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Project Document
Cover Page

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ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
AFR100	African Forest Landscape Restoration Initiative
ALAP	African Landscapes Action Plan
ARI	African Rice Initiative
ARLI	African Resilient Landscapes Initiative
ASA	Agricultural Seed Agency
ASARECA	Agricultural Research in Eastern and Central Africa
BOT	Bank of Tanzania
CAADP	Africa Agriculture Development Programme
CAMARTEC	Centre for Agricultural Mechanization and Rural Technology
CARD	Coalition for African Rice Development
CBD	Convention on Biodiveristy
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COFMA	Community Forest Management Agreements
CoL	Commission of Lands (Zanzibar)
CSO	Civil Society Organisation
DCP	Development Corridors Partnership
DED	District Executive Director
DFID	Department for International Development
DFNR	Department for Non-Renewable Natural Resources
DoE	Division of Environment
EAC	Eastern African Community
ERPP	Expanding Rice Production Project
ESMF	Environmental and Social Monitoring Framework
ESMP	Environmental and Social Management Plans
ESSF	Environmental and Social Safeguards Framework
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
FARA	Forum for Agricultural Research in Africa
FBD	Forest and Beekeeping Division
FLR	Forest Landscape Restoration

FOLUR	Food Systems, Land Use and Restoration
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GEB	Global Environment Benefit
GEF	Global Environment Fund
GHG	Greenhouse Gas
GIS	Geographic Information System
GRM	Grievance Redress Mechanism
HCV	High Conservation Value
IFAD	International Fund for Agriculture Development
IGG	Integrated Green Growth
ILM	Integrated Landscape Management
IRA	Institute for Resource Assessment
IUCN	International Union for the Conservation of Nature
IWRM	Integrated Water Resources Management
IWRMP	Integrated Water Resources Management Development Plan
JICA	Japan International Cooperation Agency
KM	Knowledge Management
LAC	Landscape Advisory Committee
LCU	Landscape Coordination Unit
LDBA	Climate Change, Biodiversity and Land Degradation program of the African Union
LGA	Local Government Authorities
M&E	Monitoring and Evaluation
MELKM	Monitoring, Evaluation, Learning & Knowledge Management
MAINRL	Ministry of Agriculture, Irrigation, Natural Resources and Livestock
MFP	Ministry of Finance and Planning
MLHHS	Ministry of Lands, Housing and Human Settlements Developments
MLHWE	Ministry of Lands, Housing, Water and Energy
MNRT	Ministry of Natural Resources and Tourism
MoA	Ministry of Agriculture
MOU	Memorandum of Understanding
MoWI	Ministry of Water and Irrigation
NAFORMA	National Forest Resources Monitoring and Assessment

NCMC	National Carbon Monitoring Center
NDC	Nationally Determined Contribution to the UNFCCC
NLUPC	National Land Use Planning Commission
PES	Payment-for-Ecosystem-Services
PMU	Project Management Unit
PO-RALG	President's Office-Regional Administration and Local Government
PPG	Project Preparation Grant
PSC	Project Steering Committee
RBWB	Rufiji Basin Water Board
RCT	Rice Council of Tanzania
REGROW	Resilient Natural Resource Management for Tourism and Growth Project
RESUPPLY	Restoration in Supply chains Project
ROAM	Restoration Opportunities Assessment Methodology
SADC	Southern African Community
SAGCOT	Southern Agricultural Growth Corridor
SIPP	Environmental and Social Safeguard Integrated Policies and Procedures
SME	Small or Medium Enterprise
SRI	System of Rice Intensification
SUA	Sokoine University of Agriculture
TA	Technical Assistance
TADB	Tanzania Agricultural Development Bank
TAFORI	Tanzania Forestry Research Institute
TANESCO	Tanzania National Electricity Supply Corporation
TARI	Tanzania Agricultural Research Institute
TARI	Tanzania Agricultural Research Institute
TASAF	Tanzania Social Action Fund
TAWA	Tanzania Wildlife Authority
TMA	Tanzania Meteorological Authority
TRI	Restoration Initiative
UNCCD	United Nations Convention on Climate Change and Desertification
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change

URT	United Republic of Tanzania
USAID	United States Agency for International Development
VLUP	Village Land Use Plan
VPO	Vice-President's Office
VPO-2	Second Vice-President's Office
WCMC	World Conservation Monitoring Centre
WDC	Ward Development Council
WRI	World Resources Institute
WUA	Water User Association
WWF	Worldwide Fund for Nature
ZARI	Zanzibar Agricultural Research Institute
ZAWA	Zanzibar Water Authority
ZCT	Zanzibar Commission for Tourism
ZURA	Zanzibar Utility Regulatory Authority

EXECUTIVE SUMMARY

The Project 'Food Systems Land Use and Restoration in Tanzania's Forest Landscapes' is a child project under the GEF Food Systems, Land Use and Restoration (FOLUR) Impact Program. The key environmental problem to be addressed by the project is the degradation of Tanzania's rich forest lands and wetlands and the related loss in forest health and biodiversity, under the pressure of rice expansion and other agricultural development, which has detrimental effects on the delivery of ecosystem services and related livelihood and economic opportunities. In Tanzania, rice production has more than tripled between 2004 and 2015, making Tanzania the 2nd largest rice producer in South, East and Central Africa. The rice sector is currently a key point of attention of various Government and donor supported programs geared towards both intensification and extensification, with a growing interest in export to supply adjacent Africa states. A key challenge is that production is small scale, with current yields are among the lowest in the world (between 1.5 and 2 t/ha), inefficient supply chains, post-harvest handling and poor transport networks, posing additional challenges.

The project focuses primarily on two landscapes in Tanzania, both critical for rice production:

- The Kilombero Valley, hosting a Ramsar-designated wetland system, part of the Selous Game Reserve, Tanzania's largest National Park and a designated World Heritage Site, parts of the Eastern Arc Forests, several wildlife migration corridors, and 75% of the world's Puku antelope population. The valley is targeted for agricultural expansion under the Southern Agricultural Growth Corridor (SAGCOT), Tanzania's largest agricultural development program, with rice production being one of the key target crops in light of the favorable conditions offered by the large Kilombero floodplain. At present, at least 60% of the wetland area has already been converted to cultivated land and the ongoing expansion is threatening the biodiversity in the wetland system, as well as blocking wildlife migration corridors cutting across the Valley.
- The North Unguja (Zanzibar) landscape, an area historically covered with rich coral rag forests and hosting the islands' major aquifer systems, which is the basis for food crop production as well as other critical ecosystem functions. Over the years, demand for food has driven large-scale conversion of forest lands, resulting in high levels of land degradation. The area is the main target for ongoing investments in the rice production sector as supported by the World Bank and South Korea. However, water needs for irrigation are increasingly becoming a constraint to both the biodiversity as well as other water uses, and intrusion of crop production in the remaining patches of high biodiversity forests is apparent.

The key barriers to be addressed by the project, towards ensuring that current and future rice production in the landscapes becomes sustainable and has least impact on the environment, are:

- Inadequate institutional coordination and integrated planning systems for land and water use management.
- Policy and market conditions do not provide adequate stimulus for sustainable agricultural practices and value chains.
- Inadequate farmer support systems and enabling conditions for private sector investment in sustainable value chains

- Resource constraints, capacity limitations and lack of proven models of improved management and land restoration

The project will build on a substantial baseline of ongoing and planned projects and initiatives, amounting to an investment of over US\$70 million, including:

- Ongoing land use planning efforts and existing Land Use Framework Plans for both Kilombero and the Unguja landscape
- Existing Integrated Water Resources Management (IWRM) planning efforts and related plans
- A range of projects supporting agricultural value chain development, including in the rice sector
- A range of projects/initiatives related to forest landscapes restoration and SFM
- Existing multi-stakeholders group at different levels

The project's Theory of Change is defined as follows: If, in the Kilombero and North-Unguja landscapes, the project promotes sustainable, more intensive, climate smart rice farming; if the project, in those landscapes, helps conserve key High Conservation Value (HCV) areas through the development and implementation of Integrated Landscape Management (ILM) Plans at district and village level, which will guide the further development of rice farming and other types of land use (basically determining the 'where' rice farming would be allowed to happen and where not because of environmental sensitivities); and if, simultaneously, the project promotes the restoration and improved management of key degraded areas (areas degraded by unsustainable farming practices or areas providing key ecosystem services to the rice farming sector); then the rice production sector in Kilombero and North Unguja districts will be more able to meet the increasing market demand for rice without threatening the long term conservation of the landscapes' Global Environmental Benefits.

