisition: Ac notaries, taxes.	-								
	Installation of sewa	10,000,000								
	Site preparation: D pipes & cables, road	1,000,000								
	Construction: civil,	10,000,000								
	Supplies, personnel building)	2,000,000								
	Total		24,300,000							
	acres), re-housing or which are considered	oes not provide for land acquisition for to other costs associated with illegal squat dagovernment issue.								
12. Source of funding:	Development Partr assistance program									
13. Responsible for the action:	Strong Government infrastructure development stakeholder capable of effecti coordinating efforts. • Contractors • etc									
14. Beneficiary from the action:	in terms of health an aspects of the surrou	eral tens of thousands) plus foreign visited safety while swimming in the sea, from anding areas; mangrove forest, intertidal auding fishers) from reduced sewage pollers.	n enhanced aesthetic and coral reefs							
	Indirect or long term beneficiaries will be the coastal populations at large that through improved coastal water quality will have bettered their opportunities for socio-economic development without compromising sustainable natural resources and environmental management.									

15. Schedule:		Т	Yea	ar 1		П	Ye	ar 2		Т	Υe	ar 3		П	Ye	ar 4		Т	Ye	ſ		
	Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q	1 Q2	Q3	Q4	Q1	. Q2	Q3	Q/	Q1	Q2	Q3	Q4	Į
	Sewage facilities for Mikindani Town	L					<u> </u>						<u> </u>		ļ		<u>.</u>		<u> </u>			
	Project preparation and mobilisation					L								<u> </u>			<u>.</u>	<u></u>				
	Initial studies, design and engineering,									┸								_	ļ			
	Project management (includes																					
	construction management)																	.				
	Site acquisition: Acquisition of building									ь.												
	plot, brokers, notaries, taxes.		ļ		ļ				,	щ			<u> </u>	上	<u> </u>	<u> </u>	<u> </u>	┫	ļ			
	Sewage collection system			ļ		ļ		Ļ										.		ļ		
	Site preparation: Demolishing, ground	1				l																
	work, rerouting pipes & cables, roads			ļ	ļ	ļ	ļ		Ļ	-								.	ļ			
	Construction: civil, mechanical, etc.,					l																
	Contingency.			ļ		_	_			_								.		ļ		
	Supplies, personnel (hiring and training/capacity building)																					
	<u> </u>	_		<u> </u>	<u> </u>							_						_	<u> </u>			L
16. Links to other	Links to following system	mic	ac	ctio	ns	W	ou	ıld	be	e d	lesi	ral	ole	:								
actions:	T 601 I 1 G		. 1																			
	• Tan-S01: Integrated C			Z(one	5 IV	/lai	naş	gei	me	ent											
	• Tan-S02: Spatial Planr	iing	g																			
	• Tan-S04: Information			σei	me	nt																
	• Tan-S06: Awareness R																					
				,																		
	Tan-S07: Integrated Legal Review																					
	Of particular relevance a	Of particular relevance and importance would be links to:																				
	• Tan-I 23: Sowage was	Tan-L23: Sewage waste treatment facility Mtwara Town																				
	• • • • • • • • • • • • • • • • • • • •															.1.,			3 <i>(</i>		1	
	• Tan-L35: Urban solid	Wa	aste	e co	OH	ect	101	n a	na	ιp	roc	ces	sın	gı	ac	IIIt	y 1	or	IVI:	1K1	naa	anı and
	Mtwara towns																					
47 D. C	TA7 . 1:, / 1 ·		D	α	_	_	`															
17. Performance	Water quality (chemis																					
indicators:	 Volumes and types of 	so	lid	W	ast	es	on	as	SSC	ci	ate	d t	ea	ch	es							
	Households connected	1 to) SE	w	era	σε	. ST	zst	en	า												
						0,)															
18. Comments:		_			_				_	_	_						_		_		_	

Tan-L23: Sewage collection and treatment facilities for Mtwara town, Mtwara Urban District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Currently there are no reports of high nutrient and faecal coliform bacteria levels in waters off Mtwara coastal waters, despite there being no sewage treatment system other that simple soak-aways. Low level but constant sewage and nutrient seepage into the marine environment is likely taking place though not documented. The projected increase in population in this important coastal town is likely to be accompanied by more seepage of sewage into small rivers and streams, directly into the coastal environment, potentially affecting the Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP).
2. Title:	Sewage collection and treatment facilities for Mtwara town, Mtwara Urban District
3. Action Reference:	Tan-L23
4. Justification:	Beach pollution was both identified as severity level 4 for Mtwara Urban District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Decline in fisheries yields, regarded as a threat of level 4, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	Sewage from over households in Mtwara Urban Town (tens of thousands) enters the marine environment continuously, at low levels, causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. fish and habitats), extending many kilometres and resulting in negative publicity to the city. Sewage and water are also responsible for water-borne disease, ranked at severity level 2. The absence of a suitable sewage collection and treatment facility will over time lead to greater pollution and health issues if not addressed.
5. Objective:	By 2025 at least 80% of Mtwara Town households connected to sewage collection and treatment system.
6. Expected outputs:	 The outputs of the action to upgrade the sewage system of the Mtwara Town are: Fully operational sewage treatment plants where appropriate. Effective and sustainable sewage collection systems in place. Clean and safe water in coastal waters. Reduced sewage wastes discharged to sea. Reduced wastes and pathogens washed up along the coast. Local LCA combine of managing systems.
7. Activities:	 Local LGA capable of managing sewage system. a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering,

8. Assumptions:	 2) Project management (includes construction management) 3) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. 4) Sewage collection system 5) Site preparation: Demolishing, ground work, rerouting pipes & cables, roads 6) Construction: civil, mechanical, etc., Contingency. 7) Supplies, personnel (hiring and training/capacity building) The Tanzania Government is committed to supporting the clean-up of the urban and natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment. 									
9. Risks:	Local residents and b	ock the project.								
10. Means of implementation:	scientific Budgets for technical assistance Access to information Green-green Human Resources Project managers Civil and water engineers									
		Spatial planners								
11. Budget	Item		Estimate in USD							
estimate:	Project preparation	100,000								
	Initial studies, desig	200,000								
	Project managemen	1,000,000								
	Site acquisition: Ac notaries, taxes.	-								
	Installation of sewa	10,000,000								
	Site preparation: D pipes & cables, road	1,000,000								
	Construction: civil,	10,000,000								
	Supplies, personnel building)	2,000,000								
	Total	24,300,000								
	The coarse budget does not provide for land acquisition for the facility (5-10 acres), re-housing or other costs associated with illegal squatters or land-users, which are considered a government issue.									
12. Source of funding:		ent (budget, participation) ners (Technical Assistance budget). AfDI nmes	3, WB, EU, Bilateral							
13. Responsible for the action:	Strong Government infrastructure development stakeholder capable of effectively coordinating efforts. • Contractors • etc									
14. Beneficiary from the action:	terms of health and s aspects of the surrou	of thousands) plus foreign visitors (several safety while swimming in the sea, from ending areas; mangrove forest, intertidal uding fishers) from reduced sewage pollers.	enhanced aesthetic and coral reefs							
	Indirect or long term beneficiaries will be the coastal populations at large that through improved coastal water quality will have bettered their opportunities for socio-economic development without compromising sustainable natural resources and environmental management.									

15. Schedule:		Year 1 Year 2				Year 3				Year 4					Year 5						
	Actions and Activities	Q1	Q2	Q3	Q4 (Q1 (Q2 (Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Sewage facilities for Mtwara Town	L																<u> </u>	<u>.</u>		
	Project preparation and mobilisation																				
	Initial studies, design and engineering,	<u>.</u>																<u> </u>	<u>.</u>		
	Project management (includes																				
	construction management)	ļ																<u> </u>			
	Site acquisition: Acquisition of building	l			- 1																
	plot, brokers, notaries, taxes.	ļ					_					<u> </u>		L				ļ	ļ		
	Sewage collection system	ļ																.	<u> </u>	ļ	
	Site preparation: Demolishing, ground	l																l			
	work, rerouting pipes & cables, roads	ļ																ļ	ļ		
	Construction: civil, mechanical, etc.,	l																l			
	Contingency.	ļ							_									ļ	ļ		
	Supplies, personnel (hiring and	l			- 1													l			
	training/capacity building)	_																			
16. Links to other	Links to following system	ic a	acti	on	s w	ou	ıld	be	e de	esi	ral	ole	:								
actions:																					
actions.	• Tan-S01: Integrated Coa	asta	al Z	Zon	e N	Лaı	nag	zeι	me	nt											
	Tan-S02: Spatial Planning						•	•													
	Tan-502: Spatial Planning Tan-S04: Information Management																				
				2111	em																
	• Tan-S06: Awareness Ra		.,																		
	• Tan-S07: Integrated Leg	gal	Re	vie	W																
	Of particular relevance and importance would be links to:																				
	Of particular relevance an	ıd i	mp	or	tan	ce	wo	oul	ld 1	bе	lin	ks	to	:							
	1		•												A710						
	• Tan-L22: Seawage was	te t	rea	ıtm	ent	t fa	cil	ity	M	lik	ino	lar	ni T	ov		C		N / C *	1	1.	
	1	te t	rea	ıtm	ent	t fa	cil	ity	M	lik	ino	lar	ni T	ov		y fo	or I	Mi	kir	nda	ni a
17. Performance	Tan-L22: Seawage wasTan-L35: Urban solid w Mtwara towns	te t vas	rea te o	tm coll	ent	t fa	cil	ity	M	lik	ino	lar	ni T	ov		y fo	or I	Mi	kir	nda	ni a
	 Tan-L22: Seawage was Tan-L35: Urban solid was Mtwara towns Water quality (chemistrems) 	te t	rea te o	itm coll	etc	t fa rior	ncil n ai	ity nd	M pı	lik oc	inc	dar sin	ni T g f	ov		y fo	or I	Mi	kir	ıda	ni a
17. Performance indicators:	 Tan-L22: Seawage was Tan-L35: Urban solid was Mtwara towns Water quality (chemistres Volumes and types of seawage was 	te t vas y, oli	rea te o BO	ntm coll D, vas	etc.	t fa ior .)	ncil	ity nd	M pı	lik oc	inc	dar sin	ni T g f	ov		y fo	or :	Mi	kir	nda	ni a
	 Tan-L22: Seawage was Tan-L35: Urban solid was Mtwara towns Water quality (chemistrems) 	te t vas y, oli	rea te o BO	ntm coll D, vas	etc.	t fa ior .)	ncil	ity nd	M pı	lik oc	inc	dar sin	ni T g f	ov		y fo	or I	Mi	kir	nda	ni a

Tan-L24: Safe toilet facilities for Bwejuu and Jibondo islands, Mafia District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Mafia District's economy relies on agricultural cultivation and fisheries, with a substantial amount of revenue also contributed by trade and, increasingly by tourism. Although Mafia ecology offers one of the best diving and snorkeling center in East Africa the number of tourists is still low. This is expected to change dramatically once the 1.4 km Kilindoni jetty is inaugurated, allowing ferries, transporters and tourist vessels to dock with safety.
	The settlement and built-up portion of Mafia is very small, concentrated in the western district headquarters town of Kilindoni, where the airport and docks are situated. Most of the remaining villages are within the Mafia Island Marine Park (MIMP).
	Responding to the recognised need to address waste development and the MIMP General Management Plan (2001) includes recommendations to develop solid waste (and sewage) disposal. With local town inhabitants reliant on informal and inadequate solid waste collection and processing services, large amounts of waste directly enter the natural environment including coastal waters. This affects productivity and tourism potential.
2. Title:	Sewage collection and treatment facilities for Bwejuu and Jibondo islands, Mafia District
3. Action Reference:	Tan-L24
4. Justification:	Beach pollution was identified as severity level 3 for Mafia Island, with sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Marine pollution was ranked as severity level 2.
	Uncontrolled solid and liquid waste disposal, lack of toilets for public as well as residential houses. Disease outbreaks in Kilondoni was also ranked at severity level 3. Based on 2002 census data, the under five years of age mortality was 176 per 1,000 live births.
	The projected increase in population accompanied by development tourism, is certain to aggravate the problem of solid waste collection and treatment. The local NGO Seasense, reports that Mafia Island is Tanzania's most important sea turtle nesting site, with over 250 green turtle nests laid each year, and the critically endangered hawksbill turtle is also known to nest on the tiny islands around Mafia. A small but developing sea turtle ecotourism initiative is generating much needed income for communities near to the nesting beaches and is helping to raise awareness of the importance of sea 2 of 3 turtle conservation. However, nesting beaches are on the east coast of the island and are continually covered in large amounts of plastic waste that washes in on the east African current from as far

	away as Indonesia and the Philippines. The amour nesting beaches poses a significant threat to sea turt the long term sustainability of the ecotourism project are becoming increasingly common. Mafia Island is part of the Mafia-Rufiji-Kilwa Ramsa formally gazetted under the Ramsar Convention as Importance', and referred to as the Rufiji-Mafia-Kilvi island, together with the Rufiji Delta and neighbour (Kilwa District) was identified during a WWF process.	cles in Mafia and also threatens ct. Complaints from visitors ar Site, was in late 2004 an 'Area of Wetlands of Global wa Marine Ramsar Site. The ring Songo Songo Archipelago							
	important biodiversity richness within the Eastern African Marine Ecoregion, was the focus of the WWF Rufiji-Mafia-Kilwa Seascape Programme (or RUM that ended in 2010. The internationally recognises importance in terms of marand coastal biodiversity gives added justification for comprehensively address the issue of solid (and other) wastes.								
5. Objective:	By 2025 at least 80% of Jibondo and Bwejuu households have access to safe toilet system.								
6. Expected	The outputs of the action to install a safe toilet syste	em of the Tibondo and Bweiuu							
outputs:	are:	and the ficoliae and briefut							
	 Fully operational toilet system where appropriate. Clean and safe water in coastal waters. Reduced sewage wastes discharged to sea. Reduced wastes and pathogens washed up along the coast. Local LGA capable of managing sewage system. 								
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering, 2) Project management (includes construction management) 3) Site acquisition: Acquisition of building plot, brown of building plot, brown of Sewage collection system 5) Site preparation: Demolishing, ground work, respectively. 6) Construction: civil, mechanical, etc., Contingency of Supplies, personnel (hiring and training/capacity) 	okers, notaries, taxes. routing pipes & cables, roads y.							
8. Assumptions:	The Tanzania Government is committed to support and natural environment. Local residents and busin initiatives to clean-up their urban environment.								
9. Risks:	Local residents and businesses may object and man	age to block the project.							
10. Means of implementation:	Logistics, technical, scientific • Budgets for meetings • Budgets for technical assist • Access to information Gree •								
	 Human Resources Civil and water engineers Spatial planners 								
11. Budget	Item	Estimate in USD							
estimate:	Project preparation and mobilisation	100,000							
	Initial studies, design and engineering,	200,000							
	Project management (includes construction management)								
	Site acquisition: Acquisition of building plot, brok notaries, taxes.								
	Toilet and sewage system	2,000,000							
	Site preparation: Demolishing, ground work, rero pipes & cables, roads	uting 1,000,000							

	Construction: civil, mechanical, etc., Contingency.	2,000,000										
	Supplies, personnel (hiring and training/capacity	1,000,000										
	building)											
	Total	6,800,000										
	The coarse budget does not provide for land acquisition for	the facility (0.5-1.0										
	acres), re-housing or other costs associated with illegal squat	tters or land-users,										
	which are considered a government issue.											
12. Source of	Tanzania Government (budget, participation)											
funding:	• Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilateral assistance programmes											
13. Responsible for	Strong Government infrastructure development stakeholder	capable of effectively										
the action:	coordinating efforts.	cupuble of effectively										
	• Contractors											
	• etc											
14. Beneficiary	Local residents (several thousand) plus foreign visitors (seve	 eral hundred) in terms										
from the action:	of health and safety while swimming in the sea, from enhance	,										
	of the surrounding areas; mangrove forest, intertidal and con											
	users (including fishers) from reduced sewage pollution enter											
	coastal waters.											
	Indirect or long term beneficiaries will be the coastal popula	tions at large that										
	through improved coastal water quality will have bettered the											
	socio-economic development without compromising sustain											
	and environmental management.											
15. Schedule:		ear 4 Year 5										
	Actions and Activities Q1 Q2 Q3 Q4 Q1 Q2 Q	2 Q3 Q4 Q1 Q2 Q3 Q4										
	Jibondo islands, Mafia District											
	Project preparation and mobilisation Initial studies, design and engineering,											
	Project management (includes											
	construction management) Site acquisition: Acquisition of building											
	plot, brokers, notaries, taxes.											
	Toilet and sewage system Site preparation: Demolishing, ground											
	work, rerouting pipes & cables, roads											
	Construction: civil, mechanical, etc., Contingency.											
	Supplies, personnel (hiring and											
46 T' 1 ()1	training/capacity building)											
16. Links to other actions:	Links to following systemic actions would be desirable:											
actions.	Tan-S01: Integrated Coastal Zone Management											
	• Tan-S02: Spatial Planning											
	• Tan-S04: Information Management											
	Tan-S06: Awareness RaisingTan-S07: Integrated Legal Review											
	Of particular relevance and importance would be links to:											
	• Tan-L15: Sewage collection and treatment facility Kilindo	ni Town, Mafia										
	District	u zuu e										
	• Tan-L31: Urban solid waste collection and treatment facil	ity Kilindoni Town,										
	Mafia DistrictTan-L38: Freshwater supply to Mafia Island Marine Park											
17. Performance	Water quality (chemistry, BOD, etc.)											
indicators:	 Volumes and types of solid wastes on associated beaches 											
	Households connected to sewerage system											
10 Comments												
18. Comments:												

Tan-L25: Urban Solid Waste Collection and Processing facility for Tanga Town, Tanga Urban District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	A body of literature documents high nutrient and faecal coliform bacteria levels in waters off the Tanga City, discharged through the city sewerage system with only primary screening, and from seepage of sewage into small rivers and streams, directly into the coastal environment, Tanga Bay and western shores of the Pemba Channel. Other forms of waste that are ever present are solid wastes from urban dwellings.
	Currently there is no evidence of high solid waste levels in waters off the Tanga Town, despite there being no formal solid waste processing facility. Low level but constant waste entry to the marine environment is likely taking place though not documented. The projected increase in population in this important coastal town is likely to be accompanied by more seepage of sewage into small rivers and streams, directly into the coastal environment, the western shores of the Pemba Channel and drifting north to the Coelacanth Marine Park.
2. Title:	Urban solid waste collection and processing facility for Tanga Town, Tanga Urban District
3. Action Reference:	Tan-L25
4. Justification:	Beach pollution and marine pollution were both identified as severity level 4, for
4. justification.	Tanga Urban District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Decline in fisheries yields, regarded as a threat of level 5, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats. The projected increase in population accompanied by development tourism, is certain to aggravate the problem of solid waste collection and treatment.
5. Objective:	By 2025 at least 80% of the households in Tanga Town linked to a solid waste
o. Objective.	collection and processing facility.
6. Expected outputs:	The outputs of the action to install a solid waste collection and processing facility
-	serving Tanga Town area are:
	Fully operational solid waste collection and processing plant.
	Effective and sustainable solid collection systems in place.
	Reduced solid wastes discharged to sea and washed up along the coast.
7 A stimition	Local LGA capable of managing solid waste system.
7. Activities:	a) Project design and appraisal.b) Project tendering
	Initial studies, design and engineering associated with processing facility:
	review and develop existing solid waste system infrastructure (and relevant
	legislative/regulatory instruments) and develop, and implement a solid waste
	master plan for Tanga Town area, especially the port.

2) Project management (includes construction management) 3) Waste processing site acquisition: acquisition of building plot, brokers, notaries, taxes. 4) Infrastructure: Access roads, power supply 5) Equipment: vehicles, compactors, incinerators, re-cycling 6) Site preparation: ground work, cables, roads 7) Construction: civil, mechanical, contingency. 8) Supplies, personnel (hiring and training/capacity building in solid waste handling, sorting and treatment) 8. Assumptions: The Tanzania Government is committed to supporting the clean-up of the urb and natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment. 9. Risks: Local residents and businesses may object and manage to block the project. 10. Means of implementation: budgets for meetings budgets for technical assistance
notaries, taxes. 4) Infrastructure: Access roads, power supply 5) Equipment: vehicles, compactors, incinerators, re-cycling 6) Site preparation: ground work, cables, roads 7) Construction: civil, mechanical, contingency. 8) Supplies, personnel (hiring and training/capacity building in solid waste handling, sorting and treatment) 8. Assumptions: The Tanzania Government is committed to supporting the clean-up of the urband natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment. 9. Risks: Local residents and businesses may object and manage to block the project. 10. Means of Logistics, • Budgets for meetings
4) Infrastructure: Access roads, power supply 5) Equipment: vehicles, compactors, incinerators, re-cycling 6) Site preparation: ground work, cables, roads 7) Construction: civil, mechanical, contingency. 8) Supplies, personnel (hiring and training/capacity building in solid waste handling, sorting and treatment) 8. Assumptions: The Tanzania Government is committed to supporting the clean-up of the urband natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment. 9. Risks: Local residents and businesses may object and manage to block the project. 10. Means of Logistics, • Budgets for meetings
5) Equipment: vehicles, compactors, incinerators, re-cycling 6) Site preparation: ground work, cables, roads 7) Construction: civil, mechanical, contingency. 8) Supplies, personnel (hiring and training/capacity building in solid waste handling, sorting and treatment) 8. Assumptions: The Tanzania Government is committed to supporting the clean-up of the urband natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment. 9. Risks: Local residents and businesses may object and manage to block the project. 10. Means of Logistics, • Budgets for meetings
6) Site preparation: ground work, cables, roads 7) Construction: civil, mechanical, contingency. 8) Supplies, personnel (hiring and training/capacity building in solid waste handling, sorting and treatment) 8. Assumptions: The Tanzania Government is committed to supporting the clean-up of the urband natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment. 9. Risks: Local residents and businesses may object and manage to block the project. 10. Means of Logistics, • Budgets for meetings
7) Construction: civil, mechanical, contingency. 8) Supplies, personnel (hiring and training/capacity building in solid waste handling, sorting and treatment) 8. Assumptions: The Tanzania Government is committed to supporting the clean-up of the urband natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment. 9. Risks: Local residents and businesses may object and manage to block the project. 10. Means of Logistics, • Budgets for meetings
7) Construction: civil, mechanical, contingency. 8) Supplies, personnel (hiring and training/capacity building in solid waste handling, sorting and treatment) 8. Assumptions: The Tanzania Government is committed to supporting the clean-up of the urband natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment. 9. Risks: Local residents and businesses may object and manage to block the project. 10. Means of Logistics, • Budgets for meetings
handling, sorting and treatment) 8. Assumptions: The Tanzania Government is committed to supporting the clean-up of the urband natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment. 9. Risks: Local residents and businesses may object and manage to block the project. 10. Means of Logistics, • Budgets for meetings
handling, sorting and treatment) 8. Assumptions: The Tanzania Government is committed to supporting the clean-up of the urband natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment. 9. Risks: Local residents and businesses may object and manage to block the project. 10. Means of Logistics, • Budgets for meetings
 8. Assumptions: The Tanzania Government is committed to supporting the clean-up of the urband natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment. 9. Risks: Local residents and businesses may object and manage to block the project. 10. Means of Logistics, • Budgets for meetings
and natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment. 9. Risks: Local residents and businesses may object and manage to block the project. 10. Means of Logistics, • Budgets for meetings
initiatives to clean-up their urban environment. 9. Risks: Local residents and businesses may object and manage to block the project. 10. Means of Logistics, • Budgets for meetings
 9. Risks: Local residents and businesses may object and manage to block the project. 10. Means of Logistics, Budgets for meetings
10. Means of Logistics, • Budgets for meetings
implementation: technical eciontitie - Devilent feature - devilent - devilent
- 0
Access to information Green-green infrastructure
•
•
Human Resources • Project managers
Civil and water engineers
Socio-economists, re-settlement specialists
•
11. Budget estimate: Item Estimate in US
Project preparation and mobilisation 100,00
Initial studies, design and engineering, 200,00
Project management (includes construction management) 500,00
Waste processing site acquisition: acquisition of building
plot, brokers, notaries, taxes.
Infrastructure: Access roads, power supply. 1,000,00
Equipment: vehicles, compactors, incinerators, re-cycling. 2,000,00
Site preparation: ground work, roads 1,000,00
Construction: civil, mechanical, contingency. 1,000,00
Supplies, personnel 1,000,00
Total 6,800,00
The coarse budget does not provide for site acquisition, re-housing or other co
associated with illegal squatters or land-users, which are considered a
government issue.
12. Source of • Tanzania Government (budget, participation)
funding: • Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilater
assistance programmes
13. Responsible for Strong Government infrastructure development stakeholder capable of effective
the action: coordinating efforts:
• Contractors
• etc
14. Beneficiary from Local residents (several tens of thousands) in terms of health and safety, from
the action: enhanced aesthetic aspects of the surrounding areas; mangrove forest, intertid
and coral reefs resources users (including fishers) from reduced solid waste
pollution entering the inshore coastal waters.
Indirect or long term beneficiaries will be the coastal populations at large that
through improved coastal water quality will have bettered their opportunities
socio-economic development without compromising sustainable natural resou
and environmental management.

	Actions and Activities											ır 3	- 1			ır 4			Yea		- 1'
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Solid waste collection/processing																				
	Tanga City		_																		
	Project preparation and mobilisation		4		_																
	Mobilisation/review of solid waste		- 1																		
	generation and design of specific needs		<u> </u>	-									_		_				_		-
	Project management Waste processing site acquisition:					_							_						7	-	-
	Infrastructure																				
	Equipment																				
	Site preparation: ground work, roads																				
	Construction: civil, mechanical,	l																			
	contingency.																				
	Supplies, personnel (hiring and	·····																		i	
	training/capacity building)																				
l6. Links to other	Links to following systemic	ac	tio	ns	w	ou]	ld '	be	de	sir	ab	le:									
actions:	Tan-S01: Integrated Coastal Zone Management																				
	• Tan-S02: Spatial Planning																				
	• Tan-S04: Information Management																				
	• Tan-S06: Awareness Raising																				
	Tan-S07: Integrated Legal Review																				
	Of particular relevance and	l in	npo	rta	ano	e v	wo	ulo	d b	e 1	ink	s t	o:								
	• Tan-L01: Rehabilitation and clean-up of four east-flowing rivers in Mkinga																				
	District																				
	• Tan-L02: Rehabilitation and clean-up of Sigi and Mkulumzi rivers through																				
	Tanga Urban and Muheza districts																				
	 Tanga Urban and Muneza districts Tan-L26: Domestic waste treatment facility Pangani Town 																				
17. Performance					en	ιIa	aCII	шу	F	anş	gar	11 1	OV	VII							
	Water quality (solid was			,																	
indicators:	 Volumes and types of so 	lid	wa	ste	es e	on	as	soc	cia	ted	be	eac	he	S							
	•																				
18. Comments:																					

Tan-L26: Urban Solid Waste Collection and Processing facility for Pangani Town, Pangani District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Currently there is no evidence of high solid waste levels in waters off the Pangani town, despite there being no formal solid waste processing facility. Low level but constant waste entry to the marine environment is likely taking place though not documented. The projected increase in population in this important coastal town is likely to be accompanied by more seepage of sewage into small rivers and streams, directly into the coastal environment, the western shores of the Pemba Channel and drifting north to the Coelacanth Marine Park.
2. Title:	Urban solid waste collection and processing facility for Pangani Town, Pangani
	District
3. Action Reference:	Tan-L26
4. Justification:	Beach pollution and marine pollution were both identified as severity level 4 and
•	2 respectively, for Pangani District, with pollution sources including uncontrolled
	dumping (particularly in creeks), as well as from lack of toilets and sewage
	systems. Agrochemicals were contributing to marine pollution. Decline in
	fisheries yields, regarded as a threat of level 4, is also attributed to loss of fish
	nurseries like mangrove forests, themselves affected by pollution from the
	catchments that drain into these coastal habitats. A formal and efficient solid waste collection and treatment facility is needed before the problem becomes
F 01' 1'	severe.
5. Objective:	By 2025 at least 80% of the households in Pangani Town linked to a solid waste
(F (1 ()	collection and processing facility.
6. Expected outputs:	The outputs of the action to install a solid waste collection and processing facility
	serving Pangani Town area are:
	 Fully operational solid waste collection and processing plant. Effective and sustainable solid collection systems in place.
	 Reduced solid wastes discharged to sea and washed up along the coast.
	 Local LGA capable of managing solid waste system.
7. Activities:	a) Project design and appraisal.
	b) Project tendering
	1) Initial studies, design and engineering associated with processing facility:
	review and develop existing solid waste system infrastructure (and relevant legislative/regulatory instruments) and develop, and implement a solid waste master plan for Pangani Town area.
	2) Project management (includes construction management)
	3) Waste processing site acquisition: acquisition of building plot, brokers,
	notaries, taxes.
	4) Infrastructure: Access roads, power supply
	5) Equipment: vehicles, compactors, incinerators, re-cycling
	6) Site preparation: ground work, cables, roads
	7) Construction: civil, mechanical, contingency.
	1 - 7

	8) Supplies, person handling, sorting	nel (hiring and training/capacity building	g in solid waste								
8. Assumptions:	The Tanzania Gover and natural environ	rnment is committed to supporting the cle ment. Local residents and businesses are p their urban environment.									
9. Risks:		businesses may object and manage to bloo	ck the project.								
10. Means of implementation:	Logistics, technical, scientific	 Budgets for meetings Budgets for technical assistance Access to information Green-green infrastructure 									
	alists										
11. Budget estimate:	Item		Estimate in USD								
	Project preparation	and mobilisation	100,000								
		gn and engineering,	200,000								
	Project managemen	500,000									
	Waste processing s plot, brokers, notar	-									
	Infrastructure: Acc	1,000,000									
	Equipment: vehicle	es, compactors, incinerators, re-cycling.	2,000,000								
	Site preparation: gr	1,000,000									
	Construction: civil,	1,000,000									
	Supplies, personne	1,000,000									
	Total		6,800,000								
	The coarse budget does not provide for site acquisition, re-housing or other costs associated with illegal squatters or land-users, which are considered a government issue.										
12. Source of funding:	Development Parti assistance program										
13. Responsible for the action:	Strong Government coordinating efforts: • Contractors • etc	infrastructure development stakeholder o	capable of effectively								
14. Beneficiary from the action:	enhanced aesthetic a and coral reefs resou	eral tens of thousands) in terms of health a aspects of the surrounding areas; mangrov arces users (including fishers) from reduce the inshore coastal waters.	ve forest, intertidal								
	Indirect or long term beneficiaries will be the coastal populations at large that through improved coastal water quality will have bettered their opportunities for socio-economic development without compromising sustainable natural resources and environmental management.										

15. Schedule:			Yea	r 1	Τ	Yea	ar 2			Yea	ar 3			Yea	ar 4			Yea	ır 5		
	Actions and Activities	Q1	Q2	Q3 Q	Į Q1	1 Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
	Solid waste collection/processing																				
	Pangani Town	<u> </u>	Щ														ļ	ļ			
	Project preparation and mobilisation				4							ļ					ļ	ļ			
	Mobilisation/review of solid waste																				
	generation and design of specific needs		ļļ	-	щ				_				ᆫ				Щ			_	
	Project management										:										
	Waste processing site acquisition:		ļļ						_												
	Infrastructure											ļ					ļ	ļ			
	Equipment		ļļ				_	<u> </u>			L						ļ				
	Site preparation: ground work, roads		ļļ														ļ	ļ			
	Construction: civil, mechanical,																				
	contingency.		ļļ										Щ				ᆫ	<u> </u>		_	
	Supplies, personnel (hiring and																				
	training/capacity building)	<u> </u>																			
16. Links to other	Links to following system	mio	c ac	tion	s v	vot	ıld	be	de	esi	ral	əle	:								
actions:																					
400101100	• Tan-S01: Integrated C	oas	stal	Zoi	ie l	Ma:	naş	ger	ne	nt											
	• Tan-S02: Spatial Planr	nin	g																		
	• Tan-S04: Information			σem	en	ŧ															
					CII																
	• Tan-S06: Awareness F			,																	
	• Tan-S07: Integrated Lo	ega	ıl R	evie	W																
	Of particular relevance a	and	l in	npor	tar	nce	w	oul	d l	be	lin	ks	to	:							
	• Tan-L12: Sewage colle	ecti	on	and	tre	eatr	ne	nt t	fac	ili	tie	s fo	or '	Ta:	nø	a (it	v			
	• • •														٠,		-	•	I	Dar	
	Tan-L13: Sewage collection and treatment facilities for Pangani town, Pangani													igani							
	District																				
	• Tan-L25: Urban solid	W	aste	e tre	atn	nen	ıt fa	aci	lity	ıΤ	'an	ıga	C	itv							
									.,			()		.,							
17. Performance	Water quality (solid w	/as	tes	etc)																
indicators:	• 3 1				•				<u>.</u> :_		J 1.		-1-								
indicators:	 Volumes and types of 	SO	na	was	tes	SOF	ı as	sso	Cla	ite	u t	ea	cn	es							
	•																				
18. Comments:																					

Tan-L27: Urban Solid Waste Collection and Processing facility for Bagamoyo Town, Bagamoyo District

1 Rackgrounds	The coastal zone of mainland Tanzania is under dayalanment procesure from
1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has
	reached its highest and the pollution of beaches and the marine environment have
	reached unprecedented levels. Sources include the drains, sewers, illegal dumping
	and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Currently there is no evidence of high solid waste levels in waters off Bagamoyo town, despite there being no formal domestic waste treatment systems. Low level but constant of waste into the marine environment is likely taking place though not documented. The projected increase in population in this important coastal town is likely to be accompanied by more solid waste generated and disposed into small rivers and streams, directly into the coastal environment, the western shores of the Pemba Channel and drifting north to the Saadani National Park.
2. Title:	Urban solid waste collection and processing facility for Bagamoyo Town, Bagamoyo District
3. Action Reference:	Tan-L27
4. Justification:	Beach pollution was both identified as severity level 3 for Bagamoyo District,
	pollution sources including uncontrolled dumping (particularly in creeks), as well
	as from lack of toilets and sewage systems. Decline in fisheries yields, regarded as
	a threat of level 4, is also attributed to loss of fish nurseries like mangrove forests,
	themselves affected by pollution from the catchments that drain into these coastal habitats.
	The district has experienced a high average annual growth rate between 2002 and
	2012 of 3.45 % leading to more than 42.30 % increase of the population over the
	ten-year period and documenting a significant in-migration. The population
	density in the district has grown to 37 persons/km2 in 2012 from 26 persons/km2
	of 2002. Bagamoyo town and surrounding urban and peri-urban areas witness the
	greatest impacts from increasing population. The absence of a suitable solid waste
	collection and treatment facility will over time lead to greater pollution and health
5. Objective:	issues if not addressed. By 2025 at least 80% of the households in Bagamoyo Town linked to a solid waste
3. Objective.	collection and processing facility.
6. Expected outputs:	The outputs of the action to install a solid waste collection and processing facility
	serving Bagamoyo Town area are:
	• Fully operational solid waste collection and processing plant.
	Effective and sustainable solid collection systems in place.
	 Reduced solid wastes discharged to sea and washed up along the coast.
	Local LGA capable of managing solid waste system.
7. Activities:	a) Project design and appraisal.
	b) Project tendering
	1) Initial studies, design and engineering associated with processing facility:
	review and develop existing solid waste system infrastructure (and relevant
	legislative/regulatory instruments) and develop, and implement a solid waste master plan for Bagamoyo Town area, especially the port.
	2) Project management (includes construction management)
	2) Troject management (includes construction management)

	I .	g site acquisition: acquisition of building	plot, brokers,								
	notaries, taxes. 4) Infrastructure: Access roads, power supply										
		cles, compactors, incinerators, re-cycling.	•								
		ground work, cables, roads									
		ril, mechanical, contingency.	. 1.1								
		nel (hiring and training/capacity buildin	g in solid waste								
0.1	handling, sorting		C -1 1								
8. Assumptions:		nment is committed to supporting the cle	-								
		ment. Local residents and businesses are	supportive of								
		p their urban environment.									
9. Risks:	Local residents and l	businesses may object and manage to blo	ck the project.								
10. Means of	Logistics,	Budgets for meetings									
implementation:	technical, scientific	Budgets for technical assistance									
-		Access to information Green-green in	frastructure								
		•									
	Human Resources	Project managers									
		Civil and water engineers									
		Socio-economists, re-settlement speci	alists								
		·									
11. Budget estimate:	Item	***	Estimate in USD								
	Project preparation	and mobilisation	100,000								
	l	gn and engineering,	200,000								
	Project managemer	500,000									
	Waste processing s	site acquisition: acquisition of building ies, taxes.	-								
	Infrastructure: Acc	1,000,000									
	Equipment: vehicle	2,000,000									
	Site preparation: gr	2,000,000									
	Construction: civil,	2,000,000									
	Supplies, personne	1	1,000,000								
	Total		6,800,000								
	The coarse budget does not provide for site acquisition, re-housing or other costs										
	associated with illegal squatters or land-users, which are considered a										
	government issue.	·									
12. Source of	Tanzania Governm	nent (budget, participation)									
funding:		ners (Technical Assistance budget). AfDB	, WB, EU, Bilateral								
· ·	assistance program	· · · · · · · · · · · · · · · · · · ·									
13. Responsible for	1	infrastructure development stakeholder o	capable of effectively								
the action:	coordinating efforts:	-	ı								
	Contractors										
	• etc										
14. Beneficiary from		eral tens of thousands) in terms of health	and safety, from								
the action:		spects of the surrounding areas; mangro									
		irces users (including fishers) from reduc									
		ne inshore coastal waters.	ca soma music								
	Indirect or long term	n beneficiaries will be the coastal populati									
	Indirect or long term										
	Indirect or long term through improved co	n beneficiaries will be the coastal populati	eir opportunities for								

15. Schedule:			Yea	ar 1			Yea	ar 2			Yea	ır 3			Yea	ır 4			Yea	ar 5	\neg
	Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Solid waste collection/processing	ĺ								Ī											
	Bagamoyo Town																				
	Project preparation and mobilisation									l											
	Mobilisation/review of solid waste	Г				[
	generation and design of specific needs	<u> </u>	<u>.</u>			L															
	Project management	<u> </u>		<u> </u>																	
	Waste processing site acquisition:	<u> </u>				<u> </u>															
	Infrastructure	<u> </u>		<u> </u>																	
	Equipment																				
	Site preparation: ground work, roads	<u> </u>				L															
	Construction: civil, mechanical,																				
	contingency.	ļ				ļ	ļ	_													
	Supplies, personnel (hiring and																				
	training/capacity building)																				
	 Tan-S02: Spatial Planning Tan-S04: Information Metan-S06: Awareness Ration Tan-S07: Integrated Legal Of particular relevance and Tan-L05: Rehabilitation Tan-L14: Sewage collect Tan-L57: Urban planning 	far isi gal nd i n a tio	nag ng Re im _j nd n a	vi po cl	ew rta ear d tr	nco n-u ea	ıp o	of I ent	Ruv t fa	vu cil	Ri	vei	r B	asi		Τ	ov	vn			
17. Performance	Water quality (solid wa																				
indicators:					,				~c:	at.	.a ·	ha:	- a-L								
mulcators:	 Volumes and types of s 	OII	u V	va	ste	s o)11 6	155	OC1	ate	2a	bea	aCI	ies							
	•																				
18. Comments:																					

Tan-L28: Urban Solid Waste Collection and Processing facility for Kinondoni Municipality

1. Background:	The coastal zone of mainland Tanzania is under development pressure from
	population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Diverse forms of pollution, discharged through local rivers into the coastal environment on the western shores of the Zanzibar Channel, is well-documented, visible especially after heavy rains, with solid wastes and sediments discharged being indicative of degraded and polluted watersheds. These water are important marine biodiversity and fisheries areas, reflected by the presence of the dare s Salaam Marine Reserves (that include the islands and reefs of Bongoyo, Mbudya, Fungu Yasin).
	Currently there is low level but constant solid waste disposal into the marine environment though not documented. The projected increase in population is likely to be accompanied by more waste entry through small rivers and streams, directly into the coastal environment. The need exists for a comprehensive solid waste treatment facility for inhabitants of Kinondoni.
2. Title:	Urban solid waste collection and processing facility for Kinondoni Municipality
3. Action Reference: 4. Justification:	Tan-L28 Beach pollution and marine pollution were both identified as severity level 4, for
4. justification.	Kinondoni District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Agrochemicals were contributing to marine pollution. Pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems.
	Solid waste presently enters the marine environment from seven relatively short-lengthed east-flowing rivers that drain Kinondoni. Together with storm drains, these are some of the largest conduits for liquid and solid waste, chemicals and sediment to the north Dar es Salaam coastline, causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. turtles, fish and habitats), extending many kilometres along the coast (likely affecting nearby small islands and coral reefs, and resulting in negative publicity of this important tourist destinations in northern Dar es Salaam.
	Decline in fisheries yields, regarded as a threat of level 4 in Kinondoni District, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats. The absence of a suitable solid waste collection and treatment facility will over time lead to greater pollution and health issues if not addressed.
5. Objective:	By 2025 at least 80% of the households in Kinondoni Municipality linked to a solid
6. Expected outputs:	waste collection and processing facility. The outputs of the action to install a solid waste collection and processing facility
	serving Kinondoni Municipality area are: • Fully operational solid waste collection and processing plant. • Effective and sustainable solid collection systems in place.

		stes discharged to sea and washed up alo	ng the coast.						
7 Astinition	•	e of managing solid waste system.							
7. Activities:	a) Project design and appraisal.								
	b) Project tendering	ocion and anainamina associated with mu	accoin a facilita						
		esign and engineering associated with pro							
		lop existing solid waste system infrastruc							
		atory instruments) and develop, and imp	lement a solid was						
		Kinondoni Municipality area.							
		nent (includes construction management)	1 . 1 1						
		g site acquisition: acquisition of building	plot, brokers,						
	notaries, taxes.	1 1							
		Access roads, power supply							
		cles, compactors, incinerators, re-cycling	•						
		ground work, cables, roads							
		ril, mechanical, contingency.							
	,	nel (hiring and training/capacity building	g in solid waste						
	handling, sorting								
8. Assumptions:		nment is committed to supporting the cle							
		ment. Local residents and businesses are s	supportive of						
	initiatives to clean-u	p their urban environment.							
9. Risks:	Local residents and l	businesses may object and manage to bloo	ck the project.						
10. Means of	Logistics,	Budgets for meetings							
implementation:	technical, scientific • Budgets for technical assistance								
-	Access to information Green-green infrastructure								
	l	•							
	Human Resources	Project managers							
		Civil and water engineers							
	Socio-economists, re-settlement specialists								
	1	•							
11. Budget estimate:	Item		Estimate in USD						
	Project preparation	100,000							
	Initial studies, design	200,000							
	Project managemen	500,000							
	Waste processing s								
	plot, brokers, notar	-							
	Infrastructure: Acc	1,500,000							
	Equipment: vehicle	2,000,000							
	Site preparation: gr	, ,	1,500,000						
	1 1	1,000,000							
	Construction: civil	Construction: civil, mechanical, contingency.							
		0 ,							
	Supplies, personne	0 ,	1,000,000						
	Supplies, personne Total	1	1,000,000 7,800,000						
	Supplies, personne Total The coarse budget de	l oes not provide for site acquisition, re-ho	1,000,000 7,800,000 using or other costs						
	Supplies, personnel Total The coarse budget de associated with illege	1	1,000,000 7,800,000 using or other costs						
	Supplies, personnel Total The coarse budget de associated with illeg government issue.	oes not provide for site acquisition, re-horal squatters or land-users, which are cons	1,000,000 7,800,000 using or other costs						
12. Source of	Supplies, personnel Total The coarse budget de associated with illeg government issue.	l oes not provide for site acquisition, re-ho	1,000,000 7,800,000 using or other costs						
	Supplies, personnel Total The coarse budget de associated with illege government issue. • Tanzania Government	oes not provide for site acquisition, re-horal squatters or land-users, which are cons	1,000,000 7,800,000 using or other costs idered a						
	Supplies, personnel Total The coarse budget de associated with illege government issue. • Tanzania Government	oes not provide for site acquisition, re-horal squatters or land-users, which are constant (budget, participation) ners (Technical Assistance budget). AfDB	1,000,000 7,800,000 using or other costs idered a						
funding:	Supplies, personnel Total The coarse budget de associated with illeg government issue. • Tanzania Governm • Development Partr assistance program	oes not provide for site acquisition, re-horal squatters or land-users, which are constant (budget, participation) ners (Technical Assistance budget). AfDB,	1,000,000 7,800,000 using or other costs idered a , WB, EU, Bilateral						
12. Source of funding: 13. Responsible for the action:	Supplies, personnel Total The coarse budget de associated with illege government issue. • Tanzania Government • Development Partra assistance program Strong Government	oes not provide for site acquisition, re-horal squatters or land-users, which are constant (budget, participation) ners (Technical Assistance budget). AfDB, nmes infrastructure development stakeholder of	1,000,000 7,800,000 using or other costs idered a , WB, EU, Bilateral						
funding: 13. Responsible for	Supplies, personnel Total The coarse budget de associated with illege government issue. • Tanzania Government • Development Partrassistance program Strong Government coordinating efforts:	oes not provide for site acquisition, re-horal squatters or land-users, which are constant (budget, participation) ners (Technical Assistance budget). AfDB, nmes infrastructure development stakeholder of	1,000,000 7,800,000 using or other costs idered a , WB, EU, Bilateral						
funding: 13. Responsible for	Supplies, personnel Total The coarse budget de associated with illege government issue. • Tanzania Governm • Development Parta assistance program Strong Government coordinating efforts: • Contractors	oes not provide for site acquisition, re-horal squatters or land-users, which are constant (budget, participation) ners (Technical Assistance budget). AfDB, nmes infrastructure development stakeholder of	1,000,000 7,800,000 using or other costs idered a , WB, EU, Bilateral						
funding: 13. Responsible for	Supplies, personnel Total The coarse budget de associated with illege government issue. • Tanzania Governm • Development Parta assistance program Strong Government coordinating efforts: • Contractors • etc	oes not provide for site acquisition, re-horal squatters or land-users, which are constant (budget, participation) ners (Technical Assistance budget). AfDB, nmes infrastructure development stakeholder of	1,000,000 7,800,000 using or other costs idered a , WB, EU, Bilateral						

	and coral reefs resources users (including fishers) from reduced solid waste pollution entering the inshore coastal waters.												
	Indirect or long term beneficiaries will be the coastal populations at large that												
	through improved coastal water quality will have bettered their opportunities for												
	socio-economic development without compromising sustainable natural resources												
	and environmental management.												
15. Schedule:	Year 1 Year 2 Year 3 Year 4 Year 5 Actions and Activities Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4												
	Solid waste collection/processing												
	Kinondoni Municipality Project preparation and mobilisation												
	Mobilisation/review of solid waste												
	generation and design of specific needs												
	Project management Project management												
	Waste processing site acquisition:												
	Infrastructure Infrastructure												
	Equipment												
	Site preparation: ground work, roads												
	Construction: civil, mechanical,												
	contingency. Supplies, personnel (hiring and												
	training/capacity building)												
16. Links to other	Links to following systemic actions would be desirable:												
actions:													
	Tan-S01: Integrated Coastal Zone Management												
	• Tan-S02: Spatial Planning												
	• Tan-S04: Information Management												
	• Tan-S06: Awareness Raising												
	• Tan-S07: Integrated Legal Review												
	• Tait-507. Integrated Legal Review												
	Of particular relevance and importance would be links to:												
	Ton I 07. Pohabilitation and alson up of seven vivous Vinandani District												
	• Tan-L07: Rehabilitation and clean-up of seven rivers, Kinondoni District												
	Tan-L15: Sewage treatment facility Kinondoni District												
	Tan-L29: Urban solid waste collection and processing Ilala District												
17. Performance	Water quality (solid wastes, etc.)												
indicators:	Volumes and types of solid wastes on associated beaches												
	•												
18. Comments:													

Tan-L29: Urban Solid Waste Collection and Processing facility for Ilala Municipality

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Msimbazi Creek is the most studied area of Dar es Salaam (see Tan-L08). Nutrients, chemical, faecal and solid waste pollution discharged through this rivers into the coastal environment as it passes under Selander Bridge, visible especially after heavy rains. Despite there being no sewage treatment system other that simple soak-aways, low level but constant sewage, nutrient and solid waste seepage into the marine environment is taking place. The projected increase in population is likely to be accompanied by greater volumes of solid waste, much of which ends up in small rivers and streams, or directly into the coastal environment.
2. Title:	Urban solid waste collection and processing facility for Ilala Municipality
3. Action Reference:	
4. Justification:	Beach pollution and marine pollution were both identified as severity level 4, for Kinondoni District, with sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Pollution of the beach and nearshore, industrial, sewage and heavy metal were all forms of pollution ranked as level 3 threats in Ilala District. Pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems.
	Decline in fisheries yields, regarded as a threat of level 4 in both Kinondoni and Ilala districts, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats. Disease outbreaks was ranked at severity level 4 and 3 respectively for Ilala and Kinondoni, with causes linked to flooding and sewage.
	Establishing an efficient solid waste collection and treatment facility is the
5. Objective:	greatest measure to reducing pollution into the coastal waters of Dar es Salaam. By 2025 at least 80% of the households in Ilala Municipality linked to a solid waste collection and processing facility.
6. Expected outputs:	
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering associated with processing facility: review and develop existing solid waste system infrastructure (and relevant legislative/regulatory instruments) and develop, and implement a solid waste master plan for Ilala Municipality area, especially the port.

		nent (includes construction management)	-1-(11					
	3) Waste processing site acquisition: acquisition of building plot, brokers,							
	notaries, taxes. 4) Infrastructure: Access roads, power supply							
		cles, compactors, incinerators, re-cycling.						
		ground work, cables, roads	•					
		il, mechanical, contingency.						
		nel (hiring and training/capacity buildin	σ in solid waste					
	handling, sorting		g in sond waste					
8. Assumptions:		nment is committed to supporting the cle	an-up of the urban					
	and natural environr	ment. Local residents and businesses are	supportive of					
	initiatives to clean-ur	p their urban environment.						
9. Risks:	Local residents and b	ousinesses may object and manage to blo	ck the project.					
10. Means of	Logistics, technical,	Budgets for meetings						
implementation:	scientific	Budgets for technical assistance						
		Access to information Green-green in	ıfrastructure					
		•						
	Human Resources	Project managers						
		Civil and water engineers						
		ialists						
		1						
11. Budget estimate:	Item	Estimate in USD						
	Project preparation	100,000						
	Initial studies, desig	200,000						
	Project managemen	500,000						
	Waste processing site acquisition: acquisition of building -							
	plot, brokers, notaries, taxes.							
	Infrastructure: Acc	1,500,000						
	Equipment: vehicle	2,000,000						
	Site preparation: gr	1,500,000						
	Construction: civil,	1,000,000						
	Supplies, personnel	1,000,000						
	Total	7,800,000						
	The coarse budget does not provide for site acquisition, re-housing or other costs							
	associated with illegal squatters or land-users, which are considered a government							
10 C	issue.							
12. Source of		nent (budget, participation)	IA7D TIT D:1-11					
funding:	="	ners (Technical Assistance budget). AfDB	, WB, EU, Bilateral					
13. Responsible for	assistance program	infrastructure development stakeholder o	canable of offectively					
the action:			capable of effectively					
the action.	coordinating efforts: • Contractors							
	• etc							
14. Beneficiary from	·	eral tens of thousands) in terms of health	and safety from					
the action:	-	spects of the surrounding areas; mangro						
the action.		irces users (including fishers) from reduc						
		inces users (including fishers) from reduc- tie inshore coastal waters.	ca bona wasie					
			one at large that					
		beneficiaries will be the coastal populati						
		oastal water quality will have bettered thelopment without compromising sustaina	The state of the s					
	and environmental n		iore natural resources					
	and environmental h	nanagement.						

15. Schedule:		П	Yea	ar 1			Yea	ar 2			Yea	ar 3		Year 4					r 5		
	Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3 Q	ι4
	Solid waste collection/processing Ilala	İ								İ											ヿ゙
	Municipality																				- 1
	Project preparation and mobilisation																				T
	Mobilisation/review of solid waste																				
	generation and design of specific needs																				╝
	Project management	l																			
	Waste processing site acquisition:																				٦
	Infrastructure	l																			Ī
	Equipment	İ																			T
	Site preparation: ground work, roads	l																			1
	Construction: civil, mechanical,			1																	
	contingency.																				╛
	Supplies, personnel (hiring and	1																			
	training/capacity building)																				
16. Links to other actions:	 Links to following systemic Tan-S01: Integrated Coas Tan-S02: Spatial Planning Tan-S04: Information Ma Tan-S06: Awareness Rais Tan-S07: Integrated Legal Of particular relevance and 	stal g ina sing il R	gen g Revi	one me: iew	M nt	an e v	age voi	em	en be	t e lir	nks	s to									
	 Tan-L05: Rehabilitation a 	and	l cl	ear	ı-u	рс	of R	Ruv	u i	Riv	er	Ва	gai	mo	yo	Di	str	ict			
	Tan-L15: Sewage treatments	ent	fac	cilit	v I	Kir	on	ido	ni	Dis	stri	ict									
	Tan-L16: Sewage treatments																				
													r:		J						
	• Tan-L28: Urban solid wa				ш)11 (anc	л р	roc	ces	SIII	gr	Ш	OH	uoi	Ш					
17. Performance	 Water quality (solid was 			,																	
indicators:	 Volumes and types of so 	lid	wa	aste	es c	n	ass	oci	iate	ed 1	bea	ach	es								
	•																				
18. Comments:																					

Tan-L30: Urban Solid Waste Collection and Processing facility for Temeke Municipality

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	The Dar es Salaam Harbour is the seaward portion of Mzinga Creek, fed by two main tributaries, the Kizinga and Mzinga rivers that drain southern Dar es Salaam. Pollution is well documented, including nutrients, chemicals, oils, faecal and solid waste pollution, that are carried into coastal environment as these waters discharge through Mzinga Creek and pass the Dar es Salaam Port.
	Low level but constant waste enters the marine environment. The projected increase in population is likely to be accompanied by more seepage of sewage into small rivers and streams, directly into the coastal environment, the western shores of the Zanzibar Channel and drifting into the Dar es Salaam Marine Reserve.
2. Title:	Urban solid waste collection and processing facility for Temeke Municipality
3. Action Reference:	Tan-L29
4. Justification:	Pollution of the beach and nearshore, industrial, sewage and heavy metal were all forms of pollution ranked as level 3 threats in Ilala District. Beach and marine pollution from heavy metals, industrial and oil pollution were all identified as severity level 3, for Temeke District, with sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems, industry and garages dumping into the Kizinga and Mzinga rivers.
	Decline in fisheries yields, regarded as a threat of level 4 in both Ilala and Temeke districts, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats. Disease outbreaks was ranked at severity level 4 for Ilala, with causes linked to flooding and sewage. Installing a complete waste system for Temeke is a high priority.
5. Objective:	By 2025 at least 80% of the households in Temeke Municipality linked to a solid waste collection and processing facility.
6. Expected outputs:	The outputs of the action to install a solid waste collection and processing facility
	serving Temeke Municipality area are:
	• Fully operational solid waste collection and processing plant.
	 Effective and sustainable solid collection systems in place. Reduced solid wastes discharged to sea and washed up along the coast.
	Local LGA capable of managing solid waste system.
7. Activities:	a) Project design and appraisal.
	b) Project tendering
	1) Initial studies, design and engineering associated with processing facility:
	review and develop existing solid waste system infrastructure (and relevant legislative/regulatory instruments) and develop, and implement a solid waste
	master plan for Temeke Municipality area, especially the port.
	2) Project management (includes construction management)
	3) Waste processing site acquisition: acquisition of building plot, brokers,
	notaries, taxes.

8. Assumptions: 9. Risks: 10. Means of implementation:	 5) Equipment: vehi 6) Site preparation: 7) Construction: civ 8) Supplies, person handling, sorting The Tanzania Gover and natural environinitiatives to clean-u 	Access roads, power supply cles, compactors, incinerators, re-cycling. ground work, cables, roads vil, mechanical, contingency. nel (hiring and training/capacity building and treatment) ment is committed to supporting the clement. Local residents and businesses are p their urban environment. businesses may object and manage to blo • Budgets for meetings • Budgets for technical assistance • Access to information Green-green ir • • Project managers	g in solid waste ean-up of the urban supportive of ck the project.				
		Civil and water engineersSocio-economists, re-settlement speci	alists				
11. Budget estimate:	Item		Estimate in USD				
0	Project preparation	and mobilisation	100,000				
	Initial studies, desi	200,000					
	Project managemen	500,000					
	1 Toject managemen	300,000					
	Waste processing s plot, brokers, notar	-					
	Infrastructure: Acc	1,500,000					
	Equipment: vehicle	2,000,000					
	Site preparation: gr	1,500,000					
	Construction: civil,	1,000,000					
	Supplies, personne	1	1,000,000				
	Total		7,800,000				
	The coarse budget does not provide for site acquisition, re-housing or other costs associated with illegal squatters or land-users, which are considered a government issue.						
12. Source of funding:		nent (budget, participation) ners (Technical Assistance budget). AfDB nmes	, WB, EU, Bilateral				
13. Responsible for the action:		infrastructure development stakeholder	capable of effectively				
14. Beneficiary from the action:	Local residents (several hundreds of thousands) in terms of health and safety, from enhanced aesthetic aspects of the surrounding areas; mangrove forest, intertidal and coral reefs resources users (including fishers) from reduced solid waste pollution entering the inshore coastal waters.						
	Indirect or long term beneficiaries will be the coastal populations at large that through improved coastal water quality will have bettered their opportunities for socio-economic development without compromising sustainable natural resources and environmental management.						

15. Schedule:		Year 1 Year 2					ar 2			Yea	ar 3			Yea	ır 4		Year 5				
	Actions and Activities	Q1 Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
	Solid waste collection/processing																				
	Temeke Municipality										ļ						ļ				
	Project preparation and mobilisation		_			ļ						ļ									
	Mobilisation/review of solid waste																				
	generation and design of specific needs						<u> </u>				<u> </u>						乚		<u> </u>		
	Project management																				
	Waste processing site acquisition:																<u> </u>				
	Infrastructure										<u> </u>						<u> </u>				
	Equipment																<u> </u>				
	Site preparation: ground work, roads																<u> </u>				
	Construction: civil, mechanical, contingency.																				
	Supplies, personnel (hiring and		·																		
	training/capacity building)																				
		•																			
	 Tan-S01: Integrated Coastal Zone Management Tan-S02: Spatial Planning Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to: Tan-L08: Rehabilitation and clean-up of Msimbazi River Basin Tan-L10: Safeguarding Nguva River and other rivers in Temeke District Tan-L16: Sewage treatment facility Ilala District Tan-L17: Sewage treatment facility Temeke District 																				
17. Performance	• Tan-L29: Urban solid w				101	ı aı	iiu	рг	JCC	ری د.	uig	, 110	ш	וטו	311.	ıιι					
	Water quality (solid was			•								1									
indicators:	 Volumes and types of solid wastes on associated beaches 																				
	•																				
18. Comments:																					

Tan-L31: Urban Solid Waste Collection and Processing facility for Kilindoni, Mafia District

1. Background:

The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.

The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.

Mafia District's economy relies on agricultural cultivation and fisheries, with a substantial amount of revenue also contributed by trade and, increasingly by tourism. Although Mafia ecology offers one of the best diving and snorkelling center in East Africa the number of tourists is still low. This is expected to change dramatically once the 1.4 km Kilindoni jetty is inaugurated, allowing ferries, transporters and tourist vessels to dock with safety.

The settlement and built-up portion of Mafia is very small, concentrated in the western district headquarters town of Kilindoni, where the airport and docks are situated. Most of the remaining villages are within the Mafia Island Marine Park (MIMP).

Responding to the recognised need to address waste development and the MIMP General Management Plan (2001) includes recommendations to develop solid waste (and sewage) disposal. With local town inhabitants reliant on informal and inadequate solid waste collection and processing services, large amounts of waste directly enter the natural environment including coastal waters. This affects productivity and tourism potential.

2. Title:

Urban solid waste collection and processing facility for Kilindoni, Mafia District

3. Action Reference:

Tan-L31

4. Justification:

Beach pollution was identified as severity level 3 for Mafia Island, with sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Marine pollution was ranked as severity level 2.

Uncontrolled solid and liquid waste disposal, lack of toilets for public as well as residential houses. Disease outbreaks in Kilondoni was also ranked at severity level 3. Based on 2002 census data, the under five years of age mortality was 176 per 1,000 live births.