A central notion in this Theory of Change is the presumption that farmers will be motivated to change their current rice farming methods because building their capacity in climate-resilient and more efficient farming will lead to a higher and sustainable return on production. This has the added benefit of reducing the need of farmers to expand rice farming into other areas, which can help conserve key HCV areas together with the implementation of the ILMP. This paradigm shift in the way that farmers think and operate will need to go hand in hand with the creation of enabling policy conditions and motivations for Government to effectively set the necessary guidance and management frameworks for land use planning, agricultural development and landscape management and restoration, not only in the target landscapes, but throughout the country. Furthermore, private sector stakeholders will need to be engaged and incentivized to deploy more sustainable supply chain approaches and invest in effective landscape management and restoration. In this way, through setting the example at landscape level, while institutionalizing recommended best practice approaches and solutions, and by creating the necessary enabling conditions for upscaling, the project will seek to bring transformational change.

The Tanzania FOLUR Child Project will benefit greatly from exchanges with other FOLUR focal countries, in particular those with a focus on the rice sector (China, India, Indonesia, Thailand, and Vietnam). In this regard, the global FOLUR platform will provide a mechanism for capacity building through learning activities, knowledge tools and resources, and general experience sharing through the Global FOLUR Community of Practice; engagement with value chain actors (private sector, investors) and access to resources and opportunities for policy engagement, finance and leverage opportunities, standards and guidelines; and access

to a global platform for knowledge products and outreach materials, as well as global and regional forums. In line with this, the project represents an integrated approach that combines aspects of sustainable food systems and deforestation free supply chains, with broader landscape level planning, management and restoration for the preservation of ecosystem services in some of Tanzania's key rice cultivation areas, which translates into three main pillars of work:

1. Support the development of an *Integrated Landscape Management* approach for the target landscapes, through a multi-stakeholder process, in order to provide for a landscape management framework that gives space for rice production and other uses, while securing space for the preservation and restoration of critical ecological systems;
2. Support the development of *sustainable and socially inclusive value/supply chains* for the rice production sector, including the development of supporting governance/policy frameworks, financial and market mechanisms and incentives that will drive sustainable value chains; and
3. Support the development and implementation of concrete *landscape restoration and management* activities in the target landscapes, including the creation of enabling conditions for upscaling. The focus here will be on areas degraded by or providing key environmental services to the rice sector.

The project will be implemented over a period of 5 years, at a total GEF budget of US\$ 7,368,808, under the lead of the Ministry of Natural Resources and Tourism of the United Republic of Tanzania. The project will build on a baseline of over US\$ 70 million in investments by the Government of Tanzania and partners. Through the baseline and GEF-funded alternative, the project will generate GEBs, including improved management and protection of water and land in an area of high value biodiversity; enhanced carbon sequestration capacity through the improved management and restoration of forest landscapes; and abatement of land degradation through improved land-use planning, agricultural practices and forest landscape restoration. Within the context of Tanzania's ambitious agricultural development goals, the project's impact will extend well beyond the specific target landscapes, and will also provide a scalable model for the wider Africa region.

SECTION 1: PROJECT BACKGROUND AND SITUATION ANALYSIS

1.1 Project Scope and Environmental Significance

In 2019, the Global Environment Facility (GEF) approved the Food Systems, Land Use and Restoration (FOLUR) Impact Program, led by the World Bank as the coordinating GEF agency, in order to address in a systematic and comprehensive way the challenges posed by unsustainable food systems across the globe. The central objective of the program is to promote sustainable, integrated landscapes and efficient food value and supply chains at scale. To achieve this objective, the program aims to (i) tackle negative externalities from food value chains; (ii) remove deforestation from commodity supply chains; and (iii) expand restoration of degraded lands, while (iv) undertake comprehensive land use planning that reconciles competing land use, considers trade-offs, and harnesses synergy. The commodity chains considered in this include palm oil, coffee, rice, livestock, wheat, maize, cocoa and soy. The program is organized around four components: (1) development of Integrated Landscape Management systems; (2) Promotion of sustainable food production practices and commodity value chains; (3) restoration of natural habitats; and (4) project management, coordination and M&E. The Tanzania FOLUR Child Project is structured around similar components to allow for maximum synergies and cross-interaction through the learning and exchange networks to be established under the FOLUR Global Platform project lead by the World Bank.

Tanzania is one of 27 countries¹ selected on the basis of their strong alignment with the program vision and their high potential to generate global environmental benefits through investments in promoting transformational change.

The commodity chain selected for Tanzania is the rice sector. As a relatively newcomer and modest player in the global rice sector, Tanzania has much to learn from traditional rice-producing countries that are part of the FOLUR IP, such as China, India, Indonesia, Thailand, and Vietnam. The choice for the rice sector is driven by the fact that rice production in Tanzania has more than tripled between 2004 and 2015, making Tanzania the 2nd largest rice producer in South, East and Central Africa. The rice sector is currently a key point of attention of various Government and donor supported programs geared towards both intensification and extensification, driven not just by local demands for nutrition but also a growing interest in export to supply adjacent Africa states. A key challenge is that rice farming in Tanzania is largely small-scale with current yields among the lowest in the world (between 1.5 and 2 t/ha), with inefficient supply chains, post-harvest handling and poor transport networks, posing additional challenges.

Representing ~18% of cultivated land and growing at over 7% per year², rice expansion represents a threat to Tanzania's forests, wetlands and other high conservation value areas. In this regard, Tanzania is endowed with worldwide renowned wilderness areas, including savannah and forest landscapes, as well as wetland systems that support several thousands of endemic plants and animal species, and provide for national and rural economies. The country is home to more than one third of the total plant species on the African continent and about one fifth of the continent's large mammal species. Tanzania ranks twelfth globally in terms of its bird

¹ Other countries are: Brazil, China, Cote d'Ivoire, Ethiopia, India, Indonesia, Nigeria, Malaysia, Peru, Ukraine, Vietnam, Kazakhstan, Liberia, Burundi, Colombia, Ghana, Guatemala, Mexico, Papua New Guinea, Paraguay, Thailand, and Uganda.

² FAO (2015). The Rice Value Chain in Tanzania, Background Paper:
http://www.fao.org/fileadmin/user_upload/ivc/PDF/SFVC/Tanzania_rice.pdf

species richness, while its fauna is the fourth-most species-rich in Africa. The threats from the growing agricultural expansion are therefore evident, as more and more forest, wetland and other critical ecosystems are being converted for cultivation at the expense of these ecosystems, including the socio-cultural, economic and environmental goods and services they provide.

This proposed project covers both Zanzibar and mainland Tanzania by focusing on two priority landscapes, combined with national-level interventions to address trade and value chain aspects to reduce degradation and deforestation in these landscapes, and in support of Tanzania’s agricultural development at large. The two target landscapes are the Kilombero district within the Kilombero sub-basin on mainland Tanzania (1,356,130 ha), and the North A/North B districts on Zanzibar (hereafter referred to as North-Unguja landscape, 43,100 ha). Both landscapes are specifically targeted for rice cultivation, as supported by various government and private-sector led initiatives.