The projected increase in population accompanied by development tourism, is certain to aggravate the problem of solid waste collection and treatment. The local NGO Seasense, reports that Mafia Island is Tanzania's most important sea turtle nesting site, with over 250 green turtle nests laid each year, and the critically endangered hawksbill turtle is also known to nest on the tiny islands around Mafia. A small but developing sea turtle ecotourism initiative is generating much needed income for communities near to the nesting beaches and is helping to raise awareness of the importance of sea 2 of 3 turtle conservation. However, nesting beaches are on the east coast of the island and are continually covered in large amounts of plastic waste that washes in on the east African current from as far away as Indonesia and the Philippines. The amount of plastic debris on the nesting beaches poses a significant threat to sea turtles in Mafia and also threatens

		nability of the ecotourism project. Compl	laints from visitors						
		singly common. of the Mafia-Rufiji-Kilwa Ramsar Site, wander the Ramsar Convention as an 'Area							
	Global Importance', The island, together Archipelago (Kilwa having globally imp Ecoregion, and was Programme (or RUN importance in terms	and referred to as the Rufiji-Mafia-Kilwa with the Rufiji Delta and neighbouring S District) was identified during a WWF prortant biodiversity richness within the Eathe focus of the WWF Rufiji-Mafia-Kilwa MAKI), that ended in 2010. The internation of marine and coastal biodiversity gives addressing the issue of solid (and other)	Marine Ramsar Site. ongo Songo rocess (2004) as estern African Marine Seascape nally recognises added justification						
5. Objective:	By 2025 at least 80% processing facility.	of the households linked to a solid waste	collection and						
6. Expected outputs:		ction to install a solid waste collection an	d processing facility						
•	serving Kilindoni to	wn area are:							
		solid waste collection and processing pla	nt.						
		ainable solid collection systems in place.	(1						
		stes discharged to sea and washed up ald e of managing solid waste system.	ong the coast.						
7. Activities:	a) Project design and		_						
	b) Project tendering	т ир р 1 и 1 и 1 и 1 и 1 и 1 и 1 и 1 и 1							
	Initial studies, design and engineering associated with processing facility:								
	review and develop existing solid waste system infrastructure (and relevant								
	legislative/regulatory instruments) and develop, and implement a solid waste								
	master plan for Kilindoni town area								
	2) Project management (includes construction management)3) Waste processing site acquisition: acquisition of building plot, brokers,								
		g site acquisition: acquisition of building	plot, brokers,						
	notaries, taxes. 4) Infrastructure: <i>A</i>	Access roads, power supply							
		cles, compactors, incinerators, re-cycling.							
	,	ground work, cables, roads	•						
		vil, mechanical, contingency.							
		nel (hiring and training/capacity buildin	g in solid waste						
	handling, sorting	g and treatment)							
8. Assumptions:		nment is committed to supporting the cle							
		ment. Local residents and businesses are	supportive of						
9. Risks:		p their urban environment.	al. the musicat						
	Local residents and	businesses may object and manage to blo	ck the project.						
10. Means of	Logistics,	Budgets for meetings							
implementation:	technical, scientific	Budgets for technical assistance							
		Access to information Green-green in	irrastructure						
	Human Resources	Project managers							
	Traman Resources	Civil and water engineers							
		Socio-economists, re-settlement speci	ialists						
		•							
11. Budget estimate:	Item		Estimate in USD						
	Project preparation		100,000						
		gn and engineering,	200,000						
		nt (includes construction management)	500,000						
		site acquisition: acquisition of building	-						
	plot, brokers, notar	ries, taxes. cess roads, power supply.	1,000,000						
		es, compactors, incinerators, re-cycling.	3,000,000						
	I Lquipinent, venicle	o, compactors, memerators, re-cycling.	3,000,000						

			1 000 000								
	Site preparation: ground		1,000,000								
	Construction: civil, mech	anical, contingency.	1,000,000								
	Supplies, personnel		1,000,000								
	Total		7,800,000								
	. ,	ot provide for site acquisition, re-hous	. ,								
		atters or land-users, which are consid	ered a								
	government issue.										
12. Source of	• Tanzania Government (l	• • •									
funding:	• Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilateral										
	assistance programmes										
13. Responsible for	Strong Government infrastructure development stakeholder capable of effe										
the action:	coordinating efforts:										
	 Contractors 										
	• etc										
14. Beneficiary from	Local residents (several te	ns of thousands) in terms of health and	d safety, from								
the action:	enhanced aesthetic aspects	s of the surrounding areas; mangrove	forest, intertidal								
	and coral reefs resources u	users (including fishers) from reduced	solid waste								
	pollution entering the insl										
	-										
	Indirect or long term beneficiaries will be the coastal populations at large that										
	through improved coastal water quality will have bettered their opportunities for										
	socio-economic development without compromising sustainable natural resources										
15. Schedule:	and environmental management. Year 1										
15. Schedule:	Actions and Activities	Year 1 Year 2 Year 3 Year 1 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2									
	Solid waste collection/processing										
	Kilindoni Town										
	Project preparation and mobilisation										
	Mobilisation/review of solid waste generation and design of specific needs										
	Project management										
	Waste processing site acquisition:										
	Infrastructure										
	Equipment										
	Site preparation: ground work, roads Construction: civil, mechanical,										
	contingency.										
	Supplies, personnel (hiring and										
	training/capacity building)										
16. Links to other	Links to following system	ic actions would be desirable:									
actions:	Tan-S01: Integrated Coastal Zone Management										
	• Tan-S01: Integrated Coastal Zone Management										
	• Tan-S02: Spatial Planning • Tan-S04: Information Management										
	• Tan-S04: Information Management										
	• Tan-S06: Awareness Raising										
	Tan-S07: Integrated Legal Review										
	Of particular relevance and importance would be links to:										
	Tan-L28: Sewage collect	tion and treatment facility for Kilindor	ni, Mafia Island								
17. Performance	Water quality (solid wa										
indicators:	Volumes and types of sets	olid wastes on associated beaches									
	•										
18. Comments:											

Tan-L32: Urban Solid Waste Collection and Processing facility for Kilwa Kivinje, Kilwa District

1. Background: The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers. The Government of Tanzania with World Bank assistance has through the project

The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.

Kilwa District's economy relies on agricultural cultivation and fisheries, with a substantial amount of revenue also contributed by trade. Kilwa is described as the district with the best fishing grounds in the country and the population is highly dependent on fisheries as a main source of protein and income, mainly from marine sources. The inshore waters off Kilwa District, especially northwards into the Songo Songo Archipelago are relatively shallow and calm, protected by a line of islands and reefs to the east that create ideal conditions for the fishery for small pelagic fish species (sardines and anchovies). Kilwa Kivinje is the most important landing site in the district, with seasonal visiting fishers boosting the number of inhabitants.

Tourism is not a major contributor to the economy of Kilwa at present, partly due to difficult and expensive access. When the Kilwa Road construction is finally completed tourism is likely to increase, as the potential is high.

The settlement and built-up portion of Kilwa is very small and concentrated in Kilwa Masoko town and Kilwa Kivinje. The districts's population is some 200,000, thought the two later towns accommodate the greatest proportion, with Kilwa Kivinje housing an estimated 10,000, though figures are not readily available. With local town inhabitants reliant on informal and inadequate solid waste collection and processing services, large amounts of waste directly enter the natural environment including coastal waters. This affects productivity and tourism potential.

2. Title:

Urban solid waste collection and processing facility for Kilwa Kivinje, Kilwa District

3. Action Reference:

Tan-L32

4. Justification:

Beach pollution and marine pollution were identified as severity level 2 for Kilwa District, notably at Kilwa Kivinje and to a lesser extent at Kilwa Masoko, with sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems.

Based on 2002 census data, the percentage of the population living below the poverty line in Kilwa was 35 %, the over 15 years of age literacy coverage was only 52 % and under five years of age mortality was 217 per 1,000 live births.

There was until recently, very limited industrial activities, but the installation of electricity powered by Songo Songo gas reserves, is expected to boost development. In addition, the projected increase in population, accompanied by the development tourism, is certain to aggravate the problem of solid waste collection and treatment.

5. Objective: 6. Expected outputs:	gazetted under the F Importance', and ref island, together with (Kilwa District) was important biodivers was the focus of the that ended in 2010. I and coastal biodiver the issue of solid (an By 2025 at least 80% processing facility. The outputs of the ac serving Kilwa Kiving • Fully operational serving and sustant • Reduced solid was	of the households linked to a solid waste ction to install a solid waste collection and town area are: solid waste collection and processing planainable solid collection systems in place. stes discharged to sea and washed up alo	ds of Global e Ramsar Site. The o Songo Archipelago as having globally arine Ecoregion, and amme (or RUMAKI), e in terms of marine hensively addressing collection and d processing facility nt.					
7. Activities:		e of managing solid waste system.						
	 a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering associated with processing facility: review and develop existing solid waste system infrastructure (and relevant legislative/regulatory instruments) and develop, and implement a solid waste master plan for Kilwa Kivinje town area, especially the port. 2) Project management (includes construction management) 3) Waste processing site acquisition: acquisition of building plot, brokers, notaries, taxes. 4) Infrastructure: Access roads, power supply 5) Equipment: vehicles, compactors, incinerators, re-cycling 6) Site preparation: ground work, cables, roads 7) Construction: civil, mechanical, contingency. 8) Supplies, personnel (hiring and training/capacity building in solid waste handling, sorting and treatment) 							
8. Assumptions:	and natural environ	nment is committed to supporting the cle ment. Local residents and businesses are p their urban environment.						
9. Risks:		businesses may object and manage to blo	ck the project.					
10. Means of	Logistics,	Budgets for meetings						
implementation:	technical, scientific	 Budgets for technical assistance Access to information Green-green ir 	nfrastructure					
	Human Resources	 Project managers Civil and water engineers Socio-economists, re-settlement specialists. 						
11. Budget estimate:	Item Estimate in USD							
	Project preparation and mobilisation 100,000							
	Initial studies, design and engineering, 200,000							
	Project management (includes construction management) 500,000							
		site acquisition: acquisition of building	-					
	plot, brokers, notaries, taxes.							
	Infrastructure: Access roads, power supply. 1,000,000 Equipment: vehicles, compactors, incinerators, re-cycling. 2,000,000							
	Site preparation: gr		2,000,000 1,000,000					
		mechanical, contingency.	1,000,000					
	Supplies, personne	** *	1,000,000					
-	Jupplies, personner 1,000,000							

	Total								6,8	300,0	00			
	The coarse budget does no associated with illegal squa						using or other costs							
	government issue.													
12. Source of	Tanzania Government (b	udget, pai	ticipation	າ)										
funding:	• Development Partners (T				AfI	ΟB,	WB	, EU	J, B	ilate	ral			
0	assistance programmes			() /		,		,	,					
13. Responsible for	Strong Government infrast	ructure de	evelopme	nt stakeh	olde	er ca	anal	ole o	of e	ffect	ivelv			
the action:	coordinating efforts:										,			
	Contractors	• •												
	• etc													
14. Beneficiary from	Local residents (several ter	ns of thous	ands) in	terms of h	ealt	th a	nd s	afe	tv.	from				
the action:	enhanced aesthetic aspects													
inc action.	and coral reefs resources u										aaı			
				ers) mom	reu	uce	u so	IIU	wa	sie				
	pollution entering the insh	ore coasta	i waters.											
	Indirect or long term benef	ficiaries w	ill be the	coastal po	pul	atic	ns a	ıt la	rge	that	:			
	through improved coastal	water qua	lity will h	ave bette	red	the	ir op	opo	rtu	nitie	s for			
	socio-economic developme	ent withou	it compre	mising su	ıstai	inal	ole n	atu	ıral	reso	urce			
	and environmental manage		•	.,										
15. Schedule:		Year 1	Year 2	Year 3	3		Year 4	ļ		Year 5	Ţ			
	Actions and Activities	Q1 Q2 Q3 Q	4 Q1 Q2 Q3	Q4 Q1 Q2 Q	3 Q4	Q1	Q2 Q:	3 Q4	Q1	Q2 Q3	Q4			
	Solid waste collection/processing Kilwa Kivinje													
	Project preparation and mobilisation		-						.		-			
	Mobilisation/review of solid waste													
	generation and design of specific needs													
	Project management				<u>, </u>			Ţ	,					
	Waste processing site acquisition:													
	Infrastructure Equipment													
	Site preparation: ground work, roads				÷	l			-		-			
	Construction: civil, mechanical,							<u> </u>						
	contingency.													
	Supplies, personnel (hiring and													
	training/capacity building)													
40 T. 1	7.1.4.6.11		111	1 . 11										
16. Links to other	Links to following systemi	c actions v	vould be	desirable:										
actions:	• Tan-S01: Integrated Coa	stal Zone l	Managen	ent										
	• Tan-S02: Spatial Plannin													
	 Tan-S04: Information Management Tan-S06: Awareness Raising Tan-S07: Integrated Legal Review 													
	Of particular relevance and	d importai	nce would	l be links	to:									
	Tan-L19: Sewage collects	ion and tre	eatmont f	acility for	Kil-	1472	Kivi	nio						
	• Tan-L20: Sewage collects													
										acol.				
17 Danfaurran	• Tan-L33: Urban solid wa		ion and J	nocessing	; 1a(.1111	y , N	пW	a IVI	asok	.U			
17. Performance	Water quality (solid was			11	1									
indicators:	Volumes and types of so	ond wastes	s on assoc	iated bead	ches	5								
	•													
18. Comments:														

Tan-L33: Urban Solid Waste Collection and Processing facility for Kilwa Masoko, Kilwa District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from
	population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Kilwa District's economy relies on agricultural cultivation and fisheries, with a substantial amount of revenue also contributed by trade. Kilwa is described as the district with the best fishing grounds in the country and the population is highly dependent on fisheries as a main source of protein and income, mainly from marine sources. The inshore waters off Kilwa District, especially northwards into the Songo Songo Archipelago are relatively shallow and calm, protected by a line of islands and reefs to the east that create ideal conditions for the fishery for small pelagic fish species (sardines and anchovies). Kilwa Masoko is the second most important landing site in the district, with seasonal visiting fishers boosting the number of inhabitants.
	Tourism is not a major contributor to the economy of Kilwa at present, partly due to difficult and expensive access. When the Kilwa Road construction is finally completed tourism is likely to increase, as the potential is high.
	The settlement and built-up portion of Kilwa is very small and concentrated in Kilwa Masoko town and Kilwa Kivinje. The districts's population is some 200,000, thought the two later towns accommodate the greatest proportion, with Kilwa Masoko housing an estimated 10,000, though figures are not readily available. With local town inhabitants reliant on informal and inadequate solid waste collection and processing services, large amounts of waste directly enter the natural environment including coastal waters. This affects productivity and tourism potential.
2. Title:	Urban solid waste collection and processing facility for Kilwa Masoko, Kilwa District
3. Action Reference:	Tan-L32
4. Justification:	Beach pollution and marine pollution were identified as severity level 2 for Kilwa District, notably at Kilwa Kivinje and to a lesser extent at Kilwa Masoko, with sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems.
	Based on 2002 census data, the percentage of the population living below the poverty line in Kilwa was 35 %, the over 15 years of age literacy coverage was only 52 % and under five years of age mortality was 217 per 1,000 live births.
	There was until recently, very limited industrial activities, but the installation of electricity powered by Songo Songo gas reserves, is expected to boost development. In addition, the projected increase in population, accompanied by the development tourism, is certain to aggravate the problem of solid waste collection and treatment.
	Kilwa is part of the Mafia-Rufiji-Kilwa Ramsar Site, was in late 2004 formally gazetted under the Ramsar Convention as an 'Area of Wetlands of Global

	1 -	erred to as the Rufiji-Mafia-Kilwa Marino								
	island, together with the Rufiji Delta and neighbouring Songo Songo Archipelago (Kilwa District) was identified during a WWF process (2004) as having globally important biodiversity richness within the Eastern African Marine Ecoregion, and									
		WWF Rufiji-Mafia-Kilwa Seascape Progr								
		The internationally recognises importance	,							
		sity gives added justification for comprel								
	the issue of solid (and	d other) wastes.								
5. Objective:	By 2025 at least 80%	of the households in Kilwa Masoko linke	ed to a solid waste							
	collection and proces									
6. Expected outputs:	-	ction to install a solid waste collection and	d processing facility							
	serving Kilwa Masok									
		solid waste collection and processing pla	nt.							
		ainable solid collection systems in place. Stes discharged to sea and washed up alo	and the coast							
		e of managing solid waste system.	ing the coast.							
7. Activities:	a) Project design and									
771202712007	b) Project tendering	approximate the second								
	1) Initial studies, de review and devel	sign and engineering associated with pro lop existing solid waste system infrastruc atory instruments) and develop, and imp	cture (and relevant							
		filwa Masoko town area, especially the p								
	-	ent (includes construction management)								
	3) Waste processing site acquisition: acquisition of building plot, brokers,									
	notaries, taxes.									
	4) Infrastructure: Access roads, power supply									
		cles, compactors, incinerators, re-cycling.								
		ground work, cables, roads								
		il, mechanical, contingency.								
	handling, sorting	nel (hiring and training/capacity buildin	g in sond waste							
8. Assumptions:		nment is committed to supporting the cle	ean-up of the urban							
o. 135amptions.		nent. Local residents and businesses are								
		p their urban environment.	F							
9. Risks:		businesses may object and manage to blo	ck the project.							
10. Means of	Logistics, technical,	Budgets for meetings								
implementation:	scientific	 Budgets for technical assistance 								
		Access to information Green-green in	nfrastructure							
		•								
	Human Resources	Project managers								
		Civil and water engineersSocio-economists, re-settlement spec	ialista							
		• Socio-economists, re-settlement spec	lansts							
11. Budget estimate:	Item	•	Estimate in USD							
221 2 1111 201 0012221111001	Project preparation and mobilisation 100,000									
	Initial studies, design and engineering, 200,000 Project management (includes construction management) 500,000									
		ite acquisition: acquisition of building	-							
	plot, brokers, notari									
	Infrastructure: Access roads, power supply. 1,000,000									
		s, compactors, incinerators, re-cycling.	2,000,000							
	Site preparation: gre	ound work, roads	1,000,000							
		mechanical, contingency.	1,000,000							
	Supplies, personnel		1,000,000							
	Total		6,800,000							

	The coarse budget does not provide for site acquisition, re-housing or other costs associated with illegal squatters or land-users, which are considered a government issue.								
12. Source of funding:	 Tanzania Government (budget, participation) Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilateral assistance programmes 								
13. Responsible for the action:	Strong Government infrastructure development stakeholder capable of effectively coordinating efforts: • Contractors • etc								
14. Beneficiary from the action:	Local residents (several tens of thousands) in terms of health and safety, from enhanced aesthetic aspects of the surrounding areas; mangrove forest, intertidal and coral reefs resources users (including fishers) from reduced solid waste pollution entering the inshore coastal waters.								
	Indirect or long term beneficiaries will be the coastal populations at large that through improved coastal water quality will have bettered their opportunities for socio-economic development without compromising sustainable natural resources and environmental management.								
15. Schedule:	Year 1 Year 2 Year 3 Year 4 Year 5								
	Actions and Activities Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q								
	Masoko								
	Project preparation and mobilisation								
	Mobilisation/review of solid waste								
	generation and design of specific needs								
	Project management Project management								
	Waste processing site acquisition:								
	Infrastructure								
	Equipment								
	Site preparation: ground work, roads								
	Construction: civil, mechanical, contingency.								
	Supplies, personnel (hiring and								
	training/capacity building)								
16. Links to other	Links to following systemic actions would be desirable:								
actions:	Emilio to following systemic detions would be desirable.								
actions.	Tan-S01: Integrated Coastal Zone Management								
	• Tan-S02: Spatial Planning								
	Tan-S04: Information Management								
	• Tan-S06: Awareness Raising								
	• Tan-S07: Integrated Legal Review								
	Of particular relevance and importance would be links to:								
	 Tan-L19: Sewage collection and treatment facility for Kilwa Kivinje Tan-L20: Sewage collection and treatment facility for Kilwa Masoko Tan-L32: Urban solid waste collection and processing facility, Kilwa Kivinje 								
17. Performance	Water quality (solid wastes, etc.)								
indicators:	 Volumes and types of solid wastes on associated beaches 								
	•								
18. Comments:									
To, Comments,									

Tan-L34: Urban Solid Waste Collection and Processing facility for Lindi Town, Lindi Urban District

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Currently there is no evidence of high solid waste levels in waters off Lindi town, despite there being no efficient solid waste collections and treatment system. Low level but constant waste entry to the marine environment is likely taking place though not documented. The projected increase in population in this important coastal town is likely to be accompanied by greater generation of solid waste with disposal into small rivers and streams, or directly into the coastal environment.
2. Title:	Urban solid waste collection and processing facility for Lindi Town, Lindi Urban District
3. Action Reference:	Tan-L34
4. Justification:	Beach pollution was identified as severity level 2 for Lindi Urban District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Decline in fisheries yields, regarded as a threat of level 4, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats.
	Solid waste from over ten thousand inhabitants in Lindi Urban town causes beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. fish and habitats), extending many kilometres coastal waters, likely affecting nearby small islands and coral reefs, and resulting in negative publicity to the city. Sewage and water are also responsible for water-borne disease. The absence of a suitable solid waste collection and treatment facility will over time lead to greater pollution and health issues if not addressed.
5. Objective:	By 2025 at least 80% of the households in Lindi Town linked to a solid waste collection and processing facility.
6. Expected outputs:	The outputs of the action to install a solid waste collection and processing facility
	 serving Lindi Town area are: Fully operational solid waste collection and processing plant. Effective and sustainable solid collection systems in place. Reduced solid wastes discharged to sea and washed up along the coast. Local LGA capable of managing solid waste system.
7. Activities:	a) Project design and appraisal.b) Project tendering1) Initial studies, design and engineering associated with processing facility:
	review and develop existing solid waste system infrastructure (and relevant legislative/regulatory instruments) and develop, and implement a solid waste master plan for Lindi Town area, especially the port. 2) Project management (includes construction management) 3) Waste processing site acquisition: acquisition of building plot, brokers, notaries, taxes.
	4) Infrastructure: Access roads, power supply5) Equipment: vehicles, compactors, incinerators, re-cycling

8. Assumptions:	 6) Site preparation: ground work, cables, roads 7) Construction: civil, mechanical, contingency. 8) Supplies, personnel (hiring and training/capacity building in solid waste handling, sorting and treatment) The Tanzania Government is committed to supporting the clean-up of the urban 									
•	and natural environment. Local residents and businesses are supportive of initiatives to clean-up their urban environment.									
9. Risks:	Local residents and businesses may object and manage to block the project.									
10. Means of implementation:	Logistics, technical, scientific Budgets for meetings Budgets for technical assistance Access to information Green-green infrastructure									
	Human Resources	 Project managers Civil and water engineers Socio-economists, re-settlement speci 	alists							
11. Budget estimate:	Item		Estimate in USD							
	Project preparation		100,000							
	Initial studies, desig		200,000							
	Project managemen	500,000								
		ite acquisition: acquisition of building	-							
	plot, brokers, notari									
		ess roads, power supply.	1,000,000							
		s, compactors, incinerators, re-cycling.	2,000,000							
	Site preparation: gr		1,000,000							
		mechanical, contingency.	1,000,000							
	Supplies, personnel		1,000,000							
	Total		6,800,000							
10.6	associated with illegatissue.	not provide for site acquisition, re-housing all squatters or land-users, which are cons								
12. Source of funding:		ent (budget, participation) ers (Technical Assistance budget). AfDB, mes	WB, EU, Bilateral							
13. Responsible for the action:	coordinating efforts:	infrastructure development stakeholder c								
14. Beneficiary from the action:	enhanced aesthetic a and coral reefs resou pollution entering th Indirect or long term through improved co	ral tens of thousands) in terms of health a spects of the surrounding areas; mangrow rces users (including fishers) from reduce e inshore coastal waters. beneficiaries will be the coastal population pastal water quality will have bettered the lopment without compromising sustainal	re forest, intertidal ed solid waste ons at large that eir opportunities for							

15. Schedule:			Yea	ar 1			Yea	ar 2			Yea	ar 3		Year 4					Year 5		
	Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3 Q	4
	Solid waste collection/processing Lindi																				1
	Town																				
	Project preparation and mobilisation																				
	Mobilisation/review of solid waste generation and design of specific needs																				
	Project management																				
	Waste processing site acquisition:																				
	Infrastructure																				
	Equipment																				
	Site preparation: ground work, roads																				
	Construction: civil, mechanical, contingency.																				
	Supplies, personnel (hiring and			ļ		ļ					-		=	-				-		_	
	training/capacity building)																				
	tramme, superity summer	!	-	<u>: </u>			:														_
16. Links to other	Links to following systemic	act	ior	ıs v	voi	uld	be	e de	esiı	rab	le:										
actions:	Tan-S01: Integrated CoastTan-S02: Spatial Planning					ına	geı	me	nt												
	 Tan-S04: Information Mar 	nag	gen	nen	t																
	• Tan-S06: Awareness Raisi	ng																			
	• Tan-S07: Integrated Legal	Rε	evie	ew																	
	Of particular relevance and importance would be links to:																				
	• Tan-L21: Sewage collection	n a	and	l tro	eat	me	nt	fac	ilit	y f	or	Lin	di	Тс	wn	ì					
17. Performance	• Water quality (solid waste	es,	etc	.)																	
indicators:	 Volumes and types of soli 			•	5 01	n a	sso	cia	ited	d b	eac	hes	S								
	•																				
18. Comments:																					

Tan-L35: Urban Solid Waste Collection and Processing facility for Mikindani-Mtwara towns, Mtwara Urban District

1 Rackground	The coastal zone of mainland Tanzania is under development processes from
1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Currently there are no reports of high nutrient and faecal coliform bacteria levels in waters off Mikindani or Mtwara coastal waters, despite there being no efficient solid waste collection and treatment facility. Low level but constant solid waste entry to the marine environment is likely taking place though not documented. The projected increase in population in this important coastal town is likely to be accompanied by more waste dumped into small rivers and streams, directly into the coastal environment, potentially affecting the Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP).
2. Title:	Urban solid waste collection and processing facility for Mikindani-Mtwara towns, Mtwara Urban District
3. Action Reference:	Tan-L34
4. Justification:	Beach pollution was both identified as severity level 4 for Mtwara Urban District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems. Decline in fisheries yields, regarded as a threat of level 4, is also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the catchments that drain into these coastal habitats. Solid waste from Mtwara Urban (tens of thousands) enters the marine environment continuously, at low levels, causing beach and sea pollution which affects health (e.g. of fishermen, bathers, tourists) and marine life (e.g. fish and habitats), extending many kilometres and resulting in negative publicity to the city. Sewage and water are also responsible for water-borne disease, ranked at severity level 2. The absence of a suitable solid waste collection and treatment facility will over time lead to greater pollution and health issues if not addressed.
5. Objective:	By 2025 at least 80% of the households in Mikindani-Mtwara towns linked to a solid waste collection and processing facility.
6. Expected outputs:	The outputs of the action to install a solid waste collection and processing facility serving Mikindani-Mtwara towns area are: • Fully operational solid waste collection and processing plant. • Effective and sustainable solid collection systems in place. • Reduced solid wastes discharged to sea and washed up along the coast. • Local LGA capable of managing solid waste system.
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering associated with processing facility: review and develop existing solid waste system infrastructure (and relevant legislative/regulatory instruments) and develop, and implement a solid waste master plan for Mikindani-Mtwara towns area, especially the port. 2) Project management (includes construction management)

	T .									
		site acquisition: acquisition of building	plot, brokers, notaries,							
	taxes.	1 1								
		ccess roads, power supply								
		les, compactors, incinerators, re-cycling.	•							
	1 '	ground work, cables, roads								
		il, mechanical, contingency.	a in colid tyrocto							
	handling, sorting	nel (hiring and training/capacity buildin and treatment)	g iii sonu wasie							
8. Assumptions:			ean-up of the urban							
of Hooding trons.	The Tanzania Government is committed to supporting the clean-up of the urban and natural environment. Local residents and businesses are supportive of									
		their urban environment.								
9. Risks:	Local residents and businesses may object and manage to block the project.									
10. Means of	Logistics, technical,	Budgets for meetings								
implementation:	scientific	Budgets for technical assistance								
_		Access to information Green-green i	nfrastructure							
		•								
		•								
	Human Resources	Project managers								
		Civil and water engineers								
		Socio-economists, re-settlement spec	cialists							
,		•								
11. Budget	Item		Estimate in USD							
estimate:	Project preparation		100,000							
	Initial studies, desig		200,000							
		t (includes construction management)	500,000							
		te acquisition: acquisition of building	-							
	plot, brokers, notari									
		ess roads, power supply.	1,000,000							
		s, compactors, incinerators, re-cycling.	2,000,000							
	Site preparation: gro		1,000,000							
		mechanical, contingency.	1,000,000							
	Supplies, personnel		1,000,000							
	Total		6,800,000							
		es not provide for site acquisition, re-ho								
	associated with illega	al squatters or land-users, which are cons	sidered a government							
10.0	issue.									
12. Source of		ent (budget, participation)	TATE TIL D'I (1							
funding:	•	ers (Technical Assistance budget). AfDB	, WB, EU, Bilateral							
12 Desmansible	assistance program		aspable of offestively							
13. Responsible for the action:	coordinating efforts:	nfrastructure development stakeholder	capable of effectively							
TOT THE aCTION.	Contractors									
	• etc									
14. Beneficiary		ral tens of thousands) in terms of health	and safety, from							
from the action:	-	spects of the surrounding areas; mangro								
		users (including fishers) from reduced so								
	entering the inshore									
		beneficiaries will be the coastal populati	= = =							
		pastal water quality will have bettered th								
		lopment without compromising sustaina	idie natural resources							
	and environmental m	ianagement.								

15. Schedule:		Г	Yea	r 1	T		Yea	ar 2			Year 3				Yea	r 4		Year			\neg
	Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Solid waste collection/processing	İ			T					Г											
	Mikindani-Mtwara towns																				
	Project preparation and mobilisation								•	İ	1										
	Mobilisation/review of solid waste																				
	generation and design of specific needs																				
	Project management																				
	Waste processing site acquisition:																				
	Infrastructure	Ш.																			
	Equipment																				
	Site preparation: ground work, roads	l																			
	Construction: civil, mechanical,	Ī																			
	contingency.																				
	Supplies, personnel (hiring and																				
	training/capacity building)																				
16. Links to other	Links to following systemic a	ctio	ons	w	oul	d l	oe o	des	ira	ble	2:										
actions:																					
uctions.	 Tan-S01: Integrated Coasta 	1Z	one	M e	lan	age	em	ent	t												
	Tan-S02: Spatial Planning																				
	• Tan-S04: Information Mana	age.	me	nt																	
	Tan-S06: Awareness Raisin	.,																			
		.,		_																	
	• Tan-S07: Integrated Legal F	xev	iev	V																	
	Of particular relevance and ir	npo	orta	anc	e v	voi	uld	be	e li	nks	s to	:									
	• Tan-L22: Seawage waste tr	reat	tme	nt	fac	ilit	ty l	Mil	kin	da	ni ˈ	Гоъ	νn								
	• Tan-L22: Seawage waste tr	reat	tme	nt	fac	ilit	ty l	Mtv	wa	ra	To	wn									
	• Tan-L35: Urban solid waste collection and processing facility for Mikindani and										nd										
	Mtwara towns						г				-0			,							
17. Performance			۱۵۱																		
	Water quality (solid wastes, etc.)																				
indicators:	Volumes and types of solid wastes on associated beaches																				
	•																				

Tan-L36: Study, review and design of freshwater supply options for Tanga Town, Tanga Urban District

population growth and economic activities. The population of the coast has reached its highest and the pollution of beaches and the marine environment have reached unprecedented levels. Sources include the drains, sewers, illegal dumping and rivers. The average rainfall for Tanga is 1,212 mm (ranging from 644 mm to 1,963 mm). The population stands at 270,000 and increases at about 1.3 % annually. Freshwater is supplied by the Sigi River which is experiencing decreasing flows due to many factors include abstraction for Muheza and agriculture. The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats. A comprehensive study is needed to ascertain the freshwater supply options for Tanga Town before the shortages become acute. Private: Review and update of freshwater supply options for Tanga Town, Tanga Urban District Action Reference: Justification: For Tanga District, water shortages were ranked as a threat of severity level 2, a situation made more pertinent by the uncertainties of climate change impacts. Reasons given include forest clearing for agricultural purposes, burning charcoal and shifting cultivation. Rainfall, with its current supply and usage, cannot meet local demands. Demand from population and economic growth is expected to increase significantly in the coming years. Impacts on climate change have as yet uncertain effects on the groundwater supplies and rainfall. By 2025 at least 80% of the households in Tanga Urban with secure freshwater supply. Expected outputs: The outputs of the action to study, review and design of supply options for on Tanga Townare: Updated understanding of the freshwater supply options and conditions of these sources (aquifers, rivers, rainfall) I dentification and understanding of areas where seawater i		
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2) Develop capacity in freshwater supply including from a range of sources3) Review and develop existing freshwater supply infrastructure and rehabilitate where appropriate		
 Review and develop existing freshwater supply infrastructure and re- habilitate where appropriate 		
habilitate where appropriate		
4) Develop, review and implement a freshwater master plan for Tanga Town.		
		14) Develop, review and implement a freshwater master plan for Tanga Town.

	instruments add 6) Trial a number o	, implement and enforce relevant legislat ressing freshwater usage in Tanga Town of alternative supply systems (rain harves s) where appropriate								
8. Assumptions:	The Tanzania Gover reliable drinking wa businesses are supported freshwater.	rnment is committed to supporting the patter to the population of Tanga Town. Locortive of initiatives to improve their envi	cal residents and ronment and supply							
9. Risks:	Local residents and	businesses may object and manage to blo	ock the project.							
10. Means of implementation:	Logistics, technical, scientific	 Green-green infrastructure, IWRM planning Drilling and borehole/well sampling 	g equipment							
	Human Resources	 Civil and water engineers Pollution chemists Socio-economists Alternative energy specialists Rain harvesting experts 								
11. Budget estimate:	Item	8 1	Estimate in USD							
· ·	Project preparation	and mobilisation	100,000							
	Mobilisation / revie	ew of freshwater options	200,000							
	Project management	•	200,000							
		harvesting and storage and supply	1,000,000							
	systems									
		ng water infrastructure	2,000,000							
		r master plan for Mafia	1,000,000							
	Supplies, personne building)	el (hiring and training/capacity	1,000,000							
	associated with illeg freshwater, which as fixed amount for reb	5,500,000 oes not provide for site acquisition, re-housing or other costs al squatters or land-users, or handling illegal extractors of the considered a government issue. The budget considers a habilitation of existing water supply infrastructure, based on beyond that the government would cover cost.								
12. Source of	Tanzania Governn	nent (budget, participation)								
funding:	-	ners (Technical Assistance budget). AfDI	B, WB, EU, Bilateral							
	assistance progran									
13. Responsible for		water development stakeholder capable	of effectively							
the action:	coordinating efforts:									
	_	er Supply and Sewerage Authority								
	• Contractors									
14. Beneficiary from	• etc	r 40,000), plus thousands of annual touris	et vicitors) in terms of							
the action:	health and safety, fro	om enhanced and reliable freshwater sur l environment (especially mangrove fore	pply; agriculture							
Indirect or long term beneficiaries will be the coastal populations at large that through improved freshwater quality will have bettered their opportunities for socio-economic development without compromising sustainable natural resonand environmental management.										