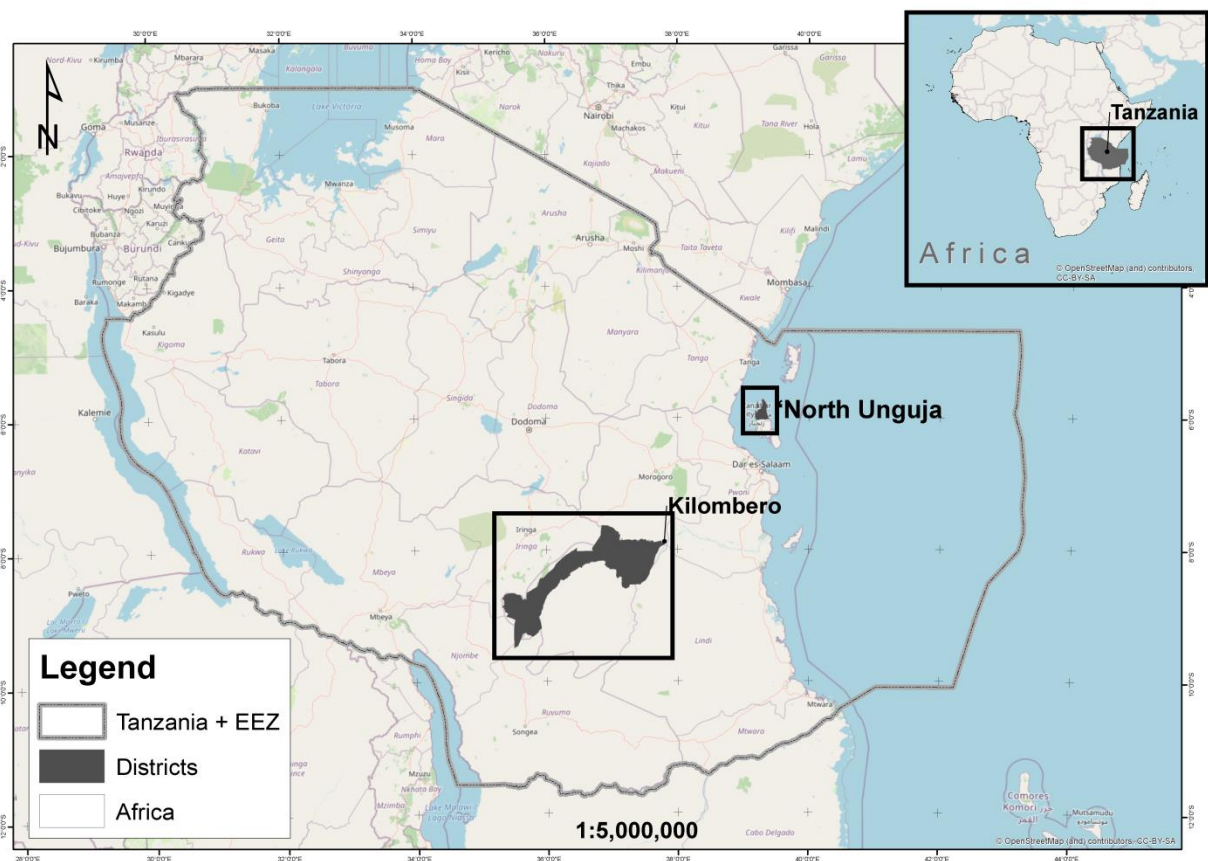


FIGURE 1 MAP OF TANZANIA WITH INDICATION OF THE TWO MAIN PROJECT LANDSCAPES

The **Kilombero district** is in mainland Tanzania and hosts the majority of the Kilombero Valley Ramsar-designated wetland system, as well as other areas of high biodiversity significance such as part of the Selous Game Reserve, Tanzania’s largest National Park and a designated World Heritage Site, parts of the Eastern Arc Forests. These important conservation areas are connected through several wildlife migration corridors, which cut across the landscape. Diverse mammals, amphibians, fish and bird species populate the area, among which

75% of the world's Puku antelope population. The Kilombero Valley is targeted for agricultural expansion under the Southern Agricultural Growth Corridor (SAGCOT), Tanzania's largest agricultural development program³. In this regard, the 2002 Ramsar status assessment⁴ already noted concern with regard to expansion of commercial and small-scale agriculture in the valley, which at present has already led to the conversion of at least 60% of the wetland area into cultivated land, with detrimental effects on the biodiversity in the wetland system, as well as downstream wildlife areas. Rice cultivation is one of the main crops that has seen rapid growth over recent decades, attracted by the favorable conditions of the low-lying wetlands systems in the Valley. 90% of production is rain fed and small-scale, represented by low yields, but production is expected to further increase in the future, with planned irrigation schemes expected to boost opportunities. Kilombero's only large-scale rice cultivation enterprise (Kilombero Plantations Limited) has recently been shut down, with an unclear future.

The **Unguja landscape** covers historically rich coral rag forests and hosts the islands' major aquifer systems, which is the basis for food crop production. The demand for food has driven large-scale conversion of forest lands, resulting in high levels of land degradation. Because of its irrigation potential, the area is a main target for ongoing investments in the rice production sector. In particular, a large-scale investment in irrigated rice production is currently underway, under the 'Rice Irrigation Infrastructure Project', implemented through a loan by KOREA Exim Bank/SMZ with a value of US\$64,500,000, which will support the construction of four irrigation schemes that foresees in the creation of reservoirs (dams) as water sources for the many small-scale rice farmers, as well as boreholes for groundwater abstraction. All current rice production in the landscape is small-scale, with no known plans for larger commercial growth.

A more detailed description of each of these landscapes is presented in Annex 1.

Participating in the GEF FOLUR Impact Program will afford the chance to manage Tanzania's growing rice production in an environmentally sustainable manner, recognizing the limits of the ecological carrying capacity, as well as the small-scale nature of the production systems. As a country with rapid agricultural expansion, Tanzania has the opportunity to represent an example for the large scale food systems transformation in Africa that has begun to spread across the continent.

1.2 Environmental Problem(s), Threats and Root Causes

The key environmental problem to be addressed by the project is the degradation of rich forest lands, freshwater and wetland systems due to rice production/expansion, mainly small-scale, and the related loss in forest health and biodiversity in the two target landscapes. This has detrimental effects on the delivery of ecosystem services (including carbon sequestration) and related livelihood and economic opportunities.

According to Tanzania Forest Reference Emission Levels Assessment⁵, Tanzania mainland hosts approximately 48.1 million ha of forests, equivalent to 54.4% of total land area, 93% of which is occupied by woodlands and

³ The Southern Agricultural Growth Corridor (SAGCOT), which is a major focus of this proposed project, is Tanzania's largest agricultural development initiative. The SAGCOT corridor cuts across various landscapes of globally important biodiversity value. The SAGCOT Greenprint, which is SAGCOT's green growth strategy, recognizes the need for preserving the ecological functions of forests, water and other critical resources through sustainable land and water management, and efficiency of production systems and value chains, as a basis for long-term sustainability and climate change resilience.

⁴ https://www.ramsar.org/sites/default/files/documents/library/ram83_kilombero_valley_tanzania_2016_e.pdf

⁵ United Republic of Tanzania, 2017, Tanzania's Forest Reference Emission Levels, submission to the UNFCCC.

the remainder shared by plantations, mangroves, montane forests and patches of coastal forests. Zanzibar's total forest area is about 106,458 ha, which is equivalent to 43% of the total land area, largely characterized by coral rag forests (81%) and mangroves (15%), with smaller patches of forest plantations. According to the Tanzanian forest reference emission levels, the annual deforestation rate is 469,420 ha for mainland Tanzania and 4,689 ha for Zanzibar respectively, equivalent to over 43 million t CO₂e/year. This high deforestation rate has a significant impact on life supporting systems, including biodiversity.

As it concerns wetlands, roughly 7% of Tanzania's territory is covered by wetland systems, including lakes, rivers, swamps, estuaries, mangroves and coastal areas. Tanzania possesses roughly 2.7 million ha of permanent and seasonal freshwater swamps, marshes and seasonal floodplains, distributed over most of the country's major river systems, the largest being the Rufiji-Ruaha River system (covering 695,500 ha), which includes the Kilombero floodplain. Many of these areas are threatened in different ways, such as is the case in Kilombero, which has lost 60% of its wetland area.

This environmental problem varies across the two target landscapes, as presented in Table 1.

TABLE 1 MANIFESTATIONS OF THE ENVIRONMENTAL PROBLEM IN THE TARGET LANDSCAPES

Manifestations of environmental problem	Kilombero landscape	Unguja landscape
Forest loss and degradation	Highest levels of forest loss occurring in the upper catchments, due to settlements, conversion for crop lands and exploitation for firewood. The rice sector is indirectly responsible due to spillover effects (increased intrusion as flood plains are converted for rice and people seeking land elsewhere).	Most coral rag forests have been cleared to make space for agriculture. Extensive rice cultivation is an important driver to the loss of forests.
Wetland loss and degradation	60% loss of wetland area as a result of expanding crop and grazing lands; rice being the most important crop. Other factors, such as the diversion of water courses, abstraction for irrigation and livestock grazing are adding to this challenge.	Wetland systems in Zanzibar mainly being of a coastal nature (mangroves in particular), the effects of rice farming on wetlands are mainly related to the intrusion of rice farmers into mangrove areas. This effect has, however, so far been limited as Government has imposed measures to protect mangroves.
Biodiversity loss	Substantial loss of biodiversity due to loss of wetlands, disturbance of wildlife migration corridors as well as intrusion of rice and other agricultural production into conservation areas. The presence of wildlife, which used to thrive in the Valley,	Loss of biodiversity mainly related to the conversion of coral rag forests for rice and other types of agriculture.

	has now become increasingly rare.	
Disruption of hydrological cycles	Disruptions of hydrological flow occurring as a result of catchment degradation, combined with the effects of climate change, increased abstraction and diversion of streams for irrigation (rice being a key target for irrigation).	Land degradation as a result of forest degradation, adding to increasing levels of abstraction for irrigation and other purposes have led to a substantial decrease in both ground- and surface water availability, including increased saltwater intrusion into aquifers.