15. Schedule:			Year 1 Year 2				r 2			Yea	r 3			Yea	r 4		Ye	ar 5	ľ	
	Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3 Q	4 Q	1 Q	Q3	Q4
	Freshwater supply options for Tanga	Π															Т			
	City	L																		
	Project preparation and mobilisation			L														i		
	Mobilisation/review of freshwater																			
	options		ļ			L,								L			4			
	Project management	.	ļ	ļ													.			ļļ
	Trial of rain water harvesting and																			
	storage systems	ļ	ļ	ļ													4			
	Re-habilitate existing water infrastructure																			
	Develop freshwater master plan for	-	ļ	ļ													-			
	Pemba																			
	Supplies, personnel (hiring and		-	ļ													1			-
	training/capacity building)																			
16. Links to other	Links to following systemi	c a	cti	ons	w	ou	ld	be	de	sir	abl	le:								
actions:	• Tan-S01: Integrated Coa	sta	1 Z	on	e N	/Iai	าลย	gen	ner	nt										
	• Tan-S04: Information M	ana	ige	eme	ent															
	• Tan-S06: Awareness Rai	sin	g																	
	• Tan-S07: Integrated Leg	al F	Rev	<i>i</i> ev	N															
	Of particular relevance and					ce	wo	ul	d b	e 1	ink	s t	to 1	fol	lov	ving	sv	ste	mi	c ar
	local actions:		1													C	,			
	Tan-S02: Spatial Plannin	$\overline{}$																		
17. Performance	Freshwater quality (chemis	stry	y, F	3O1	D,	etc	:.),	vo]	lun	nes	s ar	nd	su	pp	oly	rate	s.			
indicators:																				
18. Comments:																				

Tan-L37: Study, review and design of freshwater supply options for Lindi Town, Lindi Urban District

1. Background:	The population of Lindi Town has reached its highest, at over 40,000, in 2002. Lindi has very little surface water but holds major aquifers that have been the main source of freshwater for town. Lindi receives a relatively low annual rainwater volume (ranging from 489 mm to 1,699 mm) and water supply problems are well-documented for Lindi (e.g. National Water Policy 2002) and threaten livelihoods in future if the supplies and options are not well-understood and secured.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	The population of the district is about 200,000, with a negative average annual growth rate between 2002 and 2012 of -1.01 % leading to - 8.82 % decrease of the population over the ten-year period, confirming out-migration. The population density in the district was reduced to 31 persons/km2 in 2012 from 34 persons/km2 in 2002. This situation is visibly changing since electricity and gas exploration have reached the town of Lindi. Development of the gas industry is projected to increase significantly in the coming years with the establishment of a liquefied natural gas (LNG) facility close to Lindi town.
	Based on 2002 census data, the percentage of the population living below the poverty line was 51 %, the over 15 years of age literacy coverage was 53 % and under five years of age mortality was 220 per 1,000 live births.
2. Title:	Review and update of Freshwater supply options for Lindi Town, Lindi Urban District
3. Action Reference:	Tan-L37
4. Justification:	For Lindi District, water shortages were ranked as a threat of severity level 4, a situation made more pertinent by the uncertainties of climate change impacts. Reasons given include forest clearing for agricultural purposes, burning charcoal and shifting cultivation. Rainfall, with its current supply and usage, cannot meet local demands. Demand from population and economic growth is expected to increase significantly in the coming years. Impacts on climate change have as yet uncertain effects on the groundwater supplies and rainfall.
5. Objective:	By 2025 at least 80% of the households with secure freshwater supply.
6. Expected outputs:	The outputs of the action to study, review and design of supply options for on Lindi Townare: • Updated understanding of the freshwater supply options and conditions of these sources (aquifers, rivers, rainfall) for the island
	 Identification and understanding of areas where seawater intrusion is taking place Definition of the areas where safe and reliable freshwater supplies (with combined sources) can be established with consolidation of "water committees" Trial of rain harvesting and storage systems using alternative technology Reduced contamination of rivers and aquifers Reduced loss of freshwater
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering associated with supplying freshwater to the populations in the larger villages and town of Lindi (or where water

8. Assumptions:	source options 2) Develop capacity 3) Review and develop habilitate where 4) Develop, review 5) Review, develop instruments add. Trial a number of alter where appropriate The Tanzania Gover reliable drinking was businesses are supported freshwater.	and implement a freshwater master pla, implement and enforce relevant legislaressing freshwater usage in Lindi Town native supply systems (rain harvesting, borenment is committed to supporting the pater to the population of Lindi Town. Locartive of initiatives to improve their env	range of sources acture and re- n for Lindi Town. ative/regulatory choles, wells, river dams) provision of clean and cal residents and ironment and supply							
9. Risks:	Local residents and	Local residents and businesses may object and manage to block the project.								
10. Means of implementation:	Logistics, technical, scientific Human Resources	 Drilling and borehole/well sampling equipment 								
		Rain harvesting experts								
11. Budget estimate:	Item Project preparation		Estimate in USD 100,000							
		w of freshwater options	400,000							
	Project managemen		200,000							
	systems	harvesting and storage and supply	1,000,000							
		ng water infrastructure	3,000,000							
		r master plan for Mafia	1,000,000							
		l (hiring and training/capacity	1,000,000							
	Total		6,700,000							
	The coarse budget does not provide for site acquisition, re-housing or other costs associated with illegal squatters or land-users, or handling illegal extractors of freshwater, which are considered a government issue. The budget considers a fixed amount for rehabilitation of existing water supply infrastructure, based on the assumption that beyond that the government would cover cost.									
12. Source of funding:		nent (budget, participation) ners (Technical Assistance budget). AfD nmes	B, WB, EU, Bilateral							
13. Responsible for		water development stakeholder capable	e of effectively							
the action:	coordinating efforts:Lindi Urban WateContractors		J							
14. Beneficiary from the action:	• etc Local residents (over 40,000), plus thousands of annual tourist visitors) in terms of health and safety, from enhanced and reliable freshwater supply; agriculture activities and natural environment (especially mangrove forest) from improved freshwater.									

	Indirect or long term benefic	cia	ries	w	ill ł	ре	the	e c	oas	sta	l po	opı	ıla	tio	ns	at l	arg	ge t	ha	į	
	through improved freshwat		-		_																
	socio-economic developmen			ιοι	ıt co	on	npı	roı	nis	sin	g sı	ust	ain	ab	le i	nat	ura	ıl r	eso	ur	ces
	and environmental management.																				
15. Schedule:			Yea					ar 2				ar 3				ear 4			Yea		
	Actions and Activities Freshwater supply options for Lindi	Q1	Q2	Q3	Q4	Q1	Q2	Q	Q4	I Q1	L Q2	Q3	Q4	Q1	. Q2	2 Q3	Q4	Q1	Q2	Q3	Q4
	Town	l								ı				l							
	Project preparation and mobilisation							-	- -			-	ļ	ł	ļ	-	ļ	ļ			ļ
	Mobilisation/review of freshwater	_								╅┈		·		·		-					-
	options	l												l							
	Project management	İ																l			<u> </u>
	Trial of rain water harvesting and																	l			
	storage systems	<u> </u>																<u> </u>			ļ
	Re-habilitate existing water	l																l			
	infrastructure	ļ						ļ										ļ			ļ
	Develop freshwater master plan for Lindi	ļ			-	_		_		ш								ļ			ļ
	Supplies, personnel (hiring and training/capacity building)	l																l			
16. Links to other		_	ا د نا			.1 á	1 1-		1	:	1.1.							_			
	Links to following systemic										bie	:									
actions:	• Tan-S01: Integrated Coast					na	ge	m	ent												
	Tan-S04: Information Man	าลรู	gen	ien	ıt																
	• Tan-S06: Awareness Raisi	ng	ŗ																		
	• Tan-S07: Integrated Legal	_	,	w																	
	Of particular relevance and importance would be links to following systemic and																				
	local actions:																				
	• Tan-S02: Spatial Planning																				
	Tan-L21: Sewage treatments	nt	fac	ilit	vΙ	in	di '	Τc	w1	า											
	Tan-L34: Urban solid waste collection and processing facility Lindi town																				
	• Tall-L34. Of Dail Solid Was	ie	COL	ec	uoi	ıa	Hu	ГР	IUC	esi	5111	gı	aCII	пту	L	IIIU	ııc	, VV 1	.L		
17. Performance	Freshwater quality (chemist	ry,	, BC)D	, etc	z.),	, V(olı	ım	es	anc	l sı	upı	oly	ra	tes					
indicators:		,				,,							11	. ,							
18. Comments:																					

Tan-L38: Study, review, design and trial freshwater supply options for outlying small islands in the Mafia Island Marine Park, Mafia District

1. Background: The population of Mafia Island (including smaller islands of Jibondo and Juani) has reached its highest, at over 45,000. The economy relies on agricultural cultivation and fisheries, with a substantial amount of revenue also contributed by trade and, increasingly by tourism. Although Mafia ecology offers one of the best diving and snorkeling center in East Africa the number of tourists is still low. This is expected to change dramatically once the 1.4 km Kilindoni jetty is inaugurated, allowing ferries, transporters and tourist vessels to dock with safety. Mafia receives a moderate annual rainwater volume (ranging from 1,479 mm to 2,663 mm), yet freshwater supply is an ever-present, low ranking problem for most of the district, except for a few smaller outlying islands where it is severe. Mafia has few surface water streams but does have aquifers, though these are not well charted. Responding to the recognised need to address freshwater issues the MIMP General Management Plan (2001) acknowledges that "freshwater supplies during the dry season already appears to be under pressure, though no hydrological survey has been undertaken". The GMP also recommends the development of freshwater supply regulations. With local town and village inhabitants reliant on shallow wells, some partly saline seasonally, there are The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats. Jibondo is Mafia best-known fishing village, about 30 minutes away by boat from Utende village. There is always a water shortage and many of the younger people spend a great deal of time carrying water from sources on the main island. A similar situation exists at Bewjuu Island off the west coast. Both are water-stressed Based on 2002 census data, the percentage of the population living below the poverty line was 43 %, the over 15 years of age literacy coverage was 67 % and under five years of age mortality was 176 per 1,000 live births. 2. Title: Study, review and design of freshwater supply options and trials for outlying small islands in the Mafia Island Marine Park, Mafia District 3. Action Reference: Tan-L38 4. Justification: On Mafia Island, freshwater problems were not highlighted, though disease outbreaks were ranked at severity level 3, especially to the higher concentration areas of Kilindoni, Jibondo Island and Bwejuu Island. The later two islands have no sources of freshwater which has to be sourced from wells on the main island and transported by boat. Impacts on climate change have as yet uncertain effects on the groundwater supplies and rainfall. The lack of documented threat of freshwater availability in the Mafia Island District from the background study should not be seen as a reason to neglect the future needs of freshwater on Mafia and its surrounding islands. The focus of this

action is therefore to assess the ground water potential, define solutions for the outlying smaller islands (especially Jibondo and Bewejuu – possibly with water

pipe installation) and develop a master plan for the entire district.

	T = :									
	which is associated MIMP as a tourist do	growth in population, development and tourism, much of with the new Kilindoni Jetty facility, and the importance of the estination and marine biodiversity hotspot, the action to								
F Objections		supplies is seen as an essential infrastructure development.								
5. Objective:		of the households with secure freshwater supply. ction to study, review and design of supply options for local								
6. Expected outputs:	 communities within the MIMP are: Updated understanding of the freshwater supply options and conditions of these sources (aquifers, rivers, rainfall) for the main island and surrounding smaller islands Identification and understanding of areas where seawater intrusion is takin place Definition of the areas where safe and reliable freshwater supplies (with combined sources) can be established with consolidation of "water commit Trial of rain harvesting and storage systems using alternative technology Installation of water pipes to outlying islands Reduced contamination of rivers and aquifers Reduced loss of freshwater a) Project design and appraisal. 									
7. Activities:	 a) Project design and b) Project tendering 1) Initial studies, desthe populations is supply is most populations 2) Develop capacity 3) Review and develop habilitate where 4) Develop, review 5) Review, develop instruments add 6) Trial a number of 	esign and engineering associated with supplying freshwater to in the larger villages and towns of Mafia (or where water roblematic), through review of needs and identification of in freshwater supply including from a range of sources elop existing freshwater supply infrastructure and re-								
8. Assumptions:	The Tanzania Gover reliable drinking wa	nment is committed to supporting the provision of clean and ter to the population of Mafia. Local residents and businesses tiatives to improve their environment and supply of								
9. Risks:		businesses may object and manage to block the project.								
10. Means of implementation:	Logistics, technical, scientific	 Green-green infrastructure, IWRM planning Drilling and borehole/well sampling equipment 								
	Human Resources	 Civil and water engineers Pollution chemists Socio-economists Alternative energy specialists Rain harvesting experts 								

	16-	
11. Budget estimate:	Item	Estimate in USD
	Project preparation and mobilisation	100,000
	Mobilisation/review of freshwater options	400,000
	Project management	200,000
	Trial of rain water harvesting and storage and supply	3,000,000
	systems	2 000 000
	Re-habilitate existing water infrastructure	2,000,000
	Develop freshwater master plan for Mafia Supplies, personnel (hiring and training/capacity	1,000,000 1,000,000
	building)	1,000,000
	Total	7,700,000
	The coarse budget does not provide for site acquisition, r	
	associated with illegal squatters or land-users, or handlir	
	freshwater, which are considered a government issue. The	
	fixed amount for rehabilitation of existing water supply i	
	the assumption that beyond that the government would	cover cost.
12. Source of	Tanzania Government (budget, participation)	
funding:	• Development Partners (Technical Assistance budget). A	AfDB, WB, EU, Bilateral
10 D	assistance programmes	11 (((, , 1
13. Responsible for the action:	Strong Government infrastructure development stakehol coordinating efforts:	der capable of effectively
the action.	• Contractors	
	• etc	
14. Beneficiary from	Local residents (over 45,000), plus thousands of annual to	ourist visitors) in terms of
the action:	health and safety, from enhanced and reliable freshwater	
	activities and natural environment (especially mangrove	
	freshwater.	
	Indirect or long term beneficiaries will be the coastal pop	
	through improved freshwater quality will have bettered	
	socio-economic development without compromising sus and environmental management.	tainable natural resources
15. Schedule:	Year 1 Year 2 Year 3	Year 4 Year 5
13. Schedule.	Actions and Activities Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3	
	Freshwater supply options for Mafia Island Marine Park	
	Project preparation and mobilisation	
	Mobilisation/review of freshwater	
	options Project management	
	Trial of rain water harvesting and	
	storage and supply systems Re-habilitate existing water	
	infrastructure	
	Develop freshwater master plan for Mafia	
	Supplies, personnel (hiring and	
	training/capacity building)	
16. Links to other	Links to following systemic actions would be desirable:	
actions:	Tan-S01: Integrated Coastal Zone Management	
	Tan-S04: Information Management	
	Tan-S06: Awareness Raising	
	Tan-S07: Integrated Legal Review	
	Of particular relevance and importance would be links to	o following systemic and
	local actions:	o jovernie und
	Tan-S02: Spatial PlanningTan-S03: Shoreline Management	
	Tan-L28: Sewage collection and treatment facility for K	Glindoni, Mafia Island
-	- Tan 120. Dewage concentration and treatment facility for N	amaoni, mana isiana

17. Performance indicators:	Freshwater quality (chemistry, BOD, etc.), volumes and supply rates.
18. Comments:	Two solar desalination units are being piloted for remote communities, one of them on a small island off the Pemba Island coast. Lessons learnt from that initiative would be useful going forward with Tan-L38.

Tan-L39: Study, review, design and trial freshwater supply options for outlying villages in the Mnazi Bay-Ruvuma Estuary Marine Park, Mtwara Rural District

1. Background:	The population of Mnazi Bay-Ruvuma Estuary Marine Park (MBREMP), including smaller islands, has reached its highest, at over 20,000. The economy relies on agricultural cultivation and fisheries, with a substantial amount of revenue also contributed by trade and, increasingly by tourism. Although MBREMP ecology offers one of the best diving and snorkeling center in East Africa the number of tourists is still low. This is expected to change dramatically once the benefits for the recently discovered gas reserves comes to fruition, adding to the local population.
	Mtwara Rural receives a low annual rainwater volume (ranging from 515 mm to 1,589 mm), with freshwater supply an ever-present, low ranking problem for most of the district, except for a few smaller outlying islands where it is severe, such as in the MBREMP area. There are many water-stressed areas in the MBREMP.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
2. Title:	Study, review and design and trial freshwater supply options and trials for outlying villages in the MBREMP, Mtwara Rural District
3. Action Reference:	Tan-L39
4. Justification:	The lack of documented threat of freshwater availability in the MBREMP area from the background study should not be seen as a reason to neglect the future needs of freshwater in the park and its surrounding islands. The focus of this action is therefore to assess the ground water potential, define solutions for the general MBREMP area and develop a master plan for the entire park.
	Given the expected growth in population, development and tourism, much of which is associated with new developments in Mtwara area, and the importance of the MBREMP as a tourist destination and marine biodiversity hotspot, the action to improve freshwater supplies is seen as an essential infrastructure development.
5. Objective:	By 2025 at least 80% of the households in MBREMP with secure freshwater supply.
6. Expected outputs:	The outputs of the action to study, review and design of supply options for local communities within the MBREMP are: • Updated understanding of the freshwater supply options and conditions of these sources (aquifers, rivers, rainfall) for the main island and surrounding smaller islands • Identification and understanding of areas where seawater intrusion is taking
	 place Definition of the areas where safe and reliable freshwater supplies (with combined sources) can be established with consolidation of "water committees" Trial of rain harvesting and storage systems using alternative technology Installation of water pipes to outlying islands Reduced contamination of rivers and aquifers Reduced loss of freshwater
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Initial studies, design and engineering associated with supplying freshwater to the populations in the larger villages and towns of Mtwara Rural (or where water supply is most problematic), through review of needs and identification of source options

8. Assumptions:	 Develop capacity in freshwater supply including from a range of sources Review and develop existing freshwater supply infrastructure and re-habilitate where appropriate Develop, review and implement a freshwater master plan for Mafia. Review, develop, implement and enforce relevant legislative/regulatory instruments addressing freshwater usage within the MBREMP Trial a number of alternative supply systems (rain harvesting, boreholes, wells, river dams, water pipes) where appropriate The Tanzania Government is committed to supporting the provision of clean and reliable drinking water to the population of Mafia. Local residents and businesses are supportive of initiatives to improve their environment and supply of freshwater. Local residents and businesses may object and manage to block the project. 									
9. Risks:	Local residents and l	ocal residents and businesses may object and manage to block the project.								
10. Means of implementation:	Logistics, technical, scientific	 Green-green infrastructure, IWRM planning Drilling and borehole/well sampling equipment 								
	Human Resources	 Civil and water engineers Pollution chemists Socio-economists Alternative energy specialists Rain harvesting experts 								
11. Budget	Item	Estimate in USD								
estimate:	Project preparation	and mobilisation	100,000							
	Mobilisation/revie	w of freshwater options	400,000							
	Project managemer		200,000							
		narvesting and storage and supply	1,000,000							
	systems Do habilitate evicting	a a rivatan in fua atmirationa	2 000 000							
		ng water infrastructure r master plan for Mafia	3,000,000 1,000,000							
		l (hiring and training/capacity	1,000,000							
	Total		6,700,000							
	associated with illeg freshwater, which ar amount for rehability assumption that bey	oes not provide for site acquisition, re-hal squatters or land-users, or handling it e considered a government issue. The bation of existing water supply infrastruction that the government would cover conditions to the supplementation of the supplement	llegal extractors of udget considers a fixed ture, based on the							
12. Source of		nent (budget, participation)	R M/R EII Bilatonal							
funding:	assistance program	ners (Technical Assistance budget). AfD	D, WD, EU, Dilateral							
13. Responsible for		infrastructure development stakeholder	capable of effectively							
the action:	coordinating efforts: • Contractors									
14. Beneficiary from the action:	Local residents (over health and safety, fro	• etc Local residents (over 20,000), plus thousands of annual tourist visitors) in terms of health and safety, from enhanced and reliable freshwater supply; agriculture activities and natural environment (especially mangrove forest) from improved freshwater								
	Indirect or long term beneficiaries will be the coastal populations at large that through improved freshwater quality will have bettered their opportunities for socio-economic development without compromising sustainable natural resource and environmental management.									

15. Schedule:			Yea	ar 1		П	Ye	ar 2		П	Ye	ar 3			Yea	ar 4		Year			\neg
	Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Freshwater supply options for Mnazi																				
	Bay Ruvuma Estuary Marine Park					<u> </u>	<u> </u>			<u> </u>	<u> </u>		<u> </u>		<u>.</u>				<u> </u>		
	Project preparation and mobilisation			L										<u> </u>							
	Mobilisation/review of freshwater options																				
	Project management	Ī																	 !		
	Trial of rain water harvesting and storage systems																				
	Re-habilitate existing water infrastructure		•																		
	Develop freshwater master plan for Pemba																				
	Supplies, personnel (hiring and training/capacity building)																				
16. Links to other	Links to following systemic	Links to following systemic actions would be desirable:																			
actions:	 Tan-S01: Integrated Coast Tan-S04: Information Mar Tan-S06: Awareness Raisi Tan-S07: Integrated Legal 	nag ng	em	nen		nna	ge	m€	ent												
	Of particular relevance and local actions:	imį	poı	rtaı	ıce	w	ou	ıld	be	lin	ks	to 1	foll	ow	⁄inį	g s <u>y</u>	yst	em	ic a	ano	1
	Tan-S02: Spatial PlanningTan-S03: Shoreline Manag		nen	ıt																	
17. Performance indicators:	Freshwater quality (chemistry, BOD, etc.), volumes and supply rates.																				
18. Comments:	Two solar desalination units are being piloted for remote communities, one of them on a small island off the Pemba Island coast. Lessons learnt from that initiative would be useful going forward with Tan-L39.																				

Tan-L40: Tanzania mainland fisheries sector review by fishery type and management areas

1. Background:	The artisanal/small-scale fishery sector in mainland Tanzania supports a significant proportion of local livelihoods. In 2009, the Joint Frame Survey estimated that the activity provided full time employment for over 36,321 people with thousands more part time fishermen, yet the increased effort in fishing has not resulted in increases in fish catches per unit. The pragmatic outlook on the fisheries sector on Tanzania's mainland coast is
	that there is little room for expansion and the current and increasing pressure is damaging the productivity. Catches are unlikely to increase with more fishing effort. Some potential increase may be gained from improvements in efficiency and/or value-added in the small pelagic fishery and from coastal aquaculture.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	To give credence to any measures that attempt to manage and even restrict the fishing effort, there is first the need to better understand the main fisheries taking place along the Tanzania mainland coast, especially within and outside of the many marine conservation areas. For mainland Tanzania, fisheries management plans to address the principle four fishery types: octopus, tuna and tuna-like species, small pelagic species (sardine and anchovies), mixed reef fisheries and seaweed farming now exist, having been recently compiled (2012-2013).
2. Title:	Mainland Tanzania fisheries sector review by fishery type and management areas
3. Action Reference:	Tan-L40
4. Justification:	The use of destructive fishing gears, causing a decline in catches, was ranked as the most severe threat, level 5, for the fisheries sector as a whole. Poor fisheries resource management was ranked at level 4 for the sector as a whole.
	At district levels, the threat from destructive fishing and decline catches was the most highly ranked of all threats to coastal livelihoods and ecosystems. The significance of the threats posed by fishers and by the decline in fisheries production per unit effort cannot be overstated. Linked with potential impacts from climate change, local fisheries are more vulnerable than ever before.
	The importance of developing fisheries management plans and implementing the results was stressed recently by a SWIOfish consultancy (Groeneveld et al, 2014) who also supported the need to strengthening existing data collection methods as stressed by de Graaf (2013). It was also felt that such a review should include the harmonisation and revision of fisheries legislation in a number of respects, including best practices, consistency with other national legislation and implementation of international obligations, across the various fisheries subsectors, including artisanal and semi-industrial fisheries, and regarding vessels that have been fishing in the EEZ but pass through the territorial seas of Tanzania mainland, as highlighted by the recent SWIOfish study of Swan (2013).
5. Objective:	By 2025 the key fishery types sustainably managed and decreased use of destructive gears.
6. Expected outputs:	In alignment with relevant SWIOfish draft recommendations, the outputs of the action to support the fishery review for mainland Tanzania are:

	Assessment and ha	atus of stocks and derived effort levels armonization of fisheries legislation in	line with the findings		
	fishery types	riew and recommended fisheries mana pacity developed to undertake continue			
		monitoring and management of the main fishery types			
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Review and analyse catch records to assess the usefulness of the dataset, and improve data collection protocols 2) Collect additional catch and effort information for ground-truthing 3) Implement improved catch assessment survey (CAS) for two years 4) Revise fisheries management plans for the principle fishery types: octopus, tuna and tuna-like species, small pelagic species and mixed reef fisheries 5) Conduct two modernized and data-integrated frame surveys over next five years 6) Review and revise fisheries legislation in line with marine relevant management plans and conservation areas 				
	7) Capacity building	with relevant fisheries institutions and	d beach recorders		
8. Assumptions:	The Tanzania Govern	nment is committed to supporting the			
-	businesses are suppo fisheries.	efit of the population of coastal Tanzan portive of initiatives to improve manage	ment of the principle		
9. Risks:	businesses are suppo fisheries.		ment of the principle		
-	businesses are suppo fisheries.	ortive of initiatives to improve manage	ment of the principle		
9. Risks: 10. Means of	businesses are supportisheries. Local residents and businesses are supportisheries. Logistics, technical,	 businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses manages assistance Budgets for meetings Budgets for technical assistance Access to fisheries data/information Fisheries scientists (fisheries management, socio-economists) Fisheries trainers Master fisherman 	plock the project. on gement, ecology, data		
9. Risks: 10. Means of implementation:	businesses are supportisheries. Local residents and businesses are supportisheries. Local residents and businesses are supportisheries.	 businesses may object and manage to businesses may object and manage to be a Budgets for meetings Budgets for technical assistance Access to fisheries data/information Fisheries scientists (fisheries manamanagement, socio-economists) Fisheries trainers 	plock the project. on gement, ecology, data		
9. Risks: 10. Means of	businesses are supportisheries. Local residents and businesses are supportisheries. Local residents and businesses are supportisheries.	 businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses manages assistance Budgets for meetings Budgets for technical assistance Access to fisheries data/information Fisheries scientists (fisheries management, socio-economists) Fisheries trainers Master fisherman 	ment of the principle clock the project. on gement, ecology, data		
9. Risks: 10. Means of implementation:	businesses are supportisheries. Local residents and businesses, technical, scientific Human Resources	 businesses may object and manage to businesses may object and manage to be a Budgets for meetings Budgets for technical assistance Access to fisheries data/information Fisheries scientists (fisheries manamanagement, socio-economists) Fisheries trainers Master fisherman 	plock the project. on gement, ecology, data		
9. Risks: 10. Means of implementation:	businesses are supportisheries. Local residents and businesses are supportisheries. Logistics, technical, scientific Human Resources Item Project preparation	 businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses assistance Budgets for meetings Access to fisheries data/information Fisheries scientists (fisheries manamanagement, socio-economists) Fisheries trainers Master fisherman 	ment of the principle clock the project. on gement, ecology, data Estimate in USD 100,000		
9. Risks: 10. Means of implementation:	businesses are supportisheries. Local residents and businesses are supportisheries. Logistics, technical, scientific Human Resources	 businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses assistance Budgets for meetings Budgets for technical assistance Access to fisheries data/information Fisheries scientists (fisheries manamanagement, socio-economists) Fisheries trainers Master fisherman 	ment of the principle clock the project. on gement, ecology, data Estimate in USD		
9. Risks: 10. Means of implementation:	businesses are supportisheries. Local residents and businesses are supportisheries. Logistics, technical, scientific Human Resources Item Project preparation Mobilisation/review	businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses for meetings Budgets for meetings Budgets for technical assistance Access to fisheries data/information Fisheries scientists (fisheries manamanagement, socio-economists) Fisheries trainers Master fisherman and mobilisation w of catch records nt	ment of the principle clock the project. gement, ecology, data Estimate in USD 100,000 100,000		
9. Risks: 10. Means of implementation:	Item Project preparation Mobilisation/review Conduct frame surv	businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses for meetings Budgets for meetings Budgets for technical assistance Access to fisheries data/information Fisheries scientists (fisheries manamanagement, socio-economists) Fisheries trainers Master fisherman and mobilisation w of catch records nt	Estimate in USD 100,000 100,000 200,000		
9. Risks: 10. Means of implementation:	Item Project preparation Mobilisation/revier Project additional c Implement improve	 businesses may object and manage to businesses may object and manage to businesses may object and manage to be Budgets for meetings Budgets for technical assistance Access to fisheries data/information Fisheries scientists (fisheries manamanagement, socio-economists) Fisheries trainers Master fisherman and mobilisation w of catch records and mobilisation wey (x2) catch/effort data - groundtruthing ed catch assessment survey (CAS)	Estimate in USD 100,000 200,000 200,000 400,000		
9. Risks: 10. Means of implementation:	Item Project preparation Mobilisation/revier Conduct frame surv Collect additional collect additional collect green markets.	 businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses of the subject o	Estimate in USD 100,000 100,000 200,000 200,000 400,000 400,000		
9. Risks: 10. Means of implementation:	Item Project preparation Mobilisation/review Project dadditional c Implement improve Review fisheries leg	businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses for meetings Budgets for meetings Budgets for technical assistance Access to fisheries data/information Fisheries scientists (fisheries manamanagement, socio-economists) Fisheries trainers Master fisherman and mobilisation w of catch records ht vey (x2) catch/effort data - groundtruthing ed catch assessment survey (CAS) anagement plans (x4) gislation	Estimate in USD 100,000 200,000 200,000 400,000 200,000 200,000		
9. Risks: 10. Means of implementation:	Item Project preparation Mobilisation/review Project daditional c Implement improve Review fisheries leg Implement Fisheries	businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses for meetings Budgets for technical assistance Access to fisheries data/information Fisheries scientists (fisheries manamanagement, socio-economists) Fisheries trainers Master fisherman and mobilisation w of catch records ht vey (x2) catch/effort data - groundtruthing ed catch assessment survey (CAS) anagement plans (x4) gislation es Management Plans	Estimate in USD 100,000 200,000 400,000 400,000 1,000,000 1,000,000 1,000,000		
9. Risks: 10. Means of implementation:	Item Project preparation Mobilisation/review Project daditional c Implement improve Review fisheries leg Implement Fisheries	businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses for meetings Budgets for meetings Budgets for technical assistance Access to fisheries data/information Fisheries scientists (fisheries manamanagement, socio-economists) Fisheries trainers Master fisherman and mobilisation w of catch records ht vey (x2) catch/effort data - groundtruthing ed catch assessment survey (CAS) anagement plans (x4) gislation	Estimate in USD 100,000 200,000 200,000 400,000 200,000 200,000		
9. Risks: 10. Means of implementation:	Item Project preparation Mobilisation/reviet Project additional c Implement improve Review fisheries ma Review fisheries leg Implement Fisherie Supplies, personnel	businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses may object and manage to businesses for meetings Budgets for technical assistance Access to fisheries data/information Fisheries scientists (fisheries manamanagement, socio-economists) Fisheries trainers Master fisherman and mobilisation w of catch records ht vey (x2) catch/effort data - groundtruthing ed catch assessment survey (CAS) anagement plans (x4) gislation es Management Plans	Estimate in USD 100,000 200,000 400,000 400,000 1,000,000 1,000,000 1,000,000		

	 NGOs (participation) Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilateral 		
	assistance programmes		
13. Responsible for the action:	Strong Local Government fisheries development stakeholder capable of effectively coordinating efforts: • Marine Parks and Reserves Unit • Contractors • NGOs • Etc.		
14. Beneficiary from	Local coastal residents (above six million) plus foreign visitors (several thousand)		
the action:	in terms of improved reliability of fish, from enhanced aesthetic aspects of the surrounding areas; mangrove forest, intertidal and coral reefs resources users (including fishers) from reduced destructive fishing in coastal waters. Indirect or long term beneficiaries will be the coastal populations at large that through improved food quality will have bettered their opportunities for socioeconomic development without compromising sustainable natural resources and environmental management.		
	Year 1 Year 2 Year 3 Year 4 Year 5 Y6 Y7 Y8 Y9 Y1		
16. Links to other actions:	Actions and Activities Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q1 Q1 Q1 Q1 Q2 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1		
17 Parformance	Of particular relevance and importance would be links to following systemic and local actions: • Tan-S02: Spatial Planning • Tan-S03: Shoreline Management • Tan-L41: Small pelagic fisheries support on mainland Tanzania • Tan-L42: Mainland fisheries MCS programme • Tan-L44: Strengthening management of octopus fisheries on mainland Tanzania • Tan-L45: Strengthening seaweed farming on mainland Tanzania • Tan-L46: Tuna fisheries support programme for Mtwara and Lindi Regions • Tan-L47: Prawn fisheries support programme for Rufiji District • Tan-L48: Fish farming research and cage trials in Tanga and Kilwa		
17. Performance indicators:	Increased and sustained fish catch per unit effort; improved quality of fish landed; stabilised fishing effort.		