A schematic representation of the problems and barriers facing Tanzania's forest and wetland landscapes is presented in Figure 2.

The threats of Tanzania's agricultural development to Tanzania's high value forest, freshwater and wetland systems, include i) expansion of agricultural production over HCV areas; ii) unsustainable farming practices; and iii) water pollution and over-abstraction. The rice sector presents a specific threat in this regard. Rice is the third most important food crop in Tanzania after maize and cassava. According to official data, annual rice production doubled between 2001 and 2012, a very substantial growth level that results mainly from expanding cultivation areas rather than increased unit yields². With unit yields being among the lowest in the world, and an official Government strategy to further double rice production until 2030⁶, the potential impacts on Tanzania's high value forest, freshwater and wetland systems would be substantial. This is particularly relevant for the two target landscapes, which are among the main rice expansion areas in the country.

While the focus of this specific project is on rice, because of its significance in the target landscapes, the threats posed by the rice should be considered within the wider context of agricultural development. The threats related to agricultural expansion are further aggravated by the effects of (iv) global climate change, as well as (v) livestock overgrazing and (vi) unsustainable extraction and use of wood and other natural resources. The latter threats will not be the direct target of this specific project (considering the focus on food systems), but their pressure on the landscape will be considered as part of the project's focus on sustainable landscape management.

⁶ United Republic of Tanzania (2019). National Rice Development Strategy Phase II.

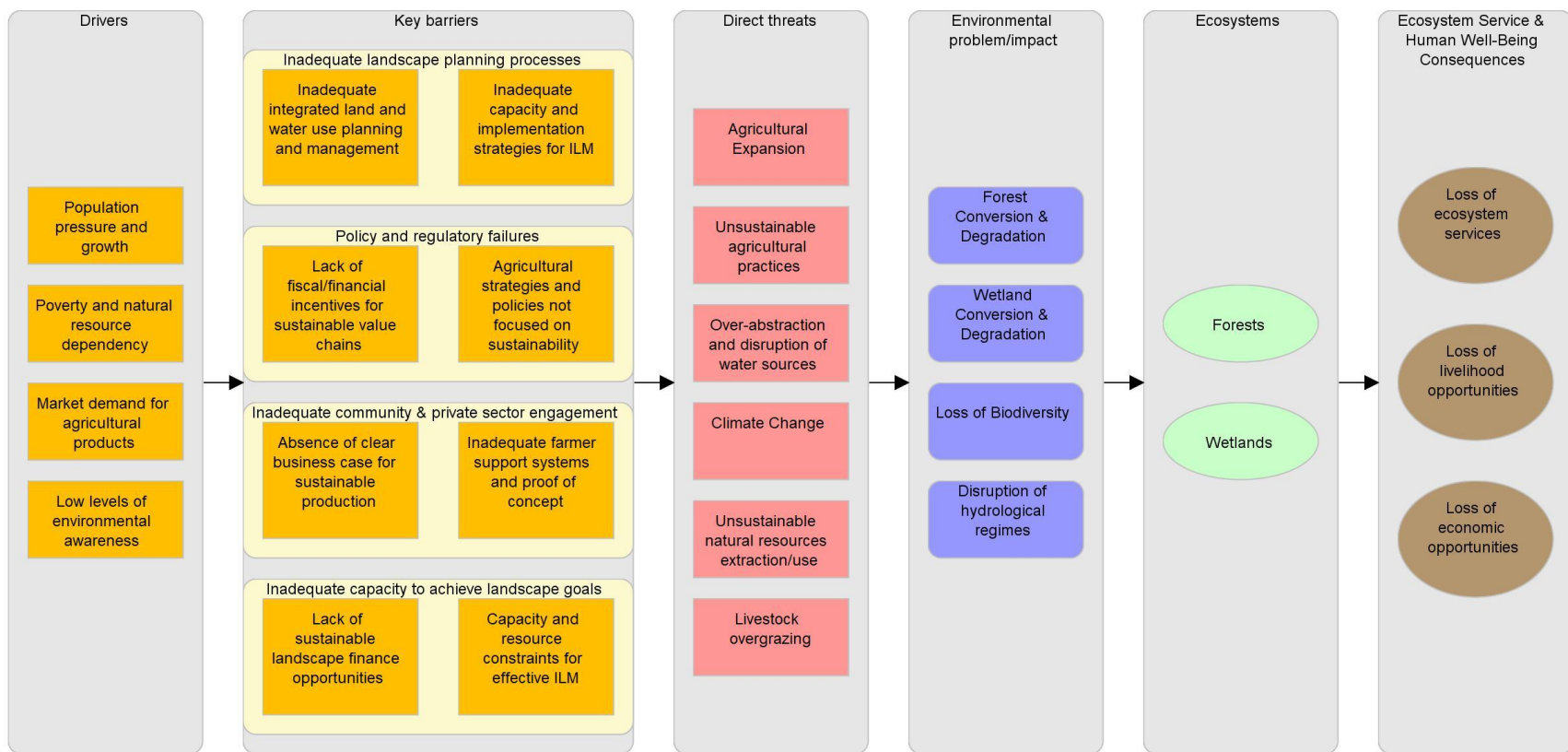


FIGURE 2 CONCEPTUAL MODEL OF ENVIRONMENTAL PROBLEM

Together, these threats result in a number of environmental impacts, including the conversion of forest and wetland systems into cultivated land, a disruption of hydrological regimes in both surface- and groundwater systems, as well as an overall loss in biodiversity. The consequent effects on the forest and wetland ecosystems has further implications for the delivery of ecosystems services, including livelihood and economic opportunities derived from such. Finally, at the root of the environmental problem, a number of key root causes may be identified, including population pressure and growth; poverty and natural resources dependency; market demand for agricultural products; inadequate institutional capacity and governance; and, limited awareness and education.

A description of each of the before-mentioned key threats and root causes is presented below:

Expansion of agricultural production over HCV areas

The current low-intensity agricultural development in Tanzania, the Kilombero and North-Unguja landscapes in particular, demands huge amount of land to be converted for cultivation purposes. Illustrative of this issue is the fact that while total harvested area for rice production in the country increased by 90% between 2002 and 2012 (from 0.5 million ha in 2002 to 0.9 million ha in 2012), total production increased by only 53%⁷. In terms of the rice production sector, Tanzania's yields are among the lowest in the world. Average rice yields for the country have stagnated at about 1.2 to 2 ton/ha against a demonstrated on-farm potential of 6 to 8 ton/ha. Consequently, as rice cultivation represents approximately 18% of cultivated land and is growing at over 7% per year, rice expansion represents an important cause of land conversion.

In Kilombero, the effects of rapid expansion of low-intensity agriculture are clearly visible, as demonstrated in Figure 3, which shows the evolution of land use changes from 1990 to 2016, during which the agricultural land and grassland increased by 11.3% and 13.3%, respectively, while the floodplain wetland area decreased from 4.6% in 1990 to 0.9% in 2016⁸. In the upper parts of the Kilombero catchment, furthermore, shortage of arable land in the valley (a spillover from the fact that lowland areas have been converted for rice and other water-intensive crops) has already led to encroachment of forest areas for farming and settlements, posing a threat not only to the forest ecosystems themselves, but also affecting the systems water retention capacity and subsequent downstream availability of freshwater. A specific

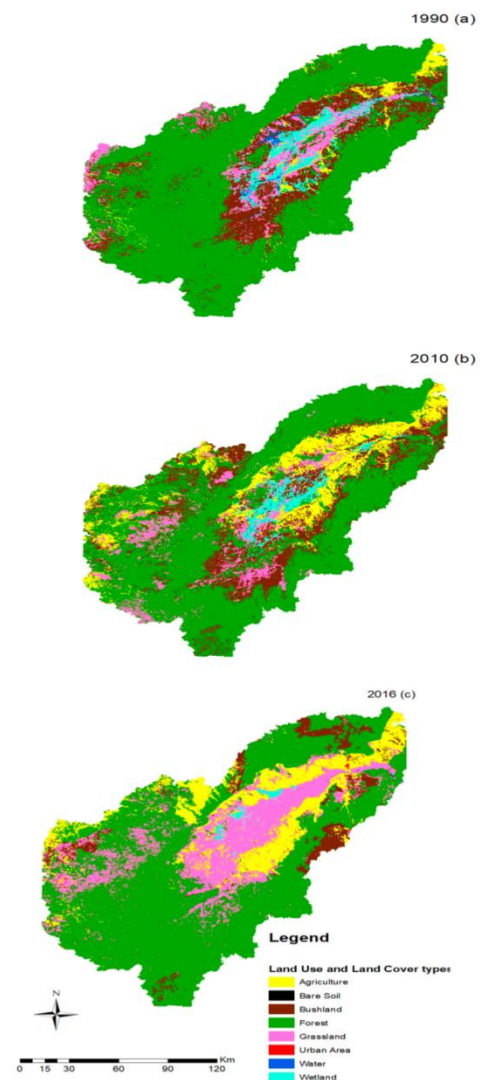


FIGURE 3 MULTI-TEMPORAL LAND USE/COVER MAP FROM 1990-2016 FOR KILOMBERO VALLEY

⁷ World Bank (2015). Project Appraisal Document for the Expanding Rice Production Project.

⁸ Msofe *et al* (2016): Land Use Change Trends and Their Driving Forces in the Kilombero Valley Floodplain, Southeastern Tanzania. Pp. 27.

consequence of the agricultural expansion, rice and other sectors, is the blockage of the important wildlife migration corridors in the Valley, which has led to the presence of wildlife, which used to thrive in the Valley, having become increasingly rare.

A similar pattern arises in North-Unguja, where the majority of the coral rag forests of the landscape, historically covering the entire landscape, have been replaced by large extents of agricultural fields, low intensity rain fed rice cultivation being a key factor. Areas under rice cultivation at present make up approximately 16% of available land in the landscape, but are expected to expand further as a result of the earlier-mentioned new irrigation scheme. As land in Zanzibar is increasingly scarce, the threats to the remaining patches of forests are evident, as may be concluded from Figure 4. In particular, the figure shows that rice farming is already the dominant crop in the area. The planned expansion of irrigated rice farming under a new Government-led initiative, funded through a loan by Korean Exim bank, (highlighted as Rice – 2019 in the Figure), will lead to a substantial increase in rice production in the area, but also lead to increased stress on both land and water resources. Encroachment and conversion of the remaining small patches of forests, as well as potential over-abstraction of groundwater resources, are particular risk factors in this regard.

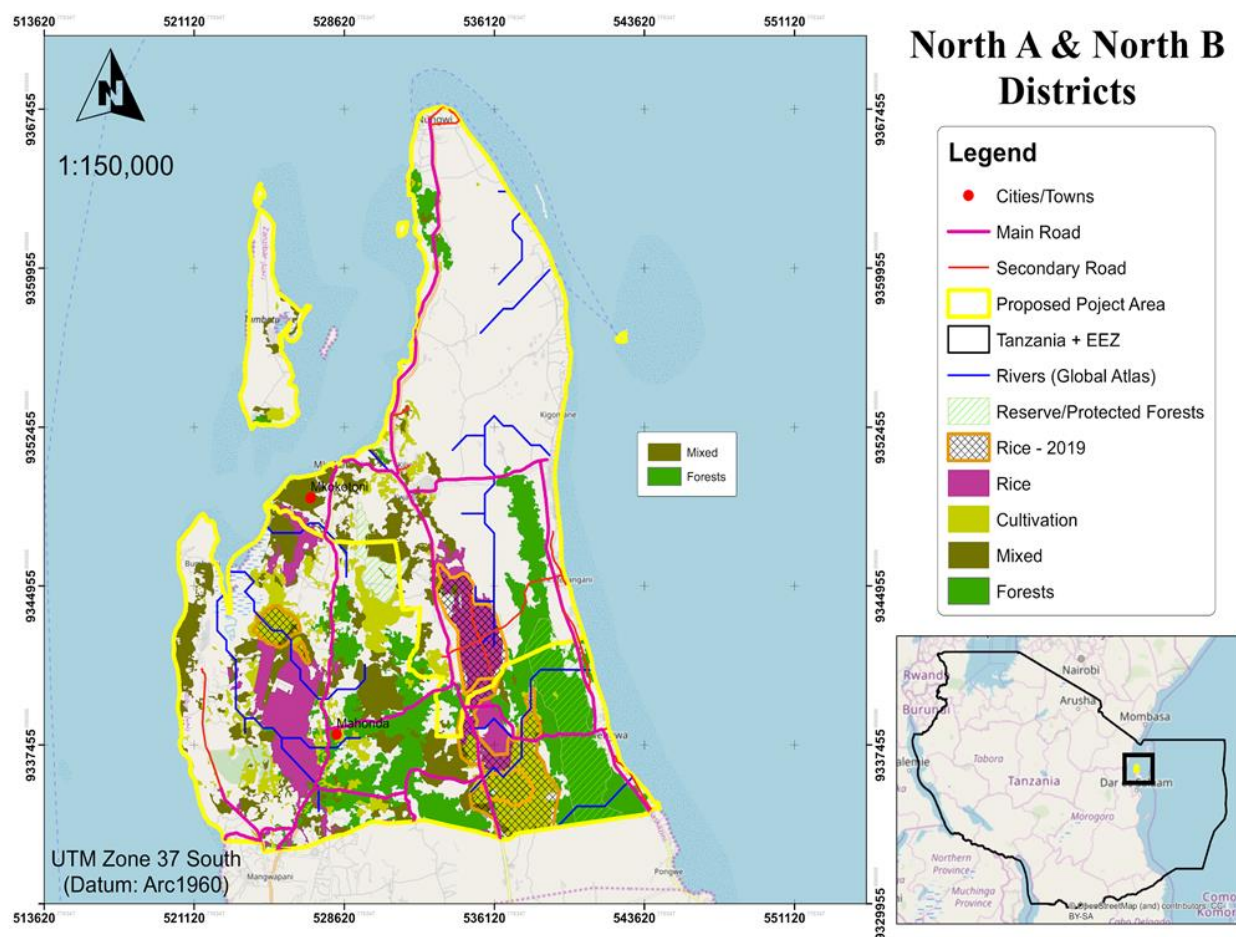


FIGURE 4 UNGUJA PROJECT AREA SHOWING AREAS OF CURRENT AND PLANNED RICE EXPANSION IN PROXIMITY TO FOREST AREAS (NOTE: RICE – 2019 INDICATES THE AREAS TARGETED FOR EXPANSION OF RICE FARMING UNDER A NEW GOVERNMENT IRRIGATION SCHEMES)

This land conversion has had a huge impact on biodiversity. The once rich wildlife of the Kilombero Valley has all but disappeared, including the rare Puku antelope species (*Kobus vardonii*). Wildlife corridors, in particular the Nyanganje and Ruipa corridors, have been largely overtaken by settlements and farmland, permanently blocking migration and leading to fragmentation of the surrounding HCV's. In Zanzibar, a significant number of plant and animal species⁹ have also been lost in the Kiwengwa-Pongwe Nature reserve due to encroachment.