18. Comments:

Note: Any interventions into fisheries development should be aligned with other efforts, the most prominent at present being the SWIOfish projects supported by the World Bank, working with the Department of Fisheries. Seaweed farming is addressed in a specific action (Tan-L44).

References cited:

de Graaf, G 2013. Rapid Assessment of Fisheries and Aquaculture Information Management System (FIMS) in mainland Tanzania and Zanzibar. First Draft Report. SWIOFish.

Groeneveld, JC ,Fennessy, ST, Everett BI and Robey J 2014. Final Report: March 2014 Specialist Report: Rapid Assessment of the State of Commercial Fisheries and Main Species Exploited in Tanzania. Oceanographic Research Institute, Durban.

Swan, J 2013. Review of legal and policy framework for fisheries in Tanzania. SWIOFish.

Tan-L41: Small pelagic fisheries support on mainland Tanzania

1. Background: The artisanal/small-scale fishery sector in mainland Tanzania supports a significant proportion of local livelihoods. In 2009, the Joint Frame Survey estimated that the activity provided full time employment for over 36,321 people with thousands more part time fishermen, yet the increased effort in fishing has not resulted in increases in fish catches per unit. Small pelagics (Clupeids, Scombrids, Engraulids) made up 68% of the marine catch in recent years (Groeneveld et al 2014). Off mainland Tanzaia they are caught off the shores of Tanga, Dar es Salaam and Kilwa, with smaller fishing effort off Mafia, and Mtwara. The Mafia Channel is reputed to be one of the richest, perhaps the richest, small pelagic fishery on the coast. Open water seine nets, purse seine, gill nets, ring / lift nets and migrant fishers are involved that follow fish schools. There is high demand for anchovies as local source of protein, for poultry farming, aquaculture, and also dried and exported. The management effectiveness of the small pelagic fishery is hindered by limited finances available for enforcement, remote areas, large (and growing) numbers of fishers, easy access, and entrenched fishing rights. Post-harvest loss is highest (20% of catch) during the wet season (SE Monsoon), when small pelagic fishes are abundant, but cannot be dried as rapidly or efficiently. Roads are then difficult to navigate, and therefore catches cannot be distributed efficiently during this period, leading to their loss. The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats. The pragmatic outlook on the fisheries sector on mainland Tanzania is that there is little room for expansion and the current and increasing pressure is damaging the productivity. Catches are unlikely to increase with more fishing effort. Some potential increase may be gained from improvements in efficiency and/or value-added in the small pelagic fishery and from coastal aquaculture. Although the small pelagic fishery has potential for expansion, and could partly absorb fishers displaced from other fisheries, such as the reef fishery, with declining productivity, or from enforcement of bans of illegal gears, there is an inherent risk associated with promoting a fishery that is not fully understood. Reef fisheries are threatened by over-fishing and environmental disturbance, principally from bleaching episodes (possibly related to anthropogenic climate change). Supporting the small pelagic fishery by better understanding the fishery, by adding value, improving yields, providing a feasibility study for the development of a cannery (for private sector investment) will contribute to its long-term sustainability and contribute towards food security and potentially foreign exchange earnings from export. 2. Title: Small pelagic fisheries support programme for mainland Tanzania 3. Action Tan-L41 Reference: 4. Justification: The use of destructive fishing gears, causing a decline in catches, was ranked as the most severe threat, level 5, for the fisheries sector as a whole. Poor fisheries resource management was ranked at level 4 for the sector as a whole.

At district levels, the threat from destructive fishing and decline catches was the most highly ranked of all threats to coastal livelihoods and ecosystems. The significance of the threats posed by fishers and by the decline in fisheries production per unit effort cannot be overstated. Linked with potential impacts from climate change, local fisheries are more vulnerable than ever before. It is widely accepted that there is inadequate knowledge on both the fishery and the biology of the pelagic resources (e.g. URT 2013). The productivity of this fisheries is threatened both by over-fishing and by environmental disturbance, principally from bleaching episodes (which may or may not be directly related to anthropogenic climate change). Given the high complexity and natural variability of small pelagic species ecosystems, the lack of data on the fishery and the difficulties in identifying clear potential responses of these fish species to anthropogenic climate change, caution is required by decision-makers who may be tempted to look at this fishery as a go-to fishery that can absorb excess capacity from other fisheries (Anderson, 2014). 5. Objective: By 2025 the small pelagic fishery is sustainably managed and developments are in place for a sardine cannery. In alignment with relevant SWIOfish draft recommendations, the outputs of the 6. Expected outputs: Action to support the small pelagic fishery on mainland Tanzania are: • Updated understanding of the fishery • A review and analysis of long-term datasets to assess their usefulness for fisheries management • Develop simple stock status indicators for the most important small pelagics • Assess status of stocks and derive effort levels for sustainable yields • Assess long-term dynamics of small pelagic fishery productivity through modelling of catch rates and oceanographic / environmental parameters • Investigate spatial and seasonal trends in fishing patterns along the coast as framework for spatial management of fishing effort Complete a feasibility study for the establishment of a sardine cannery at Tanga and Kilwa and engage the private sector in its development (if considered viable) 7. Activities: a) Project design and appraisal. b) Project tendering 1) Review and analyse previous catch data to assess the usefulness of the dataset, and improve data collection protocols. 2) Collect additional catch and effort information for ground-truthing (over 4 vears) 3) Implement improved catch assessment survey (CAS) for two years 4) Work with fishing units to install vessel monitoring systems (VMS) to monitor movements, in exchange for e.g. solar lamps and other equipment 5) Assess seasonal changes in species composition; spatiotemporal shifts in fishing effort trends along the coast; and reconstruct total catch from the fishery. 6) Model variability in catch rates and species composition trends relative to long term environmental/oceanographic information (GOOS; NOAA etc.) and plankton conditions to assess the effects of climatic variability on stocks. 8) Develop fisheries management plans to address the small pelagic species fisheries 9) Conduct two modernized and data-integrated frame surveys over next five years to provide accurate data on small pelagic fishery effort 10) Capacity building with relevant fisheries institutions and beach recorders 8. Assumptions: The Tanzania Government is committed to supporting the improvement of fisheries for the benefit of the population of coastal Tanzania. Local residents

	and businesses are supportive of initiatives to improve their small pelagic fishery.		
9. Risks:	Local residents and businesses may object and manage to block the project.		
10. Means of implementation:	Logistics, technical, scientific	 Budgets for meetings Budgets for technical assistance Access to fisheries data/informent VMS units (x50) Solar lamps and ancillary equinent 	nation
	Human Resources	 Fisheries scientists (ecology, de socio-economists, economist) Business consultants 	ata management,
11. Budget	Item		Estimate in USD
estimate:	Project preparation and n	nobilisation	100,000
	Project management		200,000
	, c	ocused on small pelagic fishery	na
		effort data - groundtruthing for	na
	1 1	enort data - groundtrutting for	Tia
	small pelagics Implement improved catch assessment survey (CAS) for small pelagics		na
	Review small pelagics fis	heries management plan	na
	Implement small pelagics	s Fisheries Management Plan	500,000
	Work with fishing units (50)		300,000
	Conduct feasibility study		200,000
	Assess seasonal changes and model vs		300,000
	climate/oceanographuic parameters		
			500,000
	Total 1,700,000 The coarse budget does not provide for reviewing existing catch data, collecting additional data, frame survey data collection, implementing revised catch assessment nor review of the small pelagic fisheries management plan, provided that these activities are undertaken as part of a separate initiative Tan-L40: Fisheries sector review by fishery type and management areas, with costing for these elements provided.		
12. Source of	Tanzania Government (b.	oudget, participation)	
funding:	Private Sector (participatNGOs (participation)Development Partners (Tassistance programmes	ion) Fechnical Assistance budget). AfDE	3, WB, EU, Bilateral
13. Responsible	Strong Local Government fisheries development stakeholder capable of		
for the action:	effectively coordinating effectively coordinating effectivelyTAFIRI, IMS, MbeganiNGOs	forts:	
	• etc		
14. Beneficiary from the action:	Local residents (over six m terms of improved reliabil surrounding areas; mangre	nillion) plus foreign visitors (severa ity of fish, from enhanced aesthetic ove forest, intertidal and coral reef duced destructive fishing in coasta he small pelagic fishery.	aspects of the s resources users
	= =	ficiaries will be the coastal populat ality will have bettered their oppo	

	economic development without compromising sustainable natural resources and environmental management.			
15. Schedule:	Year1 Year2 Year3 Year4 Year5 Y6 Y7 Y8 Y9 Y			
	Actions and Activities Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4			
	Small pelagic fisheries support for mainland Tanzania			
	Project preparation and mobilisation			
	Review of small pelagic catch records Project management			
	Conduct frame survey, focused on small			
	pelagic fishery			
	Collect additional catch/effort data - groundtruthing for small pelagics			
	Implement improved catch assessment			
	survey (CAS) for small pelagics			
	Reviews mall pelagics fisheries management plan			
	Implement small pelagics Fisheries			
	Management Plan Work with fishing units (50)			
	Conduct feasibility study for sardine			
	cannery (x2)			
	Assess seasonal changes and model vs climate/oceanographuic parameters			
	Supplies, personnel (hiring and			
	training/capacity building)			
16. Links to	Links to following systemic actions would be desirable:			
other actions:	Tan-S01: Integrated Coastal Zone Management			
	• Tan-S04: Information Management			
	• Tan-S06: Awareness Raising			
	Tan-S07: Integrated Legal Review			
17. Performance indicators: 18. Comments:	Of particular relevance and importance would be links to following systemic and local actions:			
	 Tan-S02: Spatial Planning Tan-S03: Shoreline Management Tan-L40: Fisheries sector review by fishery types and management areas Tan-L42: Mainland Tanzania fisheries MCS programme Tan-L44: Strengthening management of octopus fisheries on mainland Tanzania Tan-L45: Strengthening seaweed farming on mainland Tanzania Tan-L46 Tuna fisheries support programme for Mtwara and Lindi Regions Tan-L47: Prawn fisheries support programme for Rufiji District Tan-L48: Fish farming research and cage trials in Tanga and Kilwa Increased and sustained fish catch per unit effort; improved quality of fish landed; stabilised fishing effort. Note: Any interventions into fisheries development should be aligned with other efforts, the most prominent at present being the SWIOfish projects supported by the World Bank, working with the Department of Fisheries 			
	supported by the World Bank, working with the Department of Fisheries. Particularly, there exists an action in SWIOFish specifically to look at potential value-addition in the small pelagic fishery, including cannery. There could be several potential problems in terms of volumes and marketing hence an economic and market analysis is needed.			
	References:			
	Anderson, J. (in prep). Climate Change and African Coastal Fisheries: Vulnerability Analyses and Recommendations for Fisheries Management Adaptations. Case Study II: Small-Pelagic Fisheries in Tanzania The Known the Knowable and the Unknowable. Case Studies on Climate Change and Coastal African Fisheries: Small Pelagic Fisheries of Tanzania. 64 pp.			

URT 2013. Management plan for the Tanzanian artisanal fishery for small and
medium pelagic fish species. Ministry of Livestock and Fisheries
Development. 20 pp.

Tan-L42: Support for mainland Tanzania fisheries MCS programme

1. Background:

The artisanal/small-scale fishery sector in mainland Tanzania supports a significant proportion of local livelihoods. In 2009, the Joint Frame Survey estimated that the activity provided full time employment for over 36,321 people with thousands more part time fishermen, yet the increased effort in fishing has not resulted in increases in fish catches per unit.

The pragmatic outlook on the fisheries sector on Tanzania's mainland coast is that there is little room for expansion and the current and increasing pressure is damaging the productivity. Catches are unlikely to increase with more fishing effort. Some potential increase may be gained from improvements in efficiency and/or value-added in the small pelagic fishery and from coastal aquaculture.

The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.

There is a very week history of enforcement of fisheries regulations in mainland Tanzania. In the past, recommendations have been made to ban destructive fishing practices from marine protected areas, something that has partial success, or the complete elimination of illegal practices. Part of the problem has been confusing and contradictory legislation. Under SWIOfish, recent review have been made with recommendation for implementation.

The need to firmly address fisheries control and surveillance on coastal mainland Tanzania has been re-iterated recently by Malan (2014) while working on the SWIOfish study on MCS.

The mainland coast of Tanzania does not have strong traditional local governance of fisheries arrangements, though these have strengthened recently by community-based approaches in fisheries through Community Fishermen Committees or CFCs (similar to Beach management Units, or BMUs, as seen on the mainland) in all fishing villages. Whereas the sea is publicly owned and every individual has a user right, marine environments adjacent to any village are gradually and increasingly under the use, interest and monitoring of that village, through the development and strengthening of the BMUs. Such a structure bodes well for MCS at village level.

2. Title:

Support for mainland Tanzania fisheries MCS programme

3. Action Reference:

Tan-L42

4. Justification:

The use of destructive fishing gears, causing a decline in catches, was ranked as the most severe threat, level 5, for the fisheries sector as a whole. Poor fisheries resource management was ranked at level 4 for the sector as a whole.

At district levels, the threat from destructive fishing and decline catches was the most highly ranked of all threats to coastal livelihoods and ecosystems. The significance of the threats posed by fishers and by the decline in fisheries production per unit effort cannot be overstated. Linked with potential impacts from climate change, local fisheries are more vulnerable than ever before.

It is widely accepted that there is insufficient monitoring, control and surveillance of the inshore waters of Tanzania and that destructive and illegal fishing takes place on a large scale. In order to fill that gap, a series of investigations and interventions are needed. The important first step is to ensure that the legislation is clear and non-contradictory and that it is well-known and clearly understood by the fishing community. A second starting point is to register all vessels, gears and fishers, thereby addressing the widely known underestimate of these elements. Malan (2014) quotes interviews with fisheries officials and fishers who suggested that as many as 50% of boats and fishermen may be unlicenced (see Mkenda and Folmer, 2001). Damage to habitats cause loss of spawning and nursery grounds, loss of biodiversity and diminished habitat resilience. Reduction in fisheries productivity due to habitat destruction, can takes years, even centuries to recover

5. Objective:

By 2025 at least 80% of the fisheries activities comply with regulations.

6. Expected outputs:

In alignment with relevant SWIOfish draft recommendations, the outputs of the action to implement the mainland fisheries MCS programme are divided into two phases:

Phase I – within 3 years

- All fishers and vessels in selected districts (2 or 3) are registered
- All fishing activities for tuna (gill-net) and small pelagic (ring-nets) should have their gears, vessels and fishers registered and licenced
- All licenced vessels associated with tuna (gill-net) and small pelagic (ring-net) clearly marked and identifiable
- All boat skippers of tuna gill-net and small-pelagic ring-net operations with weatherproof fishing licence
- Effective and sustainable management of the tuna and small pelagic fisheries
- Reduced entry of non-registered/licenced fishers into the tuna (gill-net) and small pelagic (ring-net) fisheries
- Pending review of fisheries legislation in line with marine relevant management plans and conservation areas (see Tan-L42), illegal fisheries such as beach seining in forbidden areas or ring-netting ("kojani") around coral areas is effectively banned within 3 years
- A fisheries patrol unit that within two years has established a presence along the mainland coast.
- Investigate mechanisms of using a fixed portion of licence fees to fund district
 offices and CFCs, with emphasis that the funding must be ring-fenced for MCS
 and fisheries management use thereby serving as an incentive to ensure that
 licencing is comprehensive

Phase II – within 6 years

- All mixed reef fishing activities (using dugout paddle/sail or outrigger canoes) should have their gears, vessels and fishers registered and licenced
- All boat skippers of mixed reef fisheries operations with weatherproof fishing licence
- All licenced vessels associated with mixed reef fishery clearly marked and identifiable
- All octopus fishers registered and licenced with weatherproof fishing licence

7. Activities:

- a) Project design and appraisal.
- b) Project tendering

Phase I

1) Pilot project be launched in selected fishing areas, based on four priority fisheries mentioned above (see Tan-L40) for which management plans will have already been developed, beginning with the small pelagic and gill-net

	mixed reef and of 2) Pilot project expansions	rst 3 years), and in a second phase expand octopus fisheries (within six years) anded to cover entire fishery for tuna and	l small pelagic
	licenced, with per discourage unlice a licence number 4) Inspections of ca 5) Investigate mech offices and BMU for MCS and fish ensure that licence 6) The fisheries pat Phase II	tches at landing sites must include check nanisms of using a fixed portion of licence s. The emphasis being that the funding n neries management use. This should act a cing is comprehensive. rol unit established routine patrols within	significant enough to e clearly marked with ing on the licences e fees to fund district must be ring-fenced s an incentive to in four years.
	(within six year 8) Pilot project ex species 9) BMUs and dist licenced, with p fishing, and that	panded to include the mixed reef and oct rs) panded to cover entire fishery for tuna ar rict officers used to routinely check that for penalties that are significant enough to di at licenced boats are clearly marked with catches at landing sites must include check	nd small pelagic ishers are indeed iscourage unlicensed a licence number
8. Assumptions:	The Tanzania Government is committed to supporting the improvement of fisheries production and enforcement of fisheries legislation, for the benefit of the population coastal Tanzania. Local residents and businesses are supportive of initiatives to improve their fishing industry.		
9. Risks:	Local fishers and bu	sinesses may object and managed to bloc	k the project.
10. Means of implementation:	Logistics, technical, scientific	 Budgets for meetings Budgets for technical assistance Access to fisheries data/information Licence plates for boats 	
	Human Resources	 Fisheries scientists (ecology, data maleconomists) MCS expert Legal expert Security/fisheries patrol expert (or continuous National security agencies 	
11. Budget estimate:	Item		Estimate in USD
	Project preparation	and mobilisation	100,000
	Communication of revised fisheries legislation to fishers		50,000
	Launch pilot project of registration and licencing for tuna, small pelagic, octopus and mixed reef fisheries		300,000
	MBUs and district officers trained and supported		300,000
	Research mechanisms on sustainability funding		50,000
	Finalise fisheries patrol unit structure and begin 1,000,000 implementation		1,000,000
	Expand pilot project	ct for registration	1,000,000
		l (hiring and training/capacity	2,000,000
	Total		5,000,000

The coarse budget does not provide for reviewing and harmonising existing fisheries legislation, provided that activity is undertaken as part of a separate initiative Tan-L40: Mainland Tanzania fisheries sector review by fishery type and management areas. The start of the MCS support programme relies on the completion of the review of relevant fisheries legislation, formalised and made public. Only then can the implementation of the MCS support programme begin. Similarly, the budget does not provide salaries for fisheries or district personnel engaged in their usual job description. 12. Source of • Tanzania Government (budget, participation) funding: • Private Sector (participation) NGOs (participation) • Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilateral assistance programmes 13. Responsible for Strong Local Government fisheries development stakeholder (DSFA) capable of the action: effectively coordinating efforts: • Fisheries department • Strong private sector fisheries and/or security entity • District fisheries officers CFCs Contractors NGOs • etc.. 14. Beneficiary from Local residents (over six million) plus foreign visitors (several thousand) in terms the action: of improved reliability of fish, from enhanced aesthetic aspects of the surrounding areas; mangrove forest, intertidal and coral reefs resources users (including fishers) from reduced destructive fishing in coastal waters. Indirect or long term beneficiaries will be the coastal populations at large that through improved food quality will have bettered their opportunities for socioeconomic development without compromising sustainable natural resources and environmental management. 15. Schedule: Year 2 Year 3 Year 4 Y6 Y7 Y8 Y9 Y10 Year 5 Actions and Activities Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Mainland fisheries MCS programme Project preparation and mobilisation Project management Communication of revised fisheries legislation to fishers Launch pilot project of registration and licencing for tuna, smal pelagic, octopus and mixed reef fisheries MBUs and district officers trained and supported Research mechanisms on sustainability funding Finalsie fisheries patrol unit structure and begin impeementation Expand pilot project for reegistration Supplies, personnel (hiring and training/capacity building) 16. Links to other Links to following systemic actions would be desirable: actions: • Tan-S01: Integrated Coastal Zone Management • Tan-S04: Information Management • Tan-S06: Awareness Raising • Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to following systemic and local actions:

• Tan-L40: Fisheries sector review by fishery types and management areas

Tan-S02: Spatial PlanningTan-S03: Shoreline Management

	 Tan-L41: Small pelagic fisheries support on mainland Tanzania Tan-L43: Support for MCS to end ballast-fishing Tan-L46: Support for offshore tuna fisheries for Mtwara and Lindi Regions
	Tan-L47: Prawn fisheries support programme for Rufiji District
17. Performance	Increased and sustained fish catch per unit effort; improved quality of fish landed;
indicators:	stabilised fishing effort; reduced incidences of infrigement.
18. Comments:	Note: Any interventions into fisheries development should be aligned with other efforts, the most prominent at present being the SWIOfish projects supported by the World Bank, working with the Department of Fisheries. A synergetic link would also be to the EU funded project on capacity and implementation (2012-2017) for coastal districts of Temeke, Rufiji and Mafia.
	References:
	Malan, P. 2014. The state of Monitoring, Control and Surveillance in the United Republic of Tanzania. A report for SWIOFish.
	Mkenda, AF and Folmer, H. 2001. The Maximum Sustainable Yield of Artisanal Fishery in Zanzibar: A Cointegration Approach. <i>Environmental and Resource Economics</i> 19: 311–328, 2001.

Tan-L43: Support MCS to end blast fishing

1. Background:	There is a very week history of enforcement of fisheries regulations in mainland Tanzania. In the past, recommendations have been made to ban destructive fishing practices from marine protected areas, something that has partial success, or the complete elimination of illegal practices. The elimination of blast-fishing (using home-made explosives and/or TNT) has been used indiscriminately and intermittently since the 1960s. Part of the problem has been confusing and contradictory legislation and lack of political will and corruption. Under SWIOfish, recent review have been made with recommendation for implementation. The need to firmly address fisheries control and surveillance on coastal mainland Tanzania has been relieved assembly by Malar (2014), while working on the SWIOfish study on
	has been re-iterated recently by Malan (2014) while working on the SWIOfish study on MCS. Many authors have lamented the on-going use of explosives in fishing along the mainland coast, especially off parts of the coast of Tanga, Dar es Salaam, Kilwa, Lindi and Mtwara.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
2. Title:	Support MSC to end blast-fishing
3. Action Reference:	Tan-L43
4. Justification:	The use of destructive fishing gears, causing a decline in catches, was ranked as the most severe threat, level 5, for the fisheries sector as a whole. Poor fisheries resource management was ranked at level 4 for the sector as a whole.
	At district levels, the threat from destructive fishing and decline catches was the most highly ranked of all threats to coastal livelihoods and ecosystems. The significance of the threats posed by fishers and by the decline in fisheries production per unit effort cannot be overstated.
	Dynamite or blast fishing is clearly a major MCS issue in near shore fisheries, as reflected in the thematic analysis. Patrolling alone has been ineffective. Rather, it is a complex, entrenched organized criminal enterprise run by influential people that routinely undermine and corrupt both enforcement and judicial process. Blast fishing requires a more holistic stand-alone action that involves higher level national enforcement agencies such as Police, Navy, TISS and Ministry of Justice to address illegal trafficking of explosives in Tanzania and to develop a mechanism to bring much greater accountability to investigative and judicial processes.
	It is widely accepted that there is insufficient monitoring, control and surveillance of the inshore waters of Tanzania and that destructive and illegal fishing takes place on a large scale. The important first step is to focus on ending the use of explosives for fishing, a practice that is commonplace from Tanga to Mtwara at selected locations, on specific tides and requiring specific water conditions to be effective. Damage to habitats cause loss of spawning and nursery grounds, loss of biodiversity and diminished habitat resilience, and the destruction is particularly relevant given the climate change threats to inshore marine habitats.
5. Objective:	By 2020 blast-fishing has ended and will not re-appear.
6. Expected outputs:	 Within 5 years: A comprehensive understanding of the factors that control the supply of detonators;

		1, 1, 1,	
	 An effective enforcement task force that arrests culprit fishers, suppliers and funding elements. 		
	 A revised judicial process to effectively end the use of explosives along the mainland 		
	coast.		
7. Activities:	a) Project design and appraisal. b) Project tendering		
	 Establish a marine field force unit, led by proven private sand providing capacity building to the local security agen for the anti-piracy effort that accompanied oil and gas expressed in the same approach would be announced to all fishing commuse of explosive devices will no longer be tolerated, and chelp in special detention pending due legal process (followers) resolution of any legal loop-holes addressing security and 	cies - as currently undertaken ploration along the Tanzania munities, that unauthorised culprits will be apprehended, wing final review and	
8. Assumptions:	The Tanzania Government is committed to supporting the improvement of fisheries production and enforcement of fisheries legislation, for the benefit of the population coastal Tanzania. Local residents and businesses are supportive of initiatives to improve their		
0 P' 1	fishing industry.	1.1	
9. Risks:	Local fishers and businesses may object and managed to bloc	rk tne project.	
10. Means of	Logistics, technical, • Budgets for meetings		
implementation:	 Budgets for technical assistance Access to fisheries data/information Licence plates for boats 		
	Human Resources • MCS expert • Legal expert • Security/fisheries patrol expert (o • National security agencies	or company)	
	•		
11. Budget	Item Estimate in USD		
estimate:	Project preparation and mobilisation	100,000	
	Project management	200,000	
	Finalise anti-blast fishing patrol unit structure and begin	1,000,000	
	implementation		
i	Supplies, personnel (hiring and training/capacity	2,000,000	
	Supplies, personnel (hiring and training/capacity building)	2,000,000	
	building) Total	3,300,000	
	building) Total The start of the MCS support programme relies on the compl fisheries legislation, formalised and made public. Only then only the start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the complete start of the MCS support programme relies on the MCS support programme	3,300,000 etion of the review of relevant can the implementation of the	
	building) Total The start of the MCS support programme relies on the compl fisheries legislation, formalised and made public. Only then of MCS support programme begin. Similarly, the budget does not be supported by the support programme begin.	3,300,000 etion of the review of relevant can the implementation of the	
12. Source of	building) Total The start of the MCS support programme relies on the compl fisheries legislation, formalised and made public. Only then of MCS support programme begin. Similarly, the budget does not district personnel engaged in their usual job description.	3,300,000 etion of the review of relevant can the implementation of the	
12. Source of funding:	building) Total The start of the MCS support programme relies on the compl fisheries legislation, formalised and made public. Only then of MCS support programme begin. Similarly, the budget does not be supported by the support programme begin.	3,300,000 etion of the review of relevant can the implementation of the	
	building) Total The start of the MCS support programme relies on the completisheries legislation, formalised and made public. Only then of MCS support programme begin. Similarly, the budget does not district personnel engaged in their usual job description. • Tanzania Government (budget, participation) • Private Sector (participation) • NGOs (participation) • Development Partners (Technical Assistance budget). AfDE	3,300,000 Letion of the review of relevant can the implementation of the not provide salaries for fisheries	
funding:	building) Total The start of the MCS support programme relies on the completisheries legislation, formalised and made public. Only then of MCS support programme begin. Similarly, the budget does not district personnel engaged in their usual job description. • Tanzania Government (budget, participation) • Private Sector (participation) • NGOs (participation) • Development Partners (Technical Assistance budget). AfDE programmes	3,300,000 letion of the review of relevant can the implementation of the not provide salaries for fisheries 3, WB, EU, Bilateral assistance	
	building) Total The start of the MCS support programme relies on the completisheries legislation, formalised and made public. Only then of MCS support programme begin. Similarly, the budget does not district personnel engaged in their usual job description. • Tanzania Government (budget, participation) • Private Sector (participation) • NGOs (participation) • Development Partners (Technical Assistance budget). AfDE	3,300,000 Letion of the review of relevant can the implementation of the not provide salaries for fisheries B, WB, EU, Bilateral assistance ag efforts:	
funding: 13. Responsible for the action:	building) Total The start of the MCS support programme relies on the completisheries legislation, formalised and made public. Only then of MCS support programme begin. Similarly, the budget does not district personnel engaged in their usual job description. • Tanzania Government (budget, participation) • Private Sector (participation) • NGOs (participation) • Development Partners (Technical Assistance budget). AfDE programmes Strong central Government capable of effectively coordinatine. • Fisheries department • Higher level national enforcement agencies such as Police, I Justice • Contractors	3,300,000 letion of the review of relevant can the implementation of the not provide salaries for fisheries B, WB, EU, Bilateral assistance ag efforts: Navy, TISS and Ministry of	
funding: 13. Responsible	building) Total The start of the MCS support programme relies on the compl fisheries legislation, formalised and made public. Only then of MCS support programme begin. Similarly, the budget does not district personnel engaged in their usual job description. • Tanzania Government (budget, participation) • Private Sector (participation) • NGOs (participation) • Development Partners (Technical Assistance budget). AfDE programmes Strong central Government capable of effectively coordinating. • Fisheries department • Higher level national enforcement agencies such as Police, I Justice	3,300,000 letion of the review of relevant can the implementation of the not provide salaries for fisheries B, WB, EU, Bilateral assistance ag efforts: Navy, TISS and Ministry of	

intertidal and coral reefs resources users (including fishers) from reduced destructive fishing in coastal waters. Indirect or long term beneficiaries will be the coastal populations at large that through improved food quality will have bettered their opportunities for socio-economic development without compromising sustainable natural resources and environmental management. Year 2 Y6 Y7 Y8 Y9 Y10 15. Schedule: Year 1 Year 3 Year 4 Year 5 Actions and Activities Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q Support MCS to end blast-fishing Project preparation and mobilisation Project management Finalise anti-blast fishing patrol unit structure and Supplies, personnel (hiring and training/capacity 16. Links to Links to following systemic actions would be desirable: other actions: • Tan-S01: Integrated Coastal Zone Management • Tan-S04: Information Management • Tan-S06: Awareness Raising • Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to following systemic and local actions: • Tan-L42: Support for mainland Tanzania fisheries MCS programme 17. Performance Numbers of successful criminal convictions associated with elicit trade in detonators indicators: (explosives) and apprehended fishers increasing then decreasing; decreased incidences of blast fishing. 18. Comments: Note: Any interventions into fisheries development should be aligned with other efforts, the most prominent at present being the SWIOfish projects supported by the World Bank, working with the Department of Fisheries. Similarly, the enforcement of MCS, particularly with respect to illegal fishing, should align with the outcomes of the Germany-funded policy, support and implementation of the national-level anti-poaching training project with the Ministry of Natural resources and Tourism (2013-2015) and the aerial surveillance project (covering elephants in the Selous Game Reserve) through the TANAPA. A synergetic link would also be to the EU funded project on capacity and implementation (2012-2017) for coastal districts of Temeke, Rufiji and Mafia. References: Malan, P. 2014. The state of Monitoring, Control and Surveillance in the United Republic of Tanzania. A report for SWIOFish. Mkenda, AF and Folmer, H. 2001. The Maximum Sustainable Yield of Artisanal Fishery in Zanzibar: A Cointegration Approach. Environmental and Resource Economics 19: 311-328,

2001.

Tan-L44: Strengthening management of octopus fisheries on mainland Tanzania

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1. Background:	The artisanal/small-scale fishery sector in mainland Tanzania supports a significant proportion of local livelihoods. In 2009, the Joint Frame Survey estimated that the activity provided full time employment for over 36,321 people with thousands more part time fishermen, yet the increased effort in fishing has not resulted in increases in fish catches per unit.	
	The pragmatic outlook on the fisheries sector on Tanzania's mainland coast is that there is little room for expansion and the current and increasing pressure is damaging the productivity. Catches are unlikely to increase with more fishing effort. Some potential increase may be gained from improvements in efficiency and/or value-added in the small pelagic fishery and from coastal aquaculture.	
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.	
	There are several studies on octopus fisheries in Tanzania (Guard 2002; Guard and Mgaya 2002), including stock status assessments that demonstrate growth in the fishery, with export of catches. Octopus is a fast growing marine organism that appears to be a resilient with good fisheries prospects, despite its present status of being overfished in many Tanzania locations. Research to support and/or improve the management of octopus fisheries, on spatial and temporal scales, is required and strongly recommended under recent SWIOfish studies (e.g. Groeneveld 2014).	
2. Title:	Strengthening the management of octopus fisheries on mainland Tanzania	
3. Action Reference:	Tan-L44	
4. Justification:	The use of destructive fishing gears, causing a decline in catches, was ranked as the most severe threat, level 5, for the fisheries sector as a whole. Poor fisheries resource management was ranked at level 4 for the sector as a whole.	
	At district levels, the threat from destructive fishing and decline catches was the most highly ranked of all threats to coastal livelihoods and ecosystems. The significance of the threats posed by fishers and by the decline in fisheries production per unit effort cannot be overstated.	
	It is widely accepted that there is inadequate knowledge on both the fishery and the biology of the octopus fishery of Zanzibar and mainland Tanzania. In order to fill that gap, a series of investigations and interventions are needed.	
5. Objective:	By 2025 the octopus fishery is sustainably managed.	
6. Expected outputs:	The outputs of the action to support the octopus fishery on mainland Tanzania are: • Simple indicators developed that rely on basic information to assess relative octopus stock status • Traditional fisheries management methods (i.e. closed seasons/areas) tested	
	for their validity as an alternative management strategy. • Genetic stock structure of <i>Octopus cyanea</i> at selected sites along mainland Tanzania investigated (for comparison with wider SWIO region stock)	

	T		
	 Octopus fishery manager applying for eco-labelling 	ment systems strengthened with th g of products.	e aim of eventually
7. Activities:	a) Project design and appra		
	b) Project tendering		
	1) Review and analyse previous catch data to assess the usefulness of the dataset,		
	and improve data collec	tion protocols	
	2) Collect additional catch	and effort information (from differ	ent areas and water
	1 , 0	ning with subsampling to obtain bi	0
	, -	ve details, size, etc.) to be used for	
		ears) and update indicators regular	ly for management
	purposes 3) Work with fishing units	(50) to closely monitor movements	s in exchange for
	e.g. solar lamps and other		o, in exchange for
	4) Conduct population gen	netics study of fished populations	(2 above)
	5) Assess seasonal changes	in species composition; spatiotem	poral shifts in
		ng the coast; and reconstruct total c	
		ability in catch rates and species co	
		vironmental/oceanographic inform	
	· · · · · · · · · · · · · · · · · · ·	e effects of climatic variability on st	
		to trial and compare traditional clo	
	individuals	for validation and analysis of subse	equent narvest
		gement plans to address the octopu	ıs fisherv
	, -	relevant fisheries institutions and b	•
8. Assumptions:		is committed to supporting the im	
•		ne population of coastal Tanzania.	
		of initiatives to improve their small	
9. Risks:	Local residents and busines	sses may object and manage to bloc	ck the project.
10. Means of	Logistics, technical,	 Budgets for meetings 	
implementation:	scientific	Budgets for technical assistance	
		Access to fisheries data/inform	
		Solar lamps and ancillary equi	pment (x100) for
		octopus fishers	
	Human Resources	Fisheries scientists (ecology, d	aka mana aamant
	Truman Resources	• Fisheries scientists (ecology, d socio-economists, economist)	ata management,
		Genetic tissue analyst	
		•	
11. Budget		· · · · · · · · · · · · · · · · · · ·	
estimate:	Item		Estimate in USD
	Project preparation and mobilisation		100,000
	Review of small octopus catc	h records	Na
	Project management		200,000
	Conduct frame survey, focused on octopus fishery		na
	Collect additional catch/effort data - groundtruthing for		200,000
	octopus 200,000		· .
	I will worth in the state of th		na
	fishrery		
	Review octopus fisheries man	e i	na
	Implement octopus Fisheries	C	na
	Work with octopus fishing		150,000
	 Conduct population gene 	tics study of fished populations	200,000

	Assess seasonal changes and model vs 100,000	
	climate/oceanographic parameters at selected sites	
	Equipment, supplies, personnel (hiring and 100,000	
	training/capacity building)	
	Total 1,000,000	
	The coarse budget does not provide for reviewing existing catch data, frame	
	survey data collection, implementing revised catch assessment nor revision of the	
	octopus fisheries management plan, provided that these activities are undertaken as part of a separate initiative Tan-L40 (above).	
12. Source of	Tanzania Government (budget, participation)	
funding:	, 0 1 ,	
rananig.	Private Sector (participation) NGOs (participation)	
	NGOs (participation) Development Partners (Technical Assistance by deet), ASDR IMP, ELL Bilatoral	
	Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilateral assistance programmes.	
12 Pagnangible	assistance programmes	
13. Responsible for the action:	Strong Local Government fisheries development stakeholder capable of effectively coordinating efforts:	
for the action.	Contractors	
	• NGOs	
14 Paraficiary	• etc	
14. Beneficiary from the action:	Local residents (over six million) plus foreign visitors (several thousand) in terms of improved reliability of octopus, from enhanced aesthetic aspects of the	
moni the action.	surrounding areas; mangrove forest, intertidal and coral reefs resources users	
	(including fishers) from reduced destructive fishing in coastal waters.	
	Indirect or long term beneficiaries will be the coastal populations at large that	
	through improved food quality will have bettered their opportunities for socio-	
	economic development without compromising sustainable natural resources and	
	environmental management.	
15. Schedule:	Year 1	
	Strengthening management of	
	octopus fisheries on mainland Project preparation and mobilisation	
	Flevriew of small actopus catch necords Project management	
	Conduct frame survey, focused on octopus	
	fishary Collect additional catch/effort data -	
	groundtruthing for octopus	
	Implement improved catch assessment survey (CAS) for octopus fishrery	
	Review octopus fisheries management alan	
	Implement actopus Fisheries Management	
	F/lan Work with actopus fishing units (50)	
	Conduct population genetics study of fished populations	
	Assess seasonal changes and model vs	
	climate/oceanographic parameters Equipment, supplies, personnel (hiring and	
46 71 1 4	training/capacity building)	
16. Links to	Links to following systemic actions would be desirable:	
other actions:	Tan-S01: Integrated Coastal Zone Management	
	Tan-S04: Information Management	
	• Tan-S06: Awareness Raising	
	Tan-S07: Integrated Legal Review	
	Of particular relevance and importance would be links to following systemic and local actions:	
	Tan-S02: Spatial Planning	
	Tan-S03: Shoreline Management	
	Tan-L40: Fisheries sector review by fishery types and management areas	

	T 140 M : 1 1T : 1(1 : MOC	
	Tan-L42: Mainland Tanzania fisheries MCS programme	
17. Performance	Performance Increased and sustained fish catch per unit effort; improved quality of octopus	
indicators: landed; stabilised fishing effort.		
	Note: Any interventions into fisheries development should be aligned with other efforts, the most prominent at present being the SWIOfish projects supported by the World Bank, working with the Department of Fisheries.	
	References:	
Groeneveld, JC, Fennessy, ST, Everett BI and Robey J 2014. Final Report: M 2014 Specialist Report: Rapid Assessment of the State of Commercial Fi and Main Species Exploited in Tanzania. Oceanographic Research Institution.		
	Guard, M. 2002. The Artisanal Fishery for <i>Octopus cyanea</i> Gray (1849) in Tanzania; Tanga, Mafia Island Marine Park and Mtwara: Fishery Assessment, Biological Accounts and Implications for Management. Final Technical Report. June 2002. University of Dar es Salaam and Institute of Marine Sciences, Zanzibar.	
	Guard, M. and Mgaya, YD. 2002. The artisanal fishery for <i>Octopus cyanea</i> Gray in Tanzania. Ambio 31(7-8): 528-536.	

Tan-L45: Strengthening the seaweed farming industry on mainland Tanzania

1. Background:	The artisanal/small-scale fishery sector in mainland Tanzania supports a significant proportion of local livelihoods. In 2009, the Joint Frame Survey estimated that the activity provided full time employment for over 36,321 people with thousands more part time fishermen, yet the increased effort in fishing has not resulted in increases in fish catches per unit.
	The pragmatic outlook on the fisheries sector on Tanzania's mainland coast is that there is little room for expansion and the current and increasing pressure is damaging the productivity. Catches are unlikely to increase with more fishing effort. Some potential increase may be gained from improvements in efficiency and/or value-added in the small pelagic fishery and from coastal aquaculture.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	There are several studies seaweed farming on Zanzibar and parts of mainland Tanzania (e.g. Tanga), which have made recommendations on means to improve the income and benefits from the farming of seaweed. The formation of the farmer groups has significantly improved the diversity and subsequent income associated with the production of seaweed and derivative products like soaps, oils, foodstuffs etc.
2. Title:	Strengthening the seaweed farming industry on mainland Tanzania
3. Action Reference:	Tan-L45
4. Justification:	The use of destructive fishing gears, causing a decline in catches, was ranked as the most severe threat, level 5, for the fisheries sector as a whole. Poor fisheries resource management was ranked at level 4 for the sector as a whole.
	At district levels, the threat from destructive fishing and decline catches was the most highly ranked of all threats to coastal livelihoods and ecosystems. The significance of the threats posed by fishers and by the decline in fisheries production per unit effort cannot be overstated.
	It is widely accepted that there is incomplete knowledge on the seaweed farming industry on mainland Tanzania (and Zanzibar) and that in order to fill that gap, a series of investigations and interventions are needed. The sector has good potential for growth, but there is a need to investigate value-adding at local level to increase the value of the sector and break buyer monopoly (i.e. low prices fetched for dried unprocessed product), to understand the decline in production in some places with increased in other, whether there are changes in coastal water conditions that favour or hinder growth, and to address health complications associated tending to the seaweed lines
5. Objective:	By 2025 the seaweed farming industry is equitably managed for the benefit of producers, buyers and the environment.
6. Expected outputs:	In alignment with relevant SWIOfish draft recommendations, the outputs of the Action to support the seaweed farming industry on mainland Tanzania are:
	 Review and implementation of a Seaweed Management Plan. Strengthened seaweed resources departments.

	Investigated value-add			
	Differences in the species growth, water conditions between different			
		ated to assist determine factors af	fecting differences in	
	production from the tw		1:	
		ormation of cooperatives and grou	aps to assist diversity	
		nue from local production.	.d	
	reasibility study complete at an appropriate location	eted on the potential for a seawee on along the coast.	a processing facility	
7. Activities:	a) Project design and appr			
	b) Project tendering			
	1) Review the Seaweed M	Ianagement Plan		
		revious harvest data to assess the	usefulness of the	
	1 -	lata collection protocols		
	3) Work with farming un e.g. relevant equipmer	its (50) to closely monitor movem	ents, in exchange for	
		evant department in fisheries is a	ppropriately staffed,	
	and if not strengthen t		_	
		value addition: making seaweed		
	of products improved, customer reactions	processing and market research,	promotion and	
		and farming method that could ex	tond farms into	
		- thus expanding the capacity of n		
	farming	thus expanding the capacity of h	idiffication for feativeed	
		es in species yields; spatio-tempor	ral shifts in yields per	
	7) Assess seasonal changes in species yields; spatio-temporal shifts in yields per unit effort trends along the coast and between sites.			
		and species composition trends i	relative to long term	
	environmental/oceano	ographic information (GOOS; NO	AA etc.) to assess the	
	effects of climatic variability on production			
	9) Conduct feasibility study on facility required for semi-processed or fully			
		export at a higher price.		
8. Assumptions:		nt is committed to supporting the	_	
		ne benefit of the population of coa		
		residents and businesses are supportive of initiatives to improve their seaweed		
9. Risks:	farming industry. Local residents and businesses may object and manage to block the project.		lock the project.	
10. Means of	Logistics, technical,	Budgets for meetings		
implementation:	scientific	Budgets for technical assistant	nce	
•		Access to seaweed harvest date		
			, , , , , , , , , , , , , , , , , , , ,	
	Human Resources	Seaweed scientists (ecology,	data management,	
		socio-economists, economist		
		Marine ecologists		
		•		
11. Budget	Item		Estimate in USD	
estimate:	Project preparation and	mobilisation	100,000	
	Mobilisation/review of harvest records		50,000	
	Project management		200,000	
	Conduct frame survey		50,000	
		to improve understanding of	150,000	
	opportunities for value-a			
	Review seaweed farming		50,000	
	Implement Seaweed Far	ming management rian	50,000	

	Conduct feasibility study for seaweed processing plant at 100,000
	two selected sites (e.g. Tanga and Kilwa)
	Study options for alternative species 100,000
	Assess seasonal changes and model vs 100,000
	climate/oceanographic parameters for each species and
	areas (at selected siates)
	Equipment, supplies, personnel (hiring and 100,000
	training/capacity building)
	Total 1,000,000
12. Source of	Tanzania Government (budget, participation)
funding:	Private Sector (participation)
	NGOs (participation)
	• Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilateral
	assistance programmes
13. Responsible	Strong Local Government fisheries development stakeholder capable of
for the action:	effectively coordinating efforts:
	• TAFIRI, Mbegani, IMS
	• Contractors
	• NGOs
	• etc
14. Beneficiary	Local farmers (tens of thousands) in terms of improved reliability of harvest of
from the action:	seaweed, and from enhanced production.
	_
	Indirect or long term beneficiaries will be the coastal populations at large that
	through improved income security, among women, and thus bettered
	opportunities for socio-economic development without compromising
	sustainable natural resources and environmental management.
15. Schedule:	Year 1 Year 2 Year 3 Year 4 Year 5
	Actions and Activities Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4
	Strengthening seaweed farming on mainland
	Project preparation and mobilisation
	Mobilisation/review of harvest records
	Project management Conduct frame survey
	Work with farmers (50) to improve
	uderstanding of opportuniteis for value-
	Develop seaaweed farming management
	plan Implement Seaweed Farming Management
	Implement Seaweed Farming Management
	Conduct feasibility study for seaweed
	processing plant Study options for alternative species
	Assess seasonal changes and model vs
	climate/oceanographic parameters for each species and areas (Pemba/Unquja)
	Equipment, supplies, personnel (hiring and training/capacity building)
16. Links to	Links to following systemic actions would be desirable:
other actions:	
041141 4144101101	Tan-S01: Integrated Coastal Zone Management
	Tan-S04: Information Management
	Tan-S06: Awareness Raising
	Tan-S07: Integrated Legal Review
	Of particular relevance and importance would be links to following systemic
	and local actions:
	T 000 0 11 171 1
	• Tan-S02: Spatial Planning
	 Tan-S02: Spatial Planning Tan-S03: Shoreline Management

	 Tan-L40: Fisheries sector review by fishery types and management areas Tan-L48: Fish farming research and cage trials in Tanga and Kilwa 	
17. Performance indicators:	Increased and sustained seaweed harvest per unit effort; improved quality of seaweed landed; stabilised or increased farming effort.	
Note: Any interventions into fisheries development should be aligned with other efforts, the most prominent at present being the SWIOfish project supported by the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of Fisherical Control of the World Bank, working with the Department of the World Bank, working with the Department of the World Bank, working with the Department of the World Bank, working with the World Bank, working wi		
References:		
Frocklin, Sarah; M. de la Torre-Castro; L. Lindstrom; N. Jiddawi and F. Ms (2012). Seaweed mariculture as a development project in Zanzibar, Eas Africa: A price too high to pay? Aquaculture, 356–357: 30–39.		
	Groeneveld, JC ,Fennessy, ST, Everett BI and Robey J 2014. Final Report: March 2014 Specialist Report: Rapid Assessment of the State of Commercial Fisheries and Main Species Exploited in Tanzania. Oceanographic Research Institute, Durban.	

Tan-L46: Tuna fisheries support programme for Mtwara and Lindi regions

1. Background:

The artisanal/small-scale fishery sector in mainland Tanzania supports a significant proportion of local livelihoods. In 2009, the Joint Frame Survey estimated that the activity provided full time employment for over 36,321 people with thousands more part time fishermen, yet the increased effort in fishing has not resulted in increases in fish catches per unit.

The pragmatic outlook on the fisheries sector on Tanzania's mainland coast is that there is little room for expansion and the current and increasing pressure is damaging the productivity. Catches are unlikely to increase with more fishing effort. Some potential increase may be gained from improvements in efficiency and/or value-added in the small pelagic fishery and from coastal aquaculture.

The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.

Most medium and large pelagics are migratory species, undertaking seasonal movements within the Indian Ocean basin. There are few studies on tuna fisheries in Tanzania (Richmond & Mganwa, 1995), though they demonstrate significant growth in the fishery, based on 1-km long gill-nets set on darker moon nights, largely operating from Nungwi in northern Unguja, Zanzibar. Estimates of stock are not available and stock status indicators available from the IOTC are not specific to Tanzania. Some species may comprise resident populations over the continental shelf of Tanzania (neritic species, accessible to small scale fishers, such as those from Mtwara and Lindi).

However, the IOTC estimates that medium-sized pelagics (kawakawa, skipjack, kingfish) are moderately exploited; albacore is underexploited and bigeye and yellowfin tunas are not overfished. Most estimates are uncertain, but there appears to be considerable scope for fisheries development.

Tuna is a fast growing fish species with movements of schools throughout the western and northweastern Indian Ocean. Fish caught off Tanzania by local fishers tend to be small to moderate sized (5-10 kg), caught mostly from surface trolling or surface-set gillnets. Large individuals, from 20-40 kg are reportedly deeper in the water column, close to the thermocline at 70-100 m depths.

Research to support and/or improve the management of the fishery for tuna and tune-like species, on spatial and temporal scales, is required and strongly recommended under recent SWIOfish studies (e.g. Groeneveld 2014). Representing both governments, the Deep Sea Fishing Authority (DSFA) has jurisdiction over fisheries issues in the EEZ (between 12 and 200 nm from the shore; mainly tunas and billfishes), whereas small scale (artisanal) fisheries for large /medium pelagics are managed by relevant ministries. These small-scale fisheries take place in territorial waters, up to 12 nm from the shore, and focus on neritic species.

2.	Title:
0	A ation

Tuna fisheries support programme for Mtwara and Lindi Regions

3. Action Reference:

Tan-L46

4. Justification:

The use of destructive fishing gears, causing a decline in catches, was ranked as the most severe threat, level 5, for the fisheries sector as a whole. Poor fisheries resource management was ranked at level 4 for the sector as a whole.

At district levels, the threat from destructive fishing and decline catches was the most highly ranked of all threats to coastal livelihoods and ecosystems. The significance of the threats posed by fishers and by the decline in fisheries production per unit effort cannot be overstated.

It is widely accepted that there is inadequate knowledge on both the fishery and the biology of the tuna fishery of Zanzibar and mainland Tanzania. In order to fill that gap, a series of investigations and interventions are needed. Similarly, the establishment of the DSFA is regarded as a major step forward in terms of management effectiveness of tuna and tuna-like species (e.g. Groeneveld 2014). They argue that though it is still in its infancy, it needs to be further empowered and full implementation supported.

5. Objective:

By 2025 the tuna fishery is sustainably managed and yield per unit effort increased.

6. Expected outputs:

In alignment with relevant SWIOfish draft recommendations, the outputs of the action to support the tuna fishery at Mtwara and Lindi are:

- Simple stock status indicators developed for the most important neritic tuna species
- Main fishing grounds used by small-scale fishers (GPS and VMS tracking) mapped
- Genetic stock structure of key neritic species (regional project) identified
- IOTC compliance strengthened by improving reporting standards (resolution of catch
- IOTC working parties hosted at DSFA
- Data of neritic tunas to species level recorded
- Reviewed and improved links between TAFIRI (as applied research facility) and the DSFA and the two Fisheries Departments (management facilities) (5 years).
- New semi-industrial fishing methods for targeting medium and large pelagics trialed , i.e. pole-and-line, droplines and FADs, with lessons learnt during previous trials taken into account first
- Bycatches of sharks and rays made by pelagic longliners assessed

7. Activities:

- a) Project design and appraisal.
- b) Project tendering
- Use CAS and Frame survey data, and conduct biological studies (yellowfin, skipjack, kawakawa and Spanish mackerel suggested) to provide information to assess stock status
- 2) Identify hotspots of neritic tunas and sample to species level to obtain a realistic species breakdown for Tanzania for IOTC reporting purposes
- 3) Train samplers to identify large and medium pelagics to species level (2 years) through development and production of fisheries handbooks
- 4) Assess genetic population structure of key neritic species (yellowfin skipjack, kawakawa, Spanish mackerel) at local and regional levels, by including samples from neighbouring countries to assess if there are different stocks in the region (5 years).
- 5) Work with small scale fleet (10 vessels) to track vessel movements through cell-phone technology and VMS to define fishing grounds; sample catches to provide seasonal information on nursery areas, growth, reproduction, migrations and behaviour (5 years).
- 6) Construct and test FADs in nearshore waters (3 years).
- 7) Trial pole-and-line and dropline fishing (3 years).
- 8) Host some of the IOTC working parties, to raise awareness internally and also improve chances of getting IOTC quota (5 years).

	9) Identify and quantify the most common shark and ray species caught by long-line fisheries, and determine the proportion of this bycatch that is					
	retained, compared to	o the proportion that is discarded.				
8. Assumptions:	The Tanzania Government is committed to supporting the improvement of fisheries for the benefit of the population of coastal Tanzania. Local residents and businesses are supportive of initiatives to improve their small pelagic fishery.					
9. Risks:	Local residents and businesses may object and managed to block the project.					
10. Means of implementation:	Logistics, technical, scientific Budgets for meetings Budgets for technical assistance Access to fisheries data/information GPS, mobile phones and VMS units (10)					
	Human Resources	 Fisheries scientists (ecology, de socio-economists, fisheries eco Master fisherman FAD expert 				
11. Budget	Item		Estimate in USD			
estimate:	Project preparation and	I mobilisation	100,000			
commute.	, , ,	i modusation				
	Project management	forward on turn Calcare	200,000			
	,	focused on tuna fishery	200,000			
	tuna	n/effort data - groundtruthing for	200,000			
	Implement improved c	atch assessment survey (CAS) for	na			
	Review tuna pelagics fi	sheries management plan	na			
	Implement tuna Fisher		na			
	Work with fishing unit	Č	200,000			
	Trial FADs		400,000			
	Trial pole-and-line and	dropline fishing	500,000			
	Assess seasonal change		200,000			
		parameters and map hot-spots	200,000			
		enetics study of fished populations	200,000			
	Host two IOTC workin	· · · · · · · · · · · · · · · · · · ·	200,000			
	Equipment, supplies, p training/capacity build	ersonnel (hiring and	400,000			
	Total	O/	2,600,000			
	<u> </u>	not provide for reviewing existing ca				
		atch assessment nor development and				
	1	nagement plan, provided that these a	-			
		separate initiative Tan:L40 (see above				
12. Source of	Tanzania Government	(budget, participation)	,			
funding:	 Private Sector (particip 	pation)				
	• NGOs (participation)					
	T-	(Technical Assistance budget). AfDE	B, WB, EU, Bilateral			
	assistance programmes					
13. Responsible		nt fisheries development stakeholder	capable of			
for the action:	effectively coordinating	ettorts:				
	• Contractors					
	• TAFIRI, Mbegani, IMS	0				
	• NGOs					
	• etc					

14. Beneficiary from the action:

Local residents (several hundred thousand in Mtwara and Lindi) plus foreign visitors (several thousand) in terms of improved reliability of fish, from enhanced aesthetic aspects of the surrounding areas; mangrove forest, intertidal and coral reefs resources users (including fishers) from reduced destructive fishing in coastal waters.

Indirect or long term beneficiaries will be the coastal populations at large that through improved food quality will have bettered their opportunities for socio-economic development without compromising sustainable natural resources and environmental management.

15. Schedule:

·		Yea	r 1			Yea	r 2			Yea	ar 3			Ye	ar 4			Ye	ar 5		Y6	Y7	Υ8	Υ9	Υ1
Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	l				
Tuna fisheries support for Mtwara-	İ				İ				İ								İ				İ				
Lindi regions					l																l				
Project preparation and mobilisation										Ĭ		Ĭ		Ĭ		Ī		Ĭ		T	1	1			
Fleview of tuna catch records															1				1		l				
Project management																									
Conduct frame survey, focused on tuna fishery																					Γ				
Collect additional catch/effort data - groundtruthing for tuna																					l				
Implement improved catch assessment survey (CAS) for tuna																									
Develop tuna pelagics fisheries management plan																									
Implement tuna Fisheries Management Flan																									
Work with fishing units (10)																					Г				
Trial FADs					Г																i				
Trial pole-and-line and dropline fishing																					l	1			
Assess seasonal changes and model vs climate/oceanographic parameters and map hot-spots and share data with IOTC																									
Conduct population genetics study of fished populations					L					Ī											ļ				
Host two IOTC working parties					l									Π					П		l				
Equipment, supplies, personnel (hiring and training/capacity building)																									

16. Links to other actions:

Links to following systemic actions would be desirable:

- Tan-S01: Integrated Coastal Zone Management
- Tan-S04: Information Management
- Tan-S06: Awareness Raising
- Tan-S07: Integrated Legal Review

Of particular relevance and importance would be links to following systemic and local actions:

- Tan-S02: Spatial Planning
- Tan-S03: Shoreline Management
- Tan-L40: Fisheries sector review by fishery types and management areas
- Tan-L41: Small pelagic fisheries support on mainland Tanzania
- Tan-L42: Mainland Tanzania fisheries MCS programme
- Tan-L48: Fish farming research and cage trials in Tanga and Kilwa

17. Performance indicators:

Increased and sustained fish catch per unit effort; improved quality of fish landed; stabilised fishing effort.

Note: Any interventions into fisheries development should be aligned with other efforts, the most prominent at present being the SWIOfish projects supported by the World Bank, working with the Department of Fisheries. References:

Groeneveld, JC, Fennessy, ST, Everett BI and Robey J 2014. Final Report: March 2014 Specialist Report: Rapid Assessment of the State of Commercial Fisheries and Main Species Exploited in Tanzania. Oceanographic Research Institute, Durban.

Richmond, M.D. & Mganwa, G. R. 1995. *Involvement of local fishermen in data collection on the East coast of Unguja, Zanzibar, and the importance for management*. 9 pp. Presented at the National Workshop on Integrated Coastal Zone Management, Zanzibar, Tanzania. May 8-12, 1995. World Bank/SAREC.