Unsustainable agricultural practices

Coupled with low-intensity agricultural practices is a range of unsustainable agricultural practices (both in the rice sector and others) that lead to impacts on land, water and biodiversity. Key to this in the two project areas are the following:

- Shifting agriculture has very visible repercussions in terms of forest degradation. The effects of this can be seen in particular in the upper catchment of the Kilombero Valley (along the feet of the Udzungwa mountains, Uzungwa Scarp, Kilombero Nature Reserve and the Kihansi catchment area), with detrimental effects to the local biodiversity but also causing reduced water retention capacity and soil erosion and associated sediment runoff into rivers and streams. The rice sector is not a direct cause of the problem here, but as downstream lands are being converted for rice farming, communities are increasingly seeking fertile lands upstream for other types of crop production (in particular horticulture).
- Farming on river banks is causing erosion and resulting in the siltation of streams. While Tanzania has strict regulations against farming within the limit of 60m from streams and rivers, the lack of available fertile land is driving farmers to cultivate in the buffer areas of rivers. This is visible in both Kilombero and North-Unguja landscapes where farmers have encroached basically up to the immediate riverbanks.
- Mono-cropping and intensive repeated crop rotations, and the generally low use of soil improvement inputs (e.g. fertilizers) and technologies, are resulting in the degradation of lands, rendering them less useful for agriculture as a result of nutrient depletion and impeding their natural regeneration. In the case of rice, the symptoms of land degradation are salinisation/alkalinisation or sodisation, generally associated with water logging.
- Excessive application of synthetic fertilizers is known to accumulate in and acidify soils, and runoff nutrients accumulate in rivers and lakes and leach into groundwater. While it is not yet as severe problem in most of Kilombero and North-Unguja, where fertilizer underuse is predominant, nutrient contamination/accumulation may become more predominant as systems intensify.
- Overuse or improper use of pesticides and other agrochemicals in intensifying systems is already threatening human health (via poisoning) and contaminates soil and water. Again, the use of pesticides in the target landscapes is currently estimated to be limited, but as systems intensify, attention to this matter will be required.
- Poor rice post-production handling may be associated with additional threats, notably through the introduction of toxins in crop storage (storage chemicals), and through the emission of GHGs from the burning of crop residues. In addition, rice crop also suffers significant losses in traditional storage (as

⁹ The KPFR is one of the highest biological hotspots of Zanzibar coral rag zone with Colubus monkey (Kima Punju), Fisher's Toraco, Ader's duiker (Paa Nunga), Sykes, blue monkeys, sunni antelopes are

high as 40%) from various pests and diseases, leading to high rates of post-harvest spoilage. This lost production equates to not only wasted effort by farmers, but is also associated with wasted land clearing and wasted agro-chemical application for the production of food that will never be eaten.

- GHG emissions (such as CO₂, CH₄ and N₂O) from rice fields tend to increase with increased cropping intensity, and when forests/grasslands are converted to rice cropping. CO₂ emissions arise primarily from land conversion (releasing C stored in forests), soil tillage (releasing soil C) and burning of fields and crop residues which releases both GHGs and particulate air pollution. Other major GHG sources are more crop or system-specific: CH₄ emissions are primarily associated with flooded rice fields, and N₂O emissions arise from N fertilizer application.

Water over-abstraction and disruption of hydrological cycles

Due to the largely unplanned nature of agricultural development in the landscapes, water use and extraction lacks adequate control which, in combination with inefficiencies and poor (often non-existing) irrigation infrastructure, affects both ground- and surface water resources. This is specifically the case for rice cultivation, because of its water intensive nature.

For example, recent studies in evapotranspiration and groundwater contribution in the Kilombero valley (which contributes 62% of total water into the Rufiji river) show decreasing water availability trends in the floodplain¹⁰, where grassland is turned into cropland and the share of water on the total land cover is reduced. Figure 3 clearly shows the effects of such changes on the open water and wetland systems of the Kilombero Valley. Most dramatically is the impact on the main wetland system in the valley, Kibasila Swamp. Over the period 1998–2011, this important wetland system has seen a decrease in area covered by water by 35% (1665 ha) and forest by 9% (432 ha), while Papyrus sedges increased by 40% (1891 ha) and cultivated land increased by 8% (333 ha)¹¹. These changes are associated with a combination of increased siltation due to deforestation, livestock grazing and increased cultivation, increased abstraction upstream, mainly for irrigation purposes, as well as the diversion/blockage of the Ngumbingumbi stream (allegedly, to protect certain areas of agricultural land from flooding), which was one of the inflows of the wetland system. A key concern in this, from a downstream water security perspective, is the planned construction of the 2115 MW Julius Nyerere Hydroelectric Power Station to be constructed at Stiegler's Gorge, the viability of which will depend heavily on a secure water flow from the catchment. As 70% of the inflow into the plant will come from the Kilombero river, securing this important ecological function through proper catchment and water resources management, is a priority to Government.

Similarly, field reports from local communities in the North-Unguja landscape in Zanzibar informed a reduction in the availability of water, in particular in Zanzibar where communities noted seasonal streams and groundwater resources completely drying up in some cases, as well as salinization of groundwater (due to saltwater intrusion) reported in coastal areas. Unfortunately, as data on groundwater availability and

¹⁰ E.g. Munishi-Kongo, S. Ground and Satellite-Based Assessment of Hydrological Responses to land cover change in the Kilombero river basin, Tanzania. Ph.D. Dissertation, University of KwaZulu-Natal, Pietermaritzburg, South Africa; and Näschen et al (2018) Hydrological Modeling in Data-Scarce Catchments: The Kilombero Floodplain in Tanzania

¹¹ Seki, H. A., Shirima, D. D., Mustaphi, C. J., & Marchant, R. (2017, September 6). The impact of land use and land cover change on biodiversity within and adjacent to Kibasira Swamp in Kilombero Valley, Tanzania. *African Journal of Ecology*, p. 1-9.

abstraction rates in Zanzibar is largely missing (see also section 1.3), the exact effects of the increasing abstraction rates are poorly understood. Of particular importance in this regard is the planned investment in large-scale irrigation infrastructure under the Korean-Exim funded project. The effects of the planned reservoirs and boreholes, as well as related irrigation schemes, in terms of their overall impact on the hydrological balance of both ground- and surface water systems are poorly understood.

Other threats

Additional threats in the project landscapes include:

Climate change

The impacts of climate change are being felt in most parts of Tanzania in the form of increased temperatures, seasonal shifts in rainfall patterns, severe and recurring droughts and floods, with devastating effects to most vulnerable sectors (including agriculture, forestry, and fisheries). As climate change projections indicate that the frequency and severity of extreme weather events will continue to escalate, these changes and their adverse consequences are projected to escalate in the near and longer terms, with negative impacts on the economy, health and safety, and food and water security. With rice cultivation in both landscapes being largely rain fed, the potential impacts of climate change could be quite significant, as recognized by the International Rice Commission¹². For a more detailed analysis of climate change related risks and impacts in the landscape areas see section 3.4.

Livestock overgrazing

Large cattle sizes, in particular in Kilombero, exceed the area's natural carrying capacity. This is a serious threat to biodiversity because the animals are feeding in environmentally sensitive areas (e.g., Kibasila Swamp) and damaging river banks, causing erosion and sedimentation. Moreover, as vegetation is destroyed due to overgrazing and trampling, the ground becomes vulnerable to soil erosion, which results in increased sediment runoff into rivers and streams, and impedes the natural regeneration of vegetation.

Unsustainable extraction and use of wood and other natural resources

Despite the presence of laws and regulation, timber trade in Tanzania is still largely uncontrolled and transactions occurring illegally. Energy demand is another important driver of deforestation, as 90% of the domestic fuel supply is sourced from charcoal and firewood. The ever-increasing domestic wood energy demand (estimated at 1 ton per household per year at present), coupled with inefficient charcoal production methods and the lack of sufficient dedicated energy woodlots lead to excessive deforestation in natural forests. A majority of local communities in Kilombero and North-Unguja depend on forests for their energy needs and construction materials, causing deforestation and environmental degradation.

Another key threat that is leading to the physical destruction of habitats in the project areas is the issue of sand and gravel mining. In mainland (Kilombero), sand mining occurs along riverbanks and natural habitats, while in Zanzibar (North-Unguja) it occurs along the coast and riverbanks, cascading into serious erosion, sedimentation and water pollution, and consequently resulting in natural habitat degradation, loss in vegetation cover, declining of native plant diversity, and increased invasive species.

¹² Nguyen, N.V. (2002). Global climate changes and rice food security, International Rice Commission, FAO, Rome, Italy.