Tan-L47: Support for prawn fishery in Rufiji Delta

1. Background:	The artisanal/small-scale fishery sector in mainland Tanzania supports a significant proportion of local livelihoods. In 2009, the Joint Frame Survey estimated that the activity provided full time employment for over 36,321 people with thousands more part time fishermen, yet the increased effort in fishing has not resulted in increases in fish catches per unit.					
	The pragmatic outlook on the fisheries sector on Tanzania's mainland coast is that there is little room for expansion and the current and increasing pressure is damaging the productivity. Catches are unlikely to increase with more fishing effort. Some potential increase may be gained from improvements in efficiency and/or value-added in the small pelagic fishery and from coastal aquaculture.					
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.					
	Research to support and/or improve the management of the fishery for prawns, on spatial and temporal scales, is required and strongly recommended under recent SWIOfish studies (e.g. Groeneveld 2014).					
	These small-scale fisheries for prawns utilised gillnets, traps and fences, in creeks and shallow grounds around the Rufiji delta, from where the bulk of Tanzania catches originate. Lack of accurate fishing effort and understanding of the impacts of the artisanal fishery threatens its management and long-term sustainability. The industrial fishery collapsed several years ago and has not re-emerged, due to poor yields.					
2. Title:	Prawn fishery support programme for Rufiji Delta					
3. Action Reference:	Tan-L47					
4. Justification:	The use of destructive fishing gears, causing a decline in catches, was ranked as the most severe threat, level 5, for the fisheries sector as a whole. Poor fisheries resource management was ranked at level 4 for the sector as a whole.					
	At district levels, the threat from destructive fishing and decline catches was the most highly ranked of all threats to coastal livelihoods and ecosystems. The significance of the threats posed by fishers and by the decline in fisheries production per unit effort cannot be overstated.					
	The shores and creeks of Rufiji delta support over one thousand canoes and many hundred fence traps, targeting the main penaeid prawn species. These small-scale fisheries for prawns utilised gillnets, traps and fences, in creeks and shallow grounds around the Rufiji delta, from where the bulk of Tanzania catches originate. Lack of accurate fishing effort and understanding of the impacts of the artisanal fishery threatens its management and long-term sustainability. The industrial fishery collapsed several years ago and has not re-emerged, due to poor yields.					
5. Objective:	By 2025 Rufiji delta prawn fishery understood and sustainably managed.					
6. Expected outputs:	In alignment with relevant SWIOfish draft recommendations, the outputs of the action to support prawn fishery research in Rufiji are:					

	Simple indicators prawn stock statu	developed that rely on basic information	to assess relative					
	Traditional fisheri	es management methods (i.e. closed seas	ons/areas) tested for					
		n alternative management strategy. cture of selected species investigated (for	comparison with					
	wider SWIO regio	n stock)						
		for agrochemical tested in certified labor						
		 Rufiji prawn fishery management systems strengthened with the aim of eventually applying for eco-labelling of products 						
7. Activities:	a) Project design and appraisal.							
	b) Project tendering 1) Review and anal	yse previous catch data to assess the usef	ulness of the dataset,					
	and improve dat	a collection protocols						
	*	al catch and effort information (from different and all and all all all all all all all all all al						
	1 , 0	nd-truthing with subsampling to obtain be roductive details, size, etc.) to be used for	C					
	` -	ver 4 years) and update indicators regula						
	purposes							
		g units (50) to closely monitor movemen and other equipment	ts, in exchange for					
		tion genetics study of fished populations	(2 above)					
		changes in species composition; spatioten						
		nds along the coast; and reconstruct total						
	-	el variability in catch rates and species co	_					
		erm environmental/oceanographic inform sesss the effects of climatic variability on s						
	The state of the s	fishers to trial and compare traditional cl						
		proach for validation and analysis of subs	sequent harvest					
	individuals 7) Collected materia	al for shipment to certified laboratory for	agrachemical testing					
		s management plans to address the Rufiji	-					
	9) Capacity buildin	g with relevant fisheries institutions and	beach recorders					
8. Assumptions:		nment is committed to supporting the im						
	-	, for the benefit of the population of coast esses are supportive of initiatives to impre						
		ble to participating in farmed fish trials a	• • • • • • • • • • • • • • • • • • • •					
9. Risks:	Local fishers and bu	sinesses may object and managed to bloc	k the project.					
10. Means of	Logistics,	Budgets for meetings						
implementation:	technical, scientific	Budgets for technical assistanceAccess to fisheries data/information						
		• Laboratory and hatc½hling nursery e	equipment					
		• 10 fish cages (constructed locally or i	mported ready-					
		made) • Boat hire/purchase						
		• Fish feeds						
		•						
	Human Resources	Professional prawn fishery expert	1 (1)					
		Tanzania-based prawn and coastal fiBoatmen	shery experts (x4)					
		Assistants						
		• Security						
		• Economist						
11 Dudget actions	T.	•	Edinal Lieb					
11. Budget estimate:	Item Project preparation	and mobilisation	Estimate in USD 100,000					
	1 roject preparation	and modification	100,000					

	Project management	200,000
	Conduct frame survey, focused on prawn fishery	
	Collect additional catch/effort data - groundtruthing for	
	prawns	
	Implement improved catch assessment survey (CAS) for	
	prawns	
	Review prawn fisheries management plan	
	Implement prawn fisheries Management Plan	
	Work with fishing units (50)	500,000
	Sample and analyse prawns for agrochemicals	100,000
	Assess seasonal changes and model vs	300,000
	climate/oceanographic parameters	
	Supplies, personnel (hiring and training/capacity	500,000
	building)	200,000
	Total	1,700,000
	The coarse budget does not provide for reviewing existing cate	
	survey data collection, implementing revised catch assessment	
	octopus fisheries management plan, provided that these activit	
	as part of a separate initiative Tan-L40 (above).	
12. Source of	Tanzania Government (budget, participation)	
funding:	Private Sector (participation)	
O	NGOs (participation)	
	• Development Partners (Technical Assistance budget). AfDB,	WB, EU, Bilateral
	assistance programmes	
13. Responsible for	Strong Local Government fisheries development stakeholder w	vith expertise in fis
the action:	farming capable of effectively coordinating efforts:	
	Mbegani Fisheries Training Institute	
	Tanzania Fisheries Research Institute	
	• Institute of Marine Sciences (UDSM)	
	• NGOs	
	Private sector	
	•	
14. Beneficiary from	Local residents (over six million) plus foreign visitors (several	
the action:	of improved mangrove forest, intertidal and coral reefs resource fishers) from reduced destructive fishing in coastal waters.	ces users (includin
	Indirect or long term beneficiaries will be the coastal population through improved food quality will have bettered their opport economic development without compromising sustainable nat environmental management reliability of fish, from enhanced at the surrounding areas;	unities for socio- ural resources and

15 Calanderlas	T	Voor 1	Voor 3	Voor 2	Voor 4	Voor F	lve va v	9 V0 V10
15. Schedule:	Actions and Activities	Year 1 Q1 Q2 Q3 Q4	Year 2 Q1 Q2 Q3 Q4	Year 3 Q1 Q2 Q3 Q4	Year 4 Q1 Q2 Q3 Q	Year 5 4 Q1 Q2 Q3 Q		8 Y9 Y10
	Prawn fisheries support for Rufiji							
	Project preparation and mobilisation							
	Review of Rufiji prawn fishery catch records							
	Project management							
	Conduct frame survey, focused onprawn							
	fishery Collect additional catch/effort data -						-	
	groundtruthing for prawns							
	Implement improved catch assessment							
	survey (CAS) for prawns				1	T	-	
	Review prawnsfisheries management plan							
	Implement prawns fisheries							
	Management Plan						4	
	Work with fishing units (50) Sample and analyse prawns for						-	
	agrochemicals							
	Assess seasonal changes and model vs							
	climate/oceanographuic parameters							
	Supplies, personnel (hiring and training/capacity building)							
16. Links to other	Links to following system	mic actic	ns woul	d he desi	rahle:			
actions:	Links to following system	inic actic	nis wour	a be aesi	iabic.			
actions:	• Tan-S01: Integrated C	oastal Z	one Mana	agement				
	• Tan-S04: Information							
	• Tan-S06: Awareness F		incrit					
			•					
	• Tan-S07: Integrated Lo	egai Kev	1ew					
	Of particular relevance a	and impo	ortance w	zould be	links to f	allowing	syster	mic and
	local actions:	ma mip	ortarice v	rould be	mino to i	onowing	b y btc.	inc and
	local actions.							
	• Tan-S02: Spatial Plann	ning						
	• Tan-S03: Shoreline Ma		nt					
	• Tan-L40: Fisheries sec			20022 +222	o and me		at area	
	Tail-L40. Fisheries sec	tor revie	w by 1151	iery type	es and ma	magemei	ii area	15
	• Tan-L42: Mainland Ta							
17. Performance	Increased and sustained		atch per	unit effo	rt; impro	ved qual	ity of	prawn
indicators:	landed; stabilised fishing	g effort.						
18. Comments:	Note: Any interventions			-				
	efforts, the most promin	ent at pr	esent bei	ng the S	WIOfish ⁻	projects s	uppoi	ted by
	the World Bank, workin							
	would also be to the EU	-	_			-	_	
							itioii (.	2012-
	2017) for coastal districts	or rem	eke, Kun	ji and Mi	ama.			
	References:							
	de Graaf, G 2013. Rapi	d Asses	sment of	Fisherie	es and A	anacultu	re Info	ormation
	Management System					-		
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	Report. SWIOFish.							
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	(eds). Mariculture in	the wic	region	- Challer	iges and .	Prospects	s. vvic	IVISA
	Book Series No. 11							
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Tan-L48: Fish farming research and cage trials in Tanga and Kilwa

1. Background:	The artisanal/small-scale fishery sector in mainland Tanzania supports a
	significant proportion of local livelihoods. In 2009, the Joint Frame Survey estimated that the activity provided full time employment for over 36,321 people with thousands more part time fishermen, yet the increased effort in fishing has not resulted in increases in fish catches per unit.
	The pragmatic outlook on the fisheries sector on Tanzania's mainland coast is that there is little room for expansion and the current and increasing pressure is damaging the productivity. Catches are unlikely to increase with more fishing effort. Some potential increase may be gained from improvements in efficiency and/or value-added in the small pelagic fishery and from coastal aquaculture.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	According to de Graff (2014)'s SWIOfish study, mariculture in Tanzania is limited and other than seaweed farming, encompasses only milk fish farming (ca. 5 ponds, 12 ha total area), with total production of about 8 tons/year. Indeed, while there have been several trials of different pond (and cage) culture attempts over the last thirty years, most remain in the experimental or pilot stage (see Mmochi et 2001).
	The locally-based Institute of Marine Sciences (IMS) has over twenty years of experience with various small-scale pond and seaweed farming trials and demonstration projects, including those involving local communities. Experimenting with more commercial species and greater investment has not been attempted. Mbegani and TAFIRI with some technical assistance are well-qualified to conduct the necessary studies.
	Mauritius has experimented with cage culture and produce 175 tonnes of high value from circular cages in 2008 (Lesperance, 2011). Other countries bordering the Indian Ocean have greater experience and production. For example, in Singapore there are 106 licensed coastal floating netcage fish farms. In 2013, the marine aquaculture industry produced 3,235 tonnes of food fish at a value of USD 11.4 million. The main species are grouper, seabass and snapper, as well as crabs, shrimp and mussels. The Barramundi Asia Farm and Nursery has a 2-hectare USD 3 million fish farm using European and Japanese sea cage fish farming technology.
	Torell et al (2011) warn that aquaculture development in the WIO give due consideration to each of the three pillars of sustainability: a balanced understanding of the social, economic and environmental components of aquaculture, within an enabling governance framework.
2. Title:	Fish farming research and cage trials in Tanga and Kilwa
3. Action Reference:	Tan-L48
4. Justification:	The use of destructive fishing gears, causing a decline in catches, was ranked as the most severe threat, level 5, for the fisheries sector as a whole. Poor fisheries resource management was ranked at level 4 for the sector as a whole.
	At district levels, the threat from destructive fishing and decline catches was the most highly ranked of all threats to coastal livelihoods and ecosystems. The

significance of the threats posed by fishers and by the decline in fisheries production per unit effort cannot be overstated.

The use of destructive fishing gears, causing a decline in catches, was ranked as the most severe threat, level 5, for the fisheries sector as a whole. Poor fisheries resource management was ranked at level 4 for the sector as a whole.

At district levels, the threat from destructive fishing and decline catches was the most highly ranked of all threats to coastal livelihoods and ecosystems. The

significance of the threats posed by fishers and by the decline in fisheries

production per unit effort cannot be overstated.

It is widely accepted that there is inadequate development of fish farming in Zanzibar and on mainland Tanzania. In order to fill that gap, a series of investigations and interventions are needed. Pond culture trials have bene the main focus to date, yet more recent initiative in the WIO region include cage culture of high value fish such as cobia and grouper in Mauritius. A characteristic of marine production in Africa has been production of high value species destined for international markets, or on species generating large biomass from low provide vital protein for local consumption but does generate livelihoods and needed incomes (Torell et al 2011).

Such high value species if cultured on at Tanga and Kilwa would be ideal for the tourism industry that demands quality fish for restaurants and supplying Dar es Salaam markets. These authors recommend, among others, that trials be considered for mangrove snappers and octopus, that the acceptability of freshwater pond farming of tilapia be tested, that cost-effective feeds for small-scale mariculture operations be developed.

The inshore waters around Tanga and Kilwa are potentially deep waters that are sheltered from wave action with good water circulation due to the 4 m tidal range. These condition are ideal for cage culture of high value finfish. The small pelagic fishery in the areas offer the opportunity for feed provision and labour is available. The main elements that are lacking are a hatchery/laboratory, technology and expertise.

5. Objective:

By 2025 at high value farmed seafood from Tanga and Kilwa supplying tourism sector

6. Expected outputs:

The outputs of the action to support fish farming research and cage trials in Tanga and Kilwa are:

- Study tours for fisheries mariculture unit and IMS/TAFIRI aquaculture experts to Mauritius and Singapore completed
- New aquaculture candidate species for cage trials identified from local scoping studies
- Technology and expertise for cage culture of high value fish developed
- Design and construction of hatchery and nursery facilities completed
- Feasibility study for Tanga and Kilwa Aquaculture Training CentresRecruitment studies for mangrove crab completed
- Local acceptability of tilapia fish farming tested
- Tourism industry requirement and timing fully understood
- Potential for pearl oyster farming investigated
- Cost-effective feeds for small-scale mariculture operations developed
- Knowledge of where certain scales of aquaculture operations are suitable (applying ICZM perspectives) gathered and areas identified and zoned.
- Local capacity in fish farming developed so as to make meaningful technological contributions.

7. Activities:

- a) Project design and appraisal.
- b) Project tendering
- 1) Research for new aquaculture candidate species identified from local scoping studies

	1 7	lauritius and Singapore						
	3) Technology and expertise for cage culture of high value fish are developed4) Feasibility study for Tanga and Kilwa Aquaculture Training Centre completed							
	4) Feasibility study5) Recruitment	for Tanga and Kilwa Aquaculture Train	ing Centre completed					
	,	e identified and zoned.						
		studies for mangrove crab completed						
		ty of tilapia fish farming be tested						
		9) Tourism industry requirement and timing is fully understood						
		rl oyster farming investigated						
		eds for small-scale mariculture operation	s developed					
	12) Knowledge of w	here certain scales of aquaculture operat	ions are suitable					
		fish farming developed so as to make m	eaningful					
0.4	technological con							
8. Assumptions:		nment is committed to supporting the in	= -					
		, for the benefit of the population of Tang						
		esses are supportive of initiatives to impr						
9. Risks:		ble to participating in farmed fish trials a sinesses may object and managed to bloom						
	Local fishers and bu	. ,	.k tile project.					
10. Means of	Logistics,	Budgets for meetings						
implementation:	technical, scientific	Budgets for technical assistance						
		Access to fisheries data/information Laborate and labeled lines.						
		• Laboratory and hatchling nursery ed						
		• 10 fish cages (constructed locally or made)	imported ready-					
		Boat hire/purchase						
	• Fish feeds							
	•							
	Human Resources • Professional fish hatchery technician							
		Tanzania-based aquaculture experts						
		• Tropical fish farming experts (e.g. fr						
		Singapore/Mauritius)						
		Boatmen						
		• Assistants						
		Security						
		• Economist						
		•						
11. Budget estimate:	Item		Estimate in USD					
	Project preparation	and mobilisation	100,000					
	Project managemen	nt	200,000					
	Study visit to Maur	ritius/Singapore	50,000					
	Research into cage	site suitability	500,000					
		y of land/sea areas for diverse	100,000					
	fish/shellfish aqua							
	Survey of market r		50,000					
		hatchery and ponds identified (x2)	100,000					
	Facility designed a		2,000,000					
		ng and cultivating potential species	500,000					
		y techniques required for cage culture	100,000					
	Conducting fish ca	•	100,000					
		uitment of mangrove crab, tilapia	100,000					
		ity and smale-scale feed production	400.000					
	1 1	or Tanga and Kilwa Aquaculture	100,000					
	Training Centres							

	Equipment, supplies, personnel (hiring and 2,000,00	00							
	training/capacity building)								
	Total 6,000,00	00							
	The coarse budget does not provide for purchase of land for the								
	laboratory/hatchery; nor of costs associated with housing/removal of illegal								
	squatters etc. which are considered a government issue.								
12. Source of	Tanzania Government (budget, participation)								
funding:	 Private Sector (participation) 								
i diidiii 5.	NGOs (participation)								
	 Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilater 	1د•							
	assistance programmes	aı							
13. Responsible for		fic							
the action:	Strong Local Government fisheries development stakeholder with expert								
me action:	farming capable of effectively coordinating efforts:								
	• Institute of Marine Sciences (UDSM)								
	• TAFIRI, Mbegani								
	• NGOs								
	Private sector								
	•								
14. Beneficiary from	Local residents (over six million) plus foreign visitors (several thousand) in ter								
the action:	of improved mangrove forest, intertidal and coral reefs resources users (include	din							
	fishers) from reduced destructive fishing in coastal waters.								
	,								
	Indirect or long term beneficiaries will be the coastal populations at large that								
	through improved food quality will have bettered their opportunities for socio-								
	economic development without compromising sustainable natural resources a								
	environmental management reliability of fish, from enhanced aesthetic aspects	s o							
	the surrounding areas;								
15. Schedule:	Year 1	.0							
	Fish farming research and cage trials at	1							
	Tanga and Kilwa Project preparation and mobilisation								
	Project management Project management								
	Study visit to Mauritius/Singapore								
	Research into cage site suitability Survey of suitability of land'sea areas for								
	diverse fish/shellfish aquaculture								
	Survey of tourism industry requirements Site for laboratorythatchery and ponds								
	identified								
	Facility designed and constructed Research identifying and cultivating								
	potential species								
	Training in hatchery techniques required for cage culture								
	Conducting fish cage trials								
	Research into recruitment of mangrove crab, tilapia farming acceptability and smale-scale								
	feed production								
	Feasibility study for Pemba Aquaculture								
	Training Centre Equipment, supplies, personnel (hiring and								
	training/capacity building)								
16. Links to other	Links to following systemic actions would be desirable:								
actions:	Tan-S01: Integrated Coastal Zone Management								
	Tan-S04: Information Management								
	• Tan-S06: Awareness Raising								
	Tan-S07: Integrated Legal Review								
	Of particular relevance and importance would be links to following systemic and local actions:								
	• Tan-S02: Spatial Planning								
	• Tan-S02: Spatial Planning • Tan-S03: Shoreline Management								
	 Tan-S03: Shoreline Management Tan-L40: Fisheries sector review by fishery types and management areas 								
	I • Lan-I All: Highering sector review by tighery types and management areas								
	 Tan-L40: Tisieries sector review by fishery types and management areas Tan-L41: Small pelagic fisheries support on mainland Tanzania Tan-L42: Mainland Tanzania fisheries MCS programme 								

17. Performance indicators:	Increased and sustained fish catch per unit effort; improved quality of fish landed; stabilised fishing effort.
18. Comments:	Note: After initial successes have been recorded at developing cage and other fish and invertebrate farming production, the site would then have the potential to be expanded into a larger and broader aquaculture training facility.
	References:
	de Graaf, G. 2013. Rapid Assessment of Fisheries and Aquaculture Information Management System (FIMS) in mainland Tanzania and Zanzibar. First Draft Report. SWIOFish.
	Mmochi A.J. 2011. Overview of Aquaculture Activities in Tanzania. In Torell et al (eds). Mariculture in the WIO region - Challenges and Prospects. WIOMSA Book Series No. 11
	Torell, M., Hecht, T., Beveridge, M., Stead, S., Bryceson, I., Kautsky, N., Mmochi, A., Ollevier, F. (eds.) 2011. Mariculture in the WIO region - Challenges and Prospects. WIOMSA Book Series No. 11. viii + 59pp.
	Lesperance, A.D. 2011. Mariculture Development in Seychelles and other Western Indian Ocean Island States: An Overview of Challenges and Prospects. In Torell et al (eds). Mariculture in the WIO region - Challenges and Prospects. WIOMSA Book Series No. 11

Tan-L49: Beach erosion study for coastal Tanzania

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities, but also from oceanic and weather influences that are thought to be contributing to coastal erosion. The population of coastal districts has reached its highest ever and development pressures on the coastline have reached unprecedented levels.
	Many locations along the coasts, especially at the districts of Pangani, Muheza, Bagamoyo, Kinondoni, Kilwa and Mtwara, suffer from coastal erosion, which may be further worsened by sand mining conducted by local villagers, the tourism sector and building material suppliers, as well as by some of the measures taken by beach hotels to mitigate the impacts of erosion, namely inappropriate sea defences. The costs to the tourism sector is increasing.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Various studies have documented the changing beach levels and the loss of sand, which are particularly visibly along the beach fronts of Kinondoni where hotels and private residences have constructed a series of groynes to attempt to combat the problem of the northern drift of beach sand. Such attempts may exacerbate the problem. What is needed is a full understanding of the processes involved before measures can be taken.
2. Title:	Beach erosion study for mainland Tanzania
3. Action Reference:	Tan-L49
4. Justification:	Coastal erosion was ranked with severity value 5 for Bagamoyo, 4 for Temeke, Tanga, Pangani, Muheza, Mtwara Urban and Kinondoni, and level 3 for Ilala district. The remaining districts mostly scored a lesser threat values for erosion, between 1 and 2.
	With the potential sea level rise for the coastline, if left unattended, the erosion problem affecting these eight mainland districts will worsen with more severe costs, negative visual impact on the tourism sector, greater probability of sea water intrusion into agricultural and other land uses and the water table.
5. Objective:	By 2025, shoreline development planning and control adequately take erosion and accretion processes into account.
6. Expected	The outputs of the action to study erosion along the mainland coast of Tanzania
outputs:	 are: Understand the oceanographic and meteorological influences on the coastlines (to better understand beach erosion and means to address the problem) Shorelines under consideration are no longer eroded Shoreline under consideration effectively managed
7. Activities:	 a) Project design and appraisal. b) Project tendering 1) Study erosion/accretion processes along the coast and monitor and map changes. 2) Review, develop, implement and enforce relevant legislative/regulatory instruments addressing the shoreline.
	3) Re-habilitate and mitigate natural erosion soft barriers (mangroves, shoreline vegetation).

	1 · ·	beach management strategy.				
	5) Enforce illegal beach sand extraction					
		on of physical mitigation measures				
8. Assumptions:	The Tanzania Government is committed to supporting addressing the coastal erosion, enforcing relevant laws that impinge on the beaches, which are integral elements of integrated coastal zone management. Local residents and businesses are supportive of initiatives to understand and mitigate beach erosion.					
9. Risks:	Local residents and businesses may object and manage to block the project.					
10. Means of implementation:	scientific scientific • Satellite images • Marine instruments • Field surveys					
	Human Resources	 Oceanographers Civil and water engineers, Local planners Socio-economists, Resettlement specialists, 				
11. Budget estimate:	Item		Estimate in USD			
	Project preparation and	d mobilisation	200,000			
	7 -	ative/regulatory instruments	200,000			
		on processes along the coast and monitor	1,500,000			
	Review, develop, impl	ement and enforce relevant instruments addressing the shoreline	200,000			
	Re-habilitate natural en shoreline vegetation	rosion soft barriers (mangroves,)	3,000,000			
	Define and quantify co	osts for physical interventions	500,000			
	Develop and review be	each management strategy	1,000,000			
	Total		6,600,000			
	illegal squatters or land address beach sand extr	not provide for re-housing or other costs a -users, nor the implementation of legal me raction, which are considered government	asures to			
12. Source of funding:	 Tanzania Government Private Sector (particip NGOs (participation) Development Partners assistance programme 	pation) s (Technical Assistance budget). AfDB, WB	, EU, Bilateral			
13. Responsible for the action:	Strong Local Government department (e.g. DoE) capable of effectively coordinating efforts: • Contractors • NGOs • etc					
14. Beneficiary from the action:						

15. Schedule:		Year 1		Year 2		Year 3		Year 4		Year 5				
	Actions and Activities	Q1 Q2 Q3 Q4	Q1	Q2 Q3	Q4	Q1 Q2 Q3 Q4	Q1	Q2 Q3	Q4	Q1 Q2 Q3 Q4				
	Beach erosion study for mainland													
	Tanzania		l				ļ	Y						
	Project preparation and mobilisation	1 1 1			_		_							
	Project management						_		1	1 1				
	Study erosion/accretion processes						_							
	Review, develop, implementenforce laws													
	Re-habilitate natural erosion soft barriers						Г			1 1 1				
	Develop/review beach management strategy													
	Local capacity building													
16. Links to other actions:	Links to following systemic actions would be desirable:													
actions.	 Tan-S01: Integrated Coa 	astal Zone	Μa	anage	em	ent								
	• Tan-S04: Information M	[anagemer	nt											
		.,												
	• Tan-S06: Awareness Raising													
	Tan-S07: Integrated Legal Review													
	Of particular relevance and importance would be links to following systemic and													
	local actions:													
	Tan-S02: Spatial Planning													
	• Tan-S03: Shoreline Management													
	 Tan-L50: Kilwa Kisiwar 							ıdy						
17. Performance	 Beach erosion loss from 	unsustair	ıab	le lar	ıd '	use reduc	ed							
indicators:	Beach sand mining redu	ıced												
	 Local polices and guide 		hor	eline	la	nd use								
18. Comments:	1													

Tan-L50: Kilwa Kisiwani World Heritage Site erosion study

1. Background:	The coastal zone of mainland Tanzania is under development pressure from population growth and economic activities, but also from oceanic and weather influences that are thought to be contributing to coastal erosion. The population of coastal districts has reached its highest ever and development pressures on the coastline have reached unprecedented levels.						
	Many locations along the coasts, especially at the districts of Pangani, Muheza, Bagamoyo, Kinondoni, Kilwa and Mtwara, suffer from coastal erosion, which may be further worsened by sand mining conducted by local villagers, the tourism sector and building material suppliers, as well as by some of the measures taken by beach hotels to mitigate the impacts of erosion, namely inappropriate sea defences. The World Heritage Site of Kilwa Kisiwani has a well-documented erosion problem that has resulted in partial loss of the Portuguese Fort, one of the mina features of the monument.						
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.						
	At Kilwa Kisiwani a full understanding of the processes involved is needed before mitigation measures can be designed and implemented.						
2. Title:	Kilwa Kisiwani WHS erosion study						
3. Action Reference:	Tan-L50						
4. Justification:	Coastal erosion was ranked with severity value 5 for many coastal districts, though the relatively small area of Kilwa Kisiwani monument has not had an impact on the district threat, ranked at level 2. With the potential sea level rise for the coastline, if left unattended, the erosion problem affecting this site will worsen with more severe costs, negative visual impact on the tourism sector.						
	In 2004, the UNESCO (see note below) evaluation of factors affecting the site were:						
	Erosion and siltation/ deposition Financial resources						
	 Financial resources Identity, social cohesion, changes in local population and community Legal framework Management systems/ management plan Other Threats: Collapsing monuments due to lack of maintenance 						
	One of the recommendation of a recent study (Joint Word Heritage Centre / ICOMOS 2013) was " Commissioning of a report on the longer-term interventions required to permanently safeguard the Gereza, Mukutani beachfront mosque and Malindi Mosque".						
5. Objective:	By 2025, Kilwa Kisiwani shoreline erosion and accretion processes understood and mitigations measures designed.						
6. Expected outputs:	The outputs of the action to study erosion at Kilwa Kiswiani are: • Understand the oceanographic and meteorological influences on the coastline (to better understand beach erosion and means to address the problem) • Shorelines under consideration are no longer eroded • Shoreline under consideration effectively managed						

7. Activities:	a) Project design and ap	praisal.							
	b) Project tendering								
	changes.	ion processes along the coast and monitor	and map						
	• •	olement and enforce relevant legislative/re	aulatory						
	instruments addressi	**	gulatory						
		igate natural erosion soft barriers (mangro	ves, shoreline						
	vegetation).	igate natural crosson soft barriers (mangro	ves, snoremie						
		beach management strategy.							
	5) Enforce illegal beach								
	,	on of physical mitigation measures							
8. Assumptions:		ent is committed to supporting addressing	the coastal						
•		ant laws that impinge on the beaches, whic							
	elements of integrated c	oastal zone management. Local residents a	and businesses						
	ives to understand and mitigate beach eros	ion.							
9. Risks:	inesses may object and manage to block the	e project.							
10. Means of	Logistics, technical,	Modelling							
implementation:	scientific	Satellite images							
		Marine instruments							
		Field surveys							
	Human Resources • Oceanographers								
		Civil and water engineers,							
	Resettlement specialists,:								
11. Budget	Item		Estimate in						
estimate:		USD							
	Project preparation and	d mobilisation	200,000						
		ative/regulatory instruments	200,000						
		on processes along the coast and monitor	500,000						
	and map changes, loca								
		ement and enforce relevant	200,000						
	legislative/regulatory								
	Re-habilitate natural en	1,000,000							
	shoreline vegetation								
	Develop and review be	500,000							
	Capacity building	500,000							
	Total	3,100,000							
	The coarse budget does not provide for re-housing or other costs associated with								
	illegal squatters or land-users, nor the implementation of legal measures to								
	address beach sand extraction, which are considered government issues.								
12. Source of	Tanzania Government	(budget, participation)							
funding:	Private Sector (participation)	, ,							
	NGOs (participation)								
	• Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilateral								
	assistance programmes								
12 Dagmanaille fan	1 0								
13. Responsible for the action:		nt department capable of effectively coordi	nating efforts:						
ше асиоп:	World Heritage response	disidle authorities							
	ContractorsNGOs								
	→ INCTUS								
	• etc								
14. Beneficiary from the action:	• etc Local residents (several	thousand) plus foreign visitors (several the etic aspects of the surrounding areas; man							

intertidal and coral reefs resources users (including fishers) from reduced sedimentation loss and smothering within inshore coastal waters. Indirect or long term beneficiaries will be the coastal population at large and coastal developers, through improved coastal land stability which will better their opportunities for socio-economic development without compromising sustainable natural resources and environmental management. 15. Schedule: Year 4 Year 5 Q1 Q2 Q3 Q4 Q1 <u>Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4</u> **Actions and Activities** Beach erosion study for Kilwa Kisiwani **World Heritage Site** Project preparation and mobilisation Project management Study erosion/accretion processes Review, develop, implementenforce laws Re-habilitate natural erosion soft barriers Develop/review beach management strategy Local capacity building 16. Links to other Links to following systemic actions would be desirable: actions: • Tan-S01: Integrated Coastal Zone Management Tan-S04: Information Management Tan-S06: Awareness Raising • Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to following systemic and local actions: • Tan-S02: Spatial Planning • Tan-S03: Shoreline Management Tan-L49: Beach erosion study for mainland Tanzania 17. Performance • Beach erosion loss from unsustainable land use reduced indicators: Beach sand mining reduced Local polices and guidelines for shoreline land use 18. Comments: Note: the UNESCO Committee Decisions (32 COM 7A.14) on Ruins of Kilwa Kisiwani and Ruins of Songo Mnara (United Republic of Tanzania) (C 144), among 15 notes, specifically refer to erosion under: 6. Notes with concern the challenges faced by the property from climate change, leading to among others beach erosion; 7. Notes the danger posed to heritage by these challenges and their overwhelming nature; 8. Requests partners to continue to assist the State Party financially and technically to address these challenges; 9. Reiterates its request to the State party to use the management plan as the main vehicle for managing the site and for ensuring co-ordination of all activities affecting the property. Any initiative to support the study of erosion and mitigation would need to align with the UNESCO and other efforts to protect and maintain the WHS. A recent UNESCO/French Cooperation project included in minor intervention aimed at shoring up the beach walls close to the fort where they had been eroded, through the intervention is limited and does not address on-going erosion to the monuments. Reference: Joint Word Heritage Centre / ICOMOS Reactive Monitoring Mission Ruins of Kilwa Kisiwani and Ruins of Songo Mnara - Tanzania 11 to 18 December 2013

Tan-L51: Waste oil treatment facility for Tanga, Dar es Salaam and Mtwara harbours

1. Background:	The coastal zone of Tanzania is under development pressure from population growth and economic activities, but also from oceanic and weather influences that are thought to be contributing to coastal erosion. The population of Unguja has reached its highest ever and development pressures on the coastline have
	reached unprecedented levels.
	The largest marine ports in the country are, in order of traffic, Dar es Salaam, Tanga and Mtwara. Other smaller ports include Lindi, Kilwa and Mafia. None of these ports have adequate waste oil handling facilities. With the advent of oil and gas exploration in the coastal zone has raised the issue of oil waste handling, resulting in waste oil being transported by barge to neighbouring Mombasa in Kenya. The environmental risks associated with inadequate handling of waste oil and the added costs of transportation to Kenya are high and opportunities are lost to Tanzania.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	All three harbours are presently witnessing increased vessel traffic with the increased risk of oil contamination to the marine and coastal environment due to lack of handling facilities. The traffic at these harbours is seen as likely to continue to increase in the future.
2. Title:	Waste oil treatment facility for Tanga, Dar es Salaam and Mtwara harbours
3. Action Reference:	Tan-L51
514. Justification:	Marine pollution were both identified as severity level 4, for Tanga Urban District, pollution sources including uncontrolled dumping (particularly in creeks), as well as from lack of toilets and sewage systems.
	Decline in fisheries, regarded as a threat of level 5, are also attributed to loss of fish nurseries like mangrove forests, themselves affected by pollution from the various sources.
5. Objective:	By 2025, Tanga, Dar es Salaam and Mtwara harbours equipped efficient and safe waste oil handling and treatment facilities and personnel qualified to operate the facilities.
6. Expected outputs:	The outputs of the action to install a oil waste collection and processing facility
	serving Tanga, Dar es Salaam and Mtwara harbours are:
	Fully operational waste oil collection and processing plant. Effective and questionable waste oil collection gystems in place.
	 Effective and sustainable waste oil collection systems in place. Reduced waste oil discharged to sea and washed up along the coast.
	Local LGA capable of managing the waste oil system.
7. Activities:	a) Project design and appraisal.
	b) Project tendering
	1) Initial studies, design and engineering associated with waste oil handling and processing facility: review and develop existing waste oil system
	infrastructure (and relevant legislative/regulatory instruments) and develop,
	and implement a waste oil master plan for harbours in Tanga, Dar es Salaam
	and Mtwara. 2) Project management (includes construction management)
	2) Project management (includes construction management)3) Waste processing site acquisition: acquisition of building plot, brokers,
	notaries, taxes.