Root causes

Figure 2 identifies a number of root causes that are the driving forces behind the above threats:

- **Strong population pressure** and growth is at the heart of the problem. Population in the Kilombero District has more than doubled in 25 years, from 187,593 in 1988 to 407,880 in 2012¹³, with rapid growth continuing. Over the same period, population in north-Unguja grew at similar rates from 96,989 to 187,455. Besides general population growth, the prospects of rice and other farming potentials has quite likely been a key driver behind this expansion. This rapid growth will lead to a rise in demand on land, wood and food, resulting in more habitat loss and pressure on biodiversity in natural ecosystems, in turn causing further deforestation and land degradation.
- **Poverty and natural resource dependency:** According to recent data by the World Bank, Tanzania's economy grew 5.2% in 2018, showing signs of a considerably slow down from 5 years earlier (2014-2015), when rates exceeded 7%. Despite this consistent economic growth, current statistics from the World Bank show that in 2017, 49.4% of Tanzanians lived below the poverty-line of \$1.90 USD per day¹⁴. Poverty is highest in rural areas, such as Kilombero and North-Unguja landscapes, with around 80 percent of the country's poor living in those regions. This persistent level of poverty not only impacts food security, but also creates a high level of natural resources dependency.
- **Market demand for agricultural products:** Tanzania is virtually self-sufficient in rice and has been exporting small quantities of its produce to neighboring countries. Under pressure from a growing population, the demand for rice is expected to further increase. At the same time, as the second largest producer of rice in eastern and southern Africa, Tanzania is at an advantage to supply the increasing demand for rice resulting from increased urbanization and changes in consumption patterns locally and across the continent. As the East African Region has an annual rice deficit of about 541,000 tons, the Ministry of Agriculture (MoA)¹⁵ estimates that for Tanzania to be able to exploit this market the rate of production needs to increase from 5% to at least 10% per annum to enable the country to cater for its rapidly growing domestic demand, as well as produce surplus for export.
- The generally low levels of environmental awareness of Tanzania's population are another underlying factor. **Education** levels are still low, with only 37% of young men and 28% of young women aged 15-24 having attended secondary school or higher education as of 2010¹⁶. Low levels of education and awareness are generally considered a key impeding factor towards sustainable development in general, including in the case of this project¹⁷, the application of enhanced farming methodologies and sustainable management practices towards natural resources.

1.3 National and Sectoral Context

Tanzania's Development Vision 2025 has been developed to guide national development efforts which include achieving good and quality life for all, good governance and building strong and resilient economy, with the

¹³ Tanzania population census

¹⁴ World Bank, Development Research Group, <https://data.worldbank.org/indicator/SI.POV.DDAY>

¹⁵ Ministry of Agriculture, Livestock and Fisheries, Commodity Value Chain Brief No.12: Rice.

¹⁶ URT (2010), 2010 Tanzania Demographic and Health Survey

¹⁷ E.g. The Brookings Institute (2012). Unsustainable Development: The Missing Discussion about Education at Rio+20, <https://www.brookings.edu/wp-content/uploads/2016/06/Unsustainable-Development-The-Missing-Discussion-about-Education-at-Rio-20.pdf>

central goal to transform Tanzania into an industrialized, middle-income country through the development of agricultural growth corridors. Within the broad context of this common vision, it is important to note that the United Republic of Tanzania is basically divided into separate jurisdictional systems for mainland Tanzania and Zanzibar. While a number of 'Union Matters' (e.g. foreign affairs) are addressed at central government level, most aspects to be addressed within the scope of this project are governed by different policies and institutional frameworks for both parts of the Republic. An overview of the various sectoral policy and institutional frameworks as relevant to this project is provided below.

Integrated landscape management

Land and water related matters are managed separately between mainland Tanzania and Zanzibar, under different jurisdictional authorities.

In mainland Tanzania, the management and use of land is guided by a number of legislations including National Land Policy (1995), the Land Use Planning Act, No. 6 (2007), and the Village Land Act No 4 (1999). The designated authority for land use planning is the National Land Use Planning Commission (NLUPC). The Village Land Act provides legal powers and limits on ownership and administration of village land. The Act allows for two or more villages to make arrangements to manage village land jointly. The development and approval of Village Land Use Plans (VLUP) are a prerequisite for any village to have ownership and user rights of natural resources (e.g. forest, wildlife) found on the land¹⁸. The process involves six steps: (i) preparation (sensitization and formation of planning teams); (ii) participatory rural appraisal for land-use management; (iii) mapping existing land uses; (iv) Participatory village land use planning; (v) implementation of village land administration to enhance security of land tenure; and (vi) detailed village land use management planning.

The governance and decision making structure of water resources is decentralised through establishment of the National Water Board, Basin Water Boards and Catchment and Sub-catchment Water Committees, and Water User Associations (WUAs). Rufiji Water Basin Board (as per Water Resources Management Act No. 11, 2009) has a responsibility to plan for water resources management and approve, issue and revoke water use and discharge permits. The challenge of enforcing these duties is that the basin has many traditional irrigation schemes with no proper discharge systems to monitor use, lack adequate water monitoring stations and are characterised by illegal water withdrawals along major and small rivers. The Catchment and Sub-Catchment Water Committees are responsible for ensuring coordination, water conflicts resolution and perform other functions as delegated by the Basin Water Board. The WUAs may be formed by a group of water users for the purpose of sustainable use of water resources, resolving water related conflicts by members, and collect water user fees on behalf of the Basin Water Board. The WUAs constitute an executive organ, Management Committee, of which its powers are set by the association's constitution.

In Zanzibar, the Commission of Land, which was re-established in 2015, has the mandate for planning and management of land in Zanzibar. The duties for the commission are carried out by 4 departments - urban and rural planning, department of land (responsible for administration), land register, surveying and mapping. At

¹⁸ The exact process for the development and formalization of village land use plans is described in detail in the 'standard procedures for preparing detailed management plans' as issued by the NLUPC. Within this context, the Village Council is designated as preparatory authority to lead this process, including presentation of the plans to the Village Assembly and subsequent submission to the District Planning Authority for incorporation into the District Land Use Framework Plan. With legal assistance from the district and the planning team, the Village Council is also responsible for formulating by-laws to safeguard the plans for sustainability.

Shehia's (village) level, there is also presence of agricultural committees formed by farmers that informally regulate use and access to land. These committees are formally recognized by the Ministry of Agriculture, Irrigation, Natural Resources and Livestock (MAINRL) in Zanzibar.

In terms of water, the Zanzibar Water Authority (ZAWA) was established in 2007 by the Water Act of 2006 and has the legal responsibility to manage the use and distribution of water resources in Zanzibar. The operations by ZAWA are guided by a 5-year strategic plan of which the most recent ended in 2018. Among other duties, ZAWA is responsible for conserving water sources and ensuring that water extraction, supply and use are on sustainable basis. The former falls short at the moment given heavy focus on extraction and supply for domestic and commercial use, with inadequate consideration of water use and needs for irrigation, nature conservation, etc. At local level, ZAWA is decentralised through branch or sub-branch Water Committees. These committees, as per the law, are part of ZAWA. As per The Water Act of 2006, ZAWA can propose to the Board amendments of water tariffs and water service charges. However, the implementation of regulations of water use is coordinated by Zanzibar Utility Regulatory Authority (ZURA). In places with rice agricultural activities, furthermore, coordination between ZAWA and irrigation water users are managed informally by basin water committees. Many places, however, do not possess water use plans and depend highly on water from boreholes. Also, despite Zanzibar's dependence on its aquifers for the provision of freshwater there exists no current assessment or monitoring system of groundwater resources in Zanzibar.

Overall, the management and use of land and water is guided by a number of legal instruments including Zanzibar Environmental Policy (2013), Zanzibar Environmental Management Act No. 3 (2015), National Water Policy for Zanzibar (2004), Zanzibar Land Policy (2017), Land Tenure Act No. 12 (1992), Town and Country Plan Decree (1955) and Forest Act No. 10 of 1996. Other instruments include National Spatial Development Strategy (2015), Zanzibar Climate Change Strategy (2014).

Agricultural value chains

Agriculture accounts for roughly 25% of the GDP and 35% of total exports earnings of the United Republic of Tanzania (URT). The sector provides employment for about 75% of Tanzanians and fulfils 95% of the country's food needs. About 80% of production comes from subsistence farmers, cultivating farms of less than three hectares, relying on hand tools and rainfed production. This typical smallholder agriculture is labour intensive with little application of modern technologies and inputs¹⁹ and high vulnerability to weather shocks. The main challenge in the sector is therefore its low productivity - with smallholder crop yields mostly stagnating at only 20–30 percent of their potential.

The Government of United Republic of Tanzania has defined agricultural development as a core element of its Development Vision 2025 (TDV 2025). It is a key element of the Long Term Perspective Plan 2011-2026 – the road map to middle income country status - and it features prominently in the Mainland's National Strategy for Growth and Reduction of Poverty and the Zanzibar Strategy for Growth and Reduction of Poverty as a key driver of broad-based and pro-poor economic growth. To ensure that this development occurs in a sustainable way, the country has adopted several policies, laws and regulations that demand consideration for sustainable supply chains and land and water management. Core to this are the National Agriculture Policy and Agriculture

¹⁹ Only 16 percent of farmers in Tanzania use improved seed varieties and 17 percent use organic fertilizer (2010/11 National Panel Survey)

Sector Development Program (Phase II) for mainland Tanzania, , and the Zanzibar Agriculture Sector Policy and Agricultural Transformation Initiative for Zanzibar.

Tanzania is a member of both the East Africa Community (EAC) and the Southern Africa Development Community (SADC), which both allow for duty-free trading of export within the region. The EAC imposes a Common External Tariff of 75% on rice exported from outside of the region. As current regional production only meets approximately 55% of demand, and as Tanzania's growing rice production already surpasses local demand, there is a growing regional export market for Tanzania surplus rice production.

Tanzania is furthermore an active member/partner of relevant international forums, including the Africa Agriculture Development Program (CAADP), the African Rice Initiative (ARI), the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and The Forum for Agricultural Research in Africa (FARA). Within the scope of CAADP, Tanzania has committed itself to the goal of achieving a 6% average annual growth rate for the agricultural sector and has prepared the Tanzania Agriculture and Food Security Investment Plan (TAFSIP) which articulates the requisite and rationalized investments necessary to achieve the same through investments in a number of areas including: irrigation development and sustainable use of land and water resources; agricultural productivity and rural commercialization; rural infrastructure and market access and trade; private sector development; and food and nutrition security.

In terms of environmental sustainability, the 'Greenprint' developed for the Southern Agricultural Growth Corridor (SAGCOT), Tanzania's largest agricultural development initiative (which covers among others the Kilombero Valley), is an example of the kind of development promoted by Government. The Greenprint recognizes the need for preserving the ecological functions of forests, water and other critical resources through sustainable land- and water management, and efficiency of production systems and value chains, as a basis for long-term sustainability and climate change resilience of the production systems. A Green Reference Group, which includes various international civil society organizations and private sector partners, guides the SAGCOT Secretariat in this pursuit.

In terms of the rice subsector, the Government of Tanzania has identified rice as a strategic priority for agricultural development given its potential in improving food security and generating income for large numbers of low income, rural households. The country aims to double its rice production by 2030 in order to both meet its domestic demand and to expand exports to neighboring countries. These ambitions are expressed in the National Rice Development Strategy (a)²⁰ for mainland Tanzania, and the Agricultural Transformation Initiative for Zanzibar, respectively. Based on these strategies, the rice sector has been the basis of a wide range of (largely donor-funded) projects and programs²¹, many of which have focused on the promotion of the System of Rice Intensification (SRI), which represents a multi-pronged approach towards increasing efficiencies in the sector through a combination of improvements in, among others, seed varieties and other inputs (e.g. fertilizers), production methods (e.g. planting, weeding, harvesting) as well as

²⁰ Ministry of Agriculture (2019). National Rice Development Strategy (NRDS) Phase II – 2019-2030.

²¹ Key donors include World Bank, International Fund for Agriculture Development (IFAD), African Development Bank (AfDB), Irish Aid, Japan International Cooperation Agency (JICA), Alliance for a Green Revolution in Africa (AGRA), United States Agency for International Development (USAID), Department for International Development (DFID), Food and Agriculture Organization of the United Nations (FAO), AfricaRice, the Bill and Melinda Gates Foundation and the Coalition for African Rice Development (CARD). See also baseline section.

investments in technology (e.g. irrigation infrastructure, water saving technologies). An overview and analysis of the experiences of such prior initiatives is presented in Annex 9.

Despite these investments, the rice sector in Tanzania is still facing numerous challenges: Less than 15% of rice farmers are believed to be growing improved varieties; whereas research and extension trials have confirmed the value of more efficient production practices through SRI, less than 1% of rice farmers have been exposed to these management practices. Also, most farmers only produce one crop a year because of a combination of poor irrigation infrastructure and water management.

Being a ‘non-union matter’, the agriculture sector is governed separately between mainland Tanzania and Zanzibar. In mainland Tanzania, the MoA is the principle organ responsible for guiding and overseeing agricultural development in Tanzania. The Ministry is supported, in this regard, by various technical institutions, such as the Tanzania Agricultural Research Institute (TARI) – which is responsible for research & development, as well as capacity building of extension services, among others – the Centre for Agricultural Mechanization and Rural Technology (CAMARTEC), the Sokoine University of Agriculture (SUA) and the Tanzania Agricultural Development Bank (TADB). Various non-Governmental institutions, such as the Agricultural Council of Tanzania and the Rice Council of Tanzania (RCT), also provide crucial roles in bringing together private sector parties around the development of the sector. Key in this is also the SAGCOT Secretariat, which is mandated with the development of the SAGCOT agricultural development corridor.

In Zanzibar, the principle authority for the sector lies with MAINRL. Again, various other institutions, such as the Zanzibar Agricultural Research Institute (ZARI) and State University of Zanzibar provide specialized services. ZARI is, among others, already involved in testing various rice varieties appropriate for Zanzibar, including training farmers on the same. In both mainland Tanzania and Zanzibar, practical engagement with farmers is devolved to the Districts, which are equipped with Agricultural Development Officers and extension services.

[Landscape management and restoration](#)

The URT has demonstrated its commitment to halting the loss of its important forest landscapes and wetlands through various policies and international commitments. Firstly, the forest sector itself is guided by the Forest Policy and Act, Regulations and related National Forest Programs for mainland Tanzania, and their equivalents in Zanzibar, the Zanzibar Forest Policy and Act, and the Zanzibar National Forest Resources Management Plan (2010 – 2020), which recognize the critical importance of forests to the economic and social wellbeing of its populations. At the regional and international level, the United Republic of Tanzania (URT) is signatory to a number of agreements, such as CBD, UNCCD, the RAMSAR convention, CITES, the Nagoya Protocol, the SADC Forest Protocol, and more recently the Zanzibar Declaration²². Among URT’s key commitments to sustainable land management and restoration are its commitment to the UNCCD regarding land degradation neutrality by 2030 with a 25% net gain in forest landscapes, through restoring 11,011,950 ha of forests, preventing the loss of 2,640,600 ha of forests, improving land productivity of 1,714,500 ha of shrub and grassland, 8,462,500 ha of croplands and 361,275 ha of wetlands, increasing soil organic carbon in cropland to 54.5 tons/ha, and reducing

²² The Zanzibar Declaration is a collective regional mechanism that brings together five Member States (Kenya, Madagascar, Mozambique, Tanzania and Uganda) to work together towards improving forest management and trade. The impetus to signing the Declaration was the need to further strengthen national and regional efforts to address the challenges facing the forest sector, and demand for forest products in particular. The Declaration is underlined by bilateral MOUs between the Kenya-Tanzania, Zanzibar and mainland Tanzania, and the Mozambique-Tanzania Forest Departments, and was endorsed by EAC and SADC Council of Ministers of Environment in 2016.

soil erosion by 19 tons/ha; and its commitment to restore 5.2 million hectares of degraded and deforested land (6% of total land in the country) in response to the African Forest Landscape Restoration Initiative (AFR100).

Formally, the focal point for forest landscape restoration and management lies with the Ministry of Natural Resources and Tourism (MNRT), through its Forest and Beekeeping Division (FBD), for mainland Tanzania, and with the MAINRL, through its Department for Non-Renewable Natural Resources (DFNR), for Zanzibar. In practical terms, however, various other line Ministries are involved, including, for mainland Tanzania, the Tanzania Forest Service, the Department of Environment of the Vice-President's Office (VPO), and the President's Office-Regional Administration and Local Government (PO-RALG), which works closely with Local Government Authorities (LGAs) through their various departments in the actual implementation at landscape level. For Zanzibar, similarly, the Department of Environment of the Second Vice-President's Office (VPO-2) plays a key role in restoration initiatives, and coordinating work across sectors. Because of the complex interactions of forest landscapes with different sectoral interests, other line Ministries may be involved as appropriate.

For the wetlands systems in the Kilombero Valley, the Wildlife Division of MNRT plays a coordinating role, in association with the Tanzania Wildlife Authority (TAWA), which is practically responsible for the management of the Game Controlled Area in which lies the majority of the wetland system. VPO