8. Assumptions:	ess roads, power supply s, compactors, incinerators, re-cycling bund work, cables, roads mechanical, contingency. (hiring and training/capacity building independent) ment is committed to supporting the clear	g in solid waste							
		p their coastal environment.							
9. Risks:		sinesses may object and manage to block	k the project.						
10. Means of implementation:	Logistics, technical, scientific	 Budgets for meetings Budgets for technical assistance Access to information Green-green 	infrastructure						
	Human Resources	Project managersCivil and water engineersSocio-economists, re-settlement spec	ecialists						
11. Budget	Item		Estimate in USD						
estimate:	Project preparation	and mobilisation	100,000						
	Initial studies, desig		200,000						
	Project management	1,000,000							
	Site acquisition: Account notaries, taxes.	na							
		ess roads, power supply	5,000,000						
	Site preparation: De etc.	1,000,000							
	Construction: civil, 1	mechanical, etc., Contingency.	15,000,000						
	Supplies, personnel building)	2,000,000							
	Total 24,300,000 The coarse budget does not provide for site acquisition, re-housing or other costs associated with illegal squatters or land-users, which are considered a government issue.								
12. Source of funding:	Private Sector (partiNGOs (participation)	n) ers (Technical Assistance budget). AfDE	s, WB, EU, Bilateral						
13. Responsible for the action:	coordinating efforts:	ment department (e.g. DoE) capable of e	ffectively						
14. Beneficiary from the action:	Local residents (several million) plus foreign visitors (several thousand) in terms of enhanced aesthetic aspects of the surrounding areas; mangrove forest, intertidal and coral reefs resources users (including fishers) from reduced sedimentation loss and smothering within inshore coastal waters.								
	Indirect or long term beneficiaries will be the coastal population at large and coastal developers, through improved coastal land stability which will better								

	their opportunities for socio sustainable natural resource		-		-	omising
15. Schedule:	Actions and Activities Waste oil treatment facility, Tanga, Dar es Salaam and Mtwara harbours Project preparation and mobilisation Initial studies, design and engineering, Project management (includes construction management) Site acquisition: Acquisition of building plot, brokers, notaries, taxes. Infrastructure: Access roads, power supply Site preparation: Demolishing, ground work, & cables, etc. Construction: civil, mechanical, etc., Contingency. Supplies, personnel (hiring and training/capacity building)	Year 1	Year 2	Year 3	Year 4	Year 5 3 Q4 Q1 Q2 Q3 Q
16. Links to other actions:	Links to following systemic Tan-S01: Integrated Coas Tan-S04: Information Ma Tan-S06: Awareness Rais Tan-S07: Integrated Lega Of particular relevance and and local actions: Tan-S02: Spatial Planning Tan-S03: Shoreline Mana Tan-L12: Sewage treatme Tan-L16: Sewage treatme	tal Zone M nagement ing I Review importanc gement ent facility ent facility	anagemen e would be for Tanga for Ilala	t e links to City	following	systemic
17. Performance indicators: 18. Comments:	 Tan-L52: Bagamoyo town Beach erosion loss from the Beach sand mining reduce Local polices and guidelier Alignment of this propose 	unsustainab ced nes for sho	reline land	l use		g toxic and
	chemical wastes is recommaccident prevention and pre UNEP, focused on capacity Laboratory Agency (GLCA	eparedness and imple	programn mentation,	ne for Tai	nzania" su	ipported by

Tan-L52: Turtle and nesting beach protection at Pangani District

1. Background:	The coastal zone of Tanzania is under development pressure from population growth and economic activities, but also from oceanic and weather influences that are thought to be contributing to coastal erosion. The population of the Tanga Region has reached its highest ever and development pressures on the coastline have reached unprecedented levels. Many locations along the coasts, at Pangani, suffer from coastal erosion, which may be further worsened by sand mining conducted by local villagers, the tourism sector and building material suppliers, as well as by some of the
	measures taken by beach hotels to mitigate the impacts of erosion, namely inappropriate sea defences. In Pangani District marine turtle nesting has been on the decline from loss of nesting beaches, from harvest of eggs and slaughter of females, and from loss of foraging grounds due to sedimentation and other causes.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	Maziwe Island was known for green, hawksbill and Olive Ridley turtle nesting in the 1970s. Although it is covered by water during high tide it is still a natural nesting site and turtles still frequent the area (see USAID, 2012). Madete beach, within Saadani NP, is a second very important turtle nesting site in Pangani (Wells et al., 2004). Tagging of a female green turtle from a Pangani beach revealed, during the first 78 days, important data on inter-nesting movement patterns and the home range of a gravid female who remained within 15 km of her nesting beach, suggesting it is likely that she went on to lay several more nests around the Panagani area after she was tagged (Seasense, 2014).
	With United States Agency for International Development (USAID) funding, the Pwani Project, led by the Coastal Resources Center at the University of Rhode Island and its local partner, Sea Sense, changed attitudes and behaviors of villagers living and working along the coastline of Pangani. Since 2009, local communities have recorded a progressively increasing number of sea turtle nests and hatchings. This effort has faltered through lack of funding and needs to be continued.
2. Title:	Turtle and nesting beach protection at Ushongo, Pangani District
3. Action Reference:	Tan-L52
4. Justification:	Along Ushongo beaches in Pangani and other sandy beaches and dune areas, the loss of turtle nesting and scale of slaughter was ranked at severity level 4. Other threats to turtles in this area include erosion, also ranked with severity value 4, with causes listed as due to mangrove cutting, dynamite fishing, beach sand mining and climate change.
	With the potential sea level rise for the coastline, if left unattended, the erosion problem affecting Pangani's coast will worsen, and without a concerted effort at protecting the nesting sites and sensitising local communities on the legal issues of turtle harvest and potential tourism losses, sea turtle populations in this areas a certain to continue to decline. This will also have a negative impact on the tourism sector.

5. Objective:	By 2025, turtle nesting and foraging in Pangani district coastal wat	ters ensured							
C.F. (1	with numbers increasing.								
6. Expected	The outputs of the action to protect turtle nesting at Ushongo, Pan	-							
outputs:	Understanding of the turtle nesting opportunities in Ushongo a Proportional	nd the wider							
	Pangani coast.								
	Local team of beach recorders involved in monitoring beaches a	ind increasing							
	local awareness								
	Turtle nesting success increases with time								
	 A Pangani turtle nesting management strategy is developed and accommodal stakeholders. 								
= 4									
7. Activities:	a) Project design and appraisal.								
	b) Project tendering								
	1) Study nesting and turtle movement data	. 1							
	2) Review, develop, implement and enforce turtle nesting protecti	ion and							
	awareness programme.								
0. A	3) Develop and review Pangani turtle nesting management strates								
8. Assumptions:	The Tanzania Government is committed to supporting protecting								
	species, enforcing relevant laws that impinge on the beaches, which								
	elements of integrated coastal zone management. Local residents	and businesses							
9. Risks:	are supportive of initiatives to protect sea turtles.								
	Local residents and businesses may object and manage to block th	e project.							
10. Means of	Logistics, technical, • Field surveys								
implementation:	scientific •								
	Human Resources • Turtle experts								
	Local beach recorders								
	Legal officers								
	•								
11. Budget	Item	Estimate in							
estimate:		USD							
	Project preparation and mobilisation	20,000							
	Study nesting and turtle movement data (1 year)	20,000							
	Review, develop, implement and enforce turtle nesting	100,000							
	protection and awareness programme (3 years)								
		10,000							
	Develop and review Pangani turtle nesting management								
	Develop and review Pangani turtle nesting management strategy (by year 2)	,							
		20,000							
	strategy (by year 2)								
12. Source of	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total	20,000							
12. Source of funding:	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total Tanzania Government (budget, participation)	20,000							
	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total • Tanzania Government (budget, participation) • Private Sector (participation)	20,000							
	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total Tanzania Government (budget, participation) Private Sector (participation) NGOs (participation)	20,000							
	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total • Tanzania Government (budget, participation) • Private Sector (participation)	20,000							
	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total • Tanzania Government (budget, participation) • Private Sector (participation) • NGOs (participation) • Development Partners (Technical Assistance budget). AfDB, WB assistance programmes	20,000 200,000 3, EU, Bilateral							
funding:	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total • Tanzania Government (budget, participation) • Private Sector (participation) • NGOs (participation) • Development Partners (Technical Assistance budget). AfDB, WB assistance programmes Strong Local Institution or NGO capable of effectively coordinating	20,000 200,000 3, EU, Bilateral							
funding: 13. Responsible for	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total • Tanzania Government (budget, participation) • Private Sector (participation) • NGOs (participation) • Development Partners (Technical Assistance budget). AfDB, WB assistance programmes Strong Local Institution or NGO capable of effectively coordinatin • Turtle conservation experts	20,000 200,000 3, EU, Bilateral							
funding: 13. Responsible for	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total • Tanzania Government (budget, participation) • Private Sector (participation) • NGOs (participation) • Development Partners (Technical Assistance budget). AfDB, WB assistance programmes Strong Local Institution or NGO capable of effectively coordinatin • Turtle conservation experts • Community participation experts	20,000 200,000 3, EU, Bilateral							
funding: 13. Responsible for	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total Tanzania Government (budget, participation) Private Sector (participation) NGOs (participation) Development Partners (Technical Assistance budget). AfDB, WB assistance programmes Strong Local Institution or NGO capable of effectively coordinatin Turtle conservation experts Community participation experts Local beach recorders	20,000 200,000 3, EU, Bilateral							
funding: 13. Responsible for the action:	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total Tanzania Government (budget, participation) Private Sector (participation) NGOs (participation) Development Partners (Technical Assistance budget). AfDB, WB assistance programmes Strong Local Institution or NGO capable of effectively coordinatin Turtle conservation experts Community participation experts Local beach recorders etc	20,000 200,000 3, EU, Bilateral ag efforts:							
funding: 13. Responsible for	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total Tanzania Government (budget, participation) Private Sector (participation) NGOs (participation) Development Partners (Technical Assistance budget). AfDB, WB assistance programmes Strong Local Institution or NGO capable of effectively coordinatin Turtle conservation experts Community participation experts Local beach recorders etc Local residents (several million) plus foreign visitors (several thou	20,000 200,000 3, EU, Bilateral g efforts:							
funding: 13. Responsible for the action: 14. Beneficiary	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total • Tanzania Government (budget, participation) • Private Sector (participation) • NGOs (participation) • Development Partners (Technical Assistance budget). AfDB, WB assistance programmes Strong Local Institution or NGO capable of effectively coordinatin • Turtle conservation experts • Community participation experts • Local beach recorders • etc Local residents (several million) plus foreign visitors (several thou of enhanced aesthetic aspects of the surrounding areas through the	20,000 200,000 3, EU, Bilateral g efforts:							
funding: 13. Responsible for the action: 14. Beneficiary	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total • Tanzania Government (budget, participation) • Private Sector (participation) • NGOs (participation) • Development Partners (Technical Assistance budget). AfDB, WB assistance programmes Strong Local Institution or NGO capable of effectively coordinatin • Turtle conservation experts • Community participation experts • Local beach recorders • etc Local residents (several million) plus foreign visitors (several thou of enhanced aesthetic aspects of the surrounding areas through the nesting sea turtles.	20,000 200,000 2, EU, Bilateral ag efforts: asand) in terms e presence of							
funding: 13. Responsible for the action: 14. Beneficiary	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total • Tanzania Government (budget, participation) • Private Sector (participation) • NGOs (participation) • Development Partners (Technical Assistance budget). AfDB, WB assistance programmes Strong Local Institution or NGO capable of effectively coordinatin • Turtle conservation experts • Community participation experts • Local beach recorders • etc Local residents (several million) plus foreign visitors (several thou of enhanced aesthetic aspects of the surrounding areas through the nesting sea turtles. Indirect or long term beneficiaries will be the coastal population as	20,000 200,000 2, EU, Bilateral g efforts: asand) in terms e presence of t large and							
funding: 13. Responsible for the action: 14. Beneficiary	strategy (by year 2) Supplies, personnel (hiring and training/capacity building) Total • Tanzania Government (budget, participation) • Private Sector (participation) • NGOs (participation) • Development Partners (Technical Assistance budget). AfDB, WB assistance programmes Strong Local Institution or NGO capable of effectively coordinatin • Turtle conservation experts • Community participation experts • Local beach recorders • etc Local residents (several million) plus foreign visitors (several thou of enhanced aesthetic aspects of the surrounding areas through the nesting sea turtles.	20,000 200,000 2, EU, Bilateral ag efforts: asand) in terms be presence of t large and anformed							

	development without compromising sustainable natural resources and												
4.01.11	environmental management.												
15. Schedule:	Year 1 Year 2 Year 3 Year 4												
	Actions and Activities Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4												
	Turtle and nesting protection Pangani												
	Project preparation and mobilisation												
	Study nesting and turtle movement data												
	(1 year)												
	Review, develop, implement and enforce turtle nesting protection and awareness												
	programme (3 years)												
	Develop and review Pangani turtle												
	nesting management strategy (by year												
	Supplies, personnel (hiring and												
	training/capacity building)												
16. Links to other	Links to following systemic actions would be desirable:												
actions:	T 001 I 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1												
	Tan-S01: Integrated Coastal Zone Management												
	Tan-S04: Information Management												
	• Tan-S06: Awareness Raising												
	Tan-S07: Integrated Legal Review												
	Tan-S09: Support for Tourism Management Planning												
	Of particular relevance and importance would be links to following systemic and												
	local actions:												
	Tan-S02: Spatial Planning												
	Tan-So2: Spatial Flaithing Tan-So3: Shoreline Management												
	Tan-L49: Beach erosion study for coastal Tanzania												
17. Performance	Turtle nesting increased												
indicators:	9												
marcators.	Number of hatchings from Panagani increased												
	Number of slaughtered nesting females reduced												
	Numbers of turtles caught in local fishing gears reduced												
	Local network of beach recorders engaged an participating in monitoring and												
	community awareness raising												
18. Comments:	Note: An initiative related to marine turtles in Tanzania needs to be aligned with												
	current efforts under the dedicated turtle-conservation NGO Sea Sense												
	(www.seasense.org).												
	References:												
	Sea Sense, 2014. Annual Report.												
	-												
	USAID 2012. USAID/Tanzania Quarterly Report, Q4 Reporting period: July 1-Sept 30, 2012 Project Name: Conservation of Coastal Eco-Systems in Tanzania: The PWANI Project.												
	Wells, S., Juma, S., Muhando, C., Makota, V. and Agardy, T. 2004. Study on the Ecological Basis for Establishing a System of Marine Management Areas in The United Republic of Tanzania: Options for an MPA/MMA Network. Report prepared for the WORLD BANK, Tanzania Office. Vol 1 (58 pp) and Vol 2 (30 pp).												

Tan-L53: Bagamoyo town planning

1. Background:	The coastal zone of Tanzania is under development pressure from population growth and economic activities, a phenomenon that is particularly acute in the Bagamoyo district. The of Bagamoyo exceeds 310,000 and the district has experienced a high average annual growth rate between 2002 and 2012 of 3.45 % leading to more than 42.30 % increase of the population over the ten-year period and documenting a significant in-migration. The population density in the district has grown to 37 persons/km2 in 2012 from 26 persons/km2 of 2002.
	Agriculture is the main economic activity in Bagamoyo District. Other economic activities in the area include fisheries, livestock keeping, tourism, trade, and small-scale industries. In 2011, Bagamoyo's Economic Processing Zone (EPZ) operators exported products worth more than USD 380 million, compared with USD 130 million-worth of exports in 2010. Processing activities are grouped in three main categories. These are agro products (fruits, textiles, cotton lint); precious minerals (lapidary), and leather industry products.
	Over recent years, Bagamoyo has served as the expansion area, which is absorbing the rapid growth of neighbouring Dar es Salaam city. This has lead to numerous conflicts of land use with the main feature being the loss of agricultural land for human settlements. The growth has been so fast and continuous that the local authorities have been unable to direct development efficiently.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	The solution to unplanned development and land use is to first conduct a land use plan for the town of Bagamoyo, mindful of the likely continued need for settlement areas as the population will most likely continue to grow. New access roads and the planned new harbour at Bagamoyo will accelerate the process.
2. Title:	Bagamoyo town planning
3. Action Reference:	Tan-L53
4. Justification:	For Bagamoyo District, the loss of habitat and agricultural area was a threat ranked at the highest severity level 5. Causes include rapid urbanization, high increase of people immigration in the city. This action addresses the problem of land management in Bagamoyo, particularly the town and coastal areas. It will make recommendations that the district authorities can use to mitigate the problems they currently face.
5. Objective:	By 2025, the town planning of Bagamoyo is developed and implemented resulting in reduction in conflicts and loss of agricultural land to settlement.
6. Expected	The outputs of the action to protect turtle nesting at Ushongo, Pangani, are:
outputs:	 Understanding of the issues associated with Bagamoyo town land use Mapping of appropriate land uses Development of a Bagamoyo Town Land Use Plan Local district staff trained in mapping and implementation of the Bagamoyo Town Land Use Plan Agricultural land losses due to settlement decreases
7. Activities:	a) Project design and appraisal. b) Project tendering

	1) Study Ragamovo lan	d 1150 data								
	1) Study Bagamoyo land use data 2) Doyylon and rayiow Bagamoyo Toyyo Land Use Plan									
	2) Develop and review Bagamoyo Town Land Use Plan3) Train local district staff in the implementation and enforcement of the									
	Bagamoyo Town Lar		i or the							
8. Assumptions:		ent is committed to supporting addressing	coastal land							
o. 1133umptions.		evant laws that impinge on the land, which								
	0	coastal zone management. Local residents	•							
		ives to understand and mitigate land use c								
	loss of agricultural land		omice and							
9. Risks:		inesses may object and manage to block th	e project.							
10. Means of										
implementation:										
-	Human Resources	Field surveysCivil and water engineers,								
		Local planners								
		Socio-economists,								
		Resettlement specialists								
		• Resettlement specialists								
11. Budget	Item	1	Estimate in							
estimate:	Ttelli		USD							
	Project preparation and	50,000								
	Study Bagamoyo land	100,000								
		Develop and review Bagamoyo Town Land Use Plan								
		f to implement and enforce the	100,000							
	Bagamoyo Town Land Use Plan									
		iring and training/capacity building)	50,000							
	Total	0, 1 3 0,	400,000							
		not provide for re-housing or other costs a								
	illegal squatters or land-users, nor the implementation of legal measures to									
	address illegal land occupation, which are considered government issues.									
12. Source of	Tanzania Government									
funding:	Private Sector (participation)	, , ,								
	• NGOs (participation)									
	• Development Partners (Technical Assistance budget). AfDB, WB, EU, Bilateral									
	assistance programmes									
13. Responsible for	1 0	nt department capable of effectively coord	inating efforts:							
the action:	Bagamoyo District At		U							
	Contractors									
	• NGOs									
	• etc									
14. Beneficiary		million) plus foreign visitors (several thou	sand) in terms							
from the action:	,	spects of the surrounding areas; agricultura	*							
		from reduced loss from settlements.								
	Indirect or long term be	neficiaries will be the coastal population a	t large and							
	S	ugh improved land use stability which wi	O							
		economic development without compromi								
		urces and environmental management.	اکسانی							
	Jastamable natural leso	arces and environmental management.								

15. Schedule:		Π	Yea					ır 2				ar 3			Year		Т		ear 5	
	Actions and Activities	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2 (Q3 ()4 (11 Q	2 Q	3 Q4
	Urban Planning Bagamoyo	_										Y							<u>-</u>	
	Project preparation and mobilisation	H									ļ	ļ								
	Study Bagamoyo land use data (1 year)	ļ								_								-		
	Develop and review Bagamoyo Town Land Use Plan																			
	Train local district staff to implement and enforce the Bagamoyo Town Land Use	1																		
	Supplies, personnel (hiring and training/capacity building)																			
16. Links to other	Links to following systemic	ac	tio	ns v	wo	ulc	d b	e d	les	ira	ble	<u>):</u>								
actions:	• Tan-S01: Integrated Coas	tal	Zo	ne	Ma	ana	ige	me	ent	:										
	Tan-S04: Information Management																			
	• Tan-S06: Awareness Raising																			
	Tan-S07: Integrated Legal Review																			
	Tan-S09: Support for Tourism Management Plannibng																			
	Of particular relevance and importance would be links to following systemic and local actions:																			
	Tan-S02: Spatial Planning																			
	Tan-S03: Shoreline ManagementTan-L54: Mangrove rehabilitation at Bagamoyo																			
	Ü						_		_											
17. Performance	Loss of agricultural land	fro	m 1	uns	sus	tai	na	ble	la	nd	us	se r	ed	uce	ed					
indicators:	Conflict over land use rec	duc	ced																	
	Local polices and guideling	nes	s fo	r la	inc	l us	se													
18. Comments:																				

Tan-L54: Mangrove rehabilitation at Bagamoyo District

1. Background:	The coastal zone of Tanzania is under development pressure from population growth and economic activities, a phenomenon that is particularly acute in the Bagamoyo district. The of Bagamoyo exceeds 310,000 and the district has experienced a high average annual growth rate between 2002 and 2012 of 3.45 % leading to more than 42.30 % increase of the population over the ten-year period and documenting a significant in-migration. The population density in the district has grown to 37 persons/km2 in 2012 from 26 persons/km2 of 2002.
	Agriculture is the main economic activity in Bagamoyo District. Other economic activities in the area include fisheries, livestock keeping, tourism, trade, and small-scale industries. In 2011, Bagamoyo's Economic Processing Zone (EPZ) operators exported products worth more than USD 380 million, compared with USD 130 million-worth of exports in 2010. Processing activities are grouped in three main categories. These are agro products (fruits, textiles, cotton lint); precious minerals (lapidary), and leather industry products.
	Over recent years, Bagamoyo has serves as the expansion areas, which is absorbing the rapid growth of neighbouring Dar es Salaam city. This has lead to numerous conflicts of land use with the main feature being the loss of agricultural land for human settlements. Loss and degradation of mangrove forests in Bagamoyo has accompanied the expansion of the town. The growth has been so fast and continuous that the local authorities have been unable to direct development efficiently.
	The Government of Tanzania with World Bank assistance has through the project "Investment Prioritisation for Resilient Livelihoods and Ecosystems in Coastal Zones of Tanzania" embarked on identifying and prioritising threats with the view of developing fundable adaptation measures to address the most pertinent threats.
	The solution to unplanned development and land use is to first conduct a land use plan for the town of Bagamoyo, mindful of the likely continued need for settlement areas as the population will most likely continue to grow. New access roads and the planned new harbour at Bagamoyo will accelerate the process. This issue of land use planning is addressed under proposed action Tan-L52 (above). The present action addresses the need to reinstate lost or degraded mangrove forests.
2. Title:	Mangrove rehabilitation at Bagamoyo District
3. Action	Tan-L54
Reference:	Local management in Programme and Advistagement of the Control of
4. Justification:	Loss of mangrove forest in Bagamoyo was ranked with severity value 3, with sites including Utondwe creek, Wami and Ruvu River mouth, Bagamoyo Town to Mpiji River mouth. Causes included illegal and uncontrolled cutting of mangroves and salt production.
	Furthermore, a threat associated with coastal erosion at Bagamoyo was ranked at severity level 5, the highest, due to mangrove cutting, dynamite fishing, beach sand mining and unplanned construction along the coast. Meanwhile the decline in fisheries, ranked at severity level 4, is also attributed, among other things, to mangrove habitat loss.
	With the constant increasing population of Bagamoyo, and the potential sea level rise for the coastline, if left unattended, mangrove forest loss will contribute to more coastal erosion, continued reduction ion fisheries productivity, and a negative visual impact on the tourism sector.

5. Objective:	By 2025, shoreline development planning and control adequately t	ake erosion	
6 Françoito d	and accretion processes into account.		
6. Expected	The outputs of the action to rehabilitate mangrove forests at Bagan	noyo, are:	
outputs:	Quantifying the area under threat		
	Development of a local team of mangrove restoration workers involved in		
	rehabilitation and monitoring mangroves and increasing local av	wareness	
	Mangrove forest cover loss is decreased.		
	A Bagamoyo mangrove forest management strategy is develope	d and	
— A	accepted by local stakeholders.		
7. Activities:	a) Project design and appraisal.		
	b) Project tendering		
	1) Study and survey mangrove forest data and present condition		
	2) Develop and review a Bagamoyo mangrove forest management		
	3) Have the Bagamoyo mangrove forest management strategy acco	epted by local	
	stakeholders		
	4) Rehabilitate degraded mangrove forest areas		
	5) Implement and enforce mangrove protection and awareness pro		
	6) Develop local capacity to continue mangrove protection in Baga		
8. Assumptions:	The Tanzania Government is committed to supporting protecting of		
	enforcing relevant laws that impinge on such protection, which are		
	elements of integrated coastal zone management. Local residents a	and businesses	
	are supportive of initiatives to protect mangroves.		
9. Risks:	Local residents and businesses may object and manage to block the	e project.	
10. Means of	Logistics, technical, • Modelling		
implementation:	scientific • Satellite images		
	Marine instruments		
	• Field surveys		
	Human Resources • Mangrove foresters		
	• Local planners		
	• Socio-economists		
	•		
11. Budget	Item	Estimate in	
estimate:		USD	
	Project preparation and mobilisation	50,000	
	Study and survey mangrove forest data and present condition	500,000	
	Develop and review a Bagamoyo mangrove forest	100,000	
	management strategy	,	
	Bagamoyo mangrove forest management strategy accepted by	100,000	
	local stakeholders		
	Rehabilitate degraded mangrove forest areas	100,000	
	8-2		
	Implement and enforce mangrove protection and awareness	50,000	
	programme		
	Supplies, personnel (hiring and training/capacity building)	100,000	
	Total	5,500,000	
	1000	accepted with	
		ssociated with	
	The coarse budget does not provide for re-housing or other costs a		
	The coarse budget does not provide for re-housing or other costs a illegal squatters or land-users, nor the implementation of legal mea	asures to	
	The coarse budget does not provide for re-housing or other costs a illegal squatters or land-users, nor the implementation of legal mea address unauthorised mangrove harvest, or pollution, which are co	asures to	
12. Source of	The coarse budget does not provide for re-housing or other costs a illegal squatters or land-users, nor the implementation of legal mea address unauthorised mangrove harvest, or pollution, which are congovernment issues.	asures to	
	The coarse budget does not provide for re-housing or other costs a illegal squatters or land-users, nor the implementation of legal mea address unauthorised mangrove harvest, or pollution, which are considered government issues. • Tanzania Government (budget, participation)	asures to	
	The coarse budget does not provide for re-housing or other costs a illegal squatters or land-users, nor the implementation of legal mean address unauthorised mangrove harvest, or pollution, which are considered government issues. • Tanzania Government (budget, participation) • Private Sector (participation)	asures to	
12. Source of funding:	The coarse budget does not provide for re-housing or other costs a illegal squatters or land-users, nor the implementation of legal mea address unauthorised mangrove harvest, or pollution, which are considered government issues. • Tanzania Government (budget, participation)	asures to onsidered	

13. Responsible for the action: 14. Beneficiary from the action:	Strong Local Government department capable of effectively coordinating efforts: • Forestry Department • District mangrove officer • Contractors • NGOs • etc Local residents (several million) plus foreign visitors (several thousand) in terms of enhanced aesthetic aspects of the surrounding areas; mangrove forest,		
	intertidal and coral reefs resources users (including fishers) from reduced sedimentation loss and smothering within inshore coastal waters. Indirect or long term beneficiaries will be the coastal population at large and coastal developers, through improved coastal land stability which will better their opportunities for socio-economic development without compromising sustainable natural resources and environmental management.		
15. Schedule:	Year 1 Year 2 Year 3 Year 4 Actions and Activities Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q1 Q2 Q3 Q4 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1 Q1		
	Mangrove rehabilitation Bagamoyo Project preparation and mobilisation Study and survey mangrove forest data and present condition Develop and review a Bagamoyo mangrove forest management strategy Bagamoyo mangrove forest management strategy accepted by local stakeholders Rehabilitate degraded mangrove forest areas Implement and enforce mangrove protection and awareness programme Supplies, personnel (hiring and training/capacity building)		
16. Links to other actions: 17. Performance	Links to following systemic actions would be desirable: • Tan-S01: Integrated Coastal Zone Management • Tan-S04: Information Management • Tan-S06: Awareness Raising • Tan-S07: Integrated Legal Review Of particular relevance and importance would be links to following systemic and local actions: • Tan-S02: Spatial Planning • Tan-S03: Shoreline Management • Tan-S08: Support for NEMC • Tan-L53: Bagamoyo town planning • Mangrove loss from unsustainable land use reduced		
indicators:	 Fisheries reduction reduced Local polices and guidelines for shoreline land use 		
18. Comments:	7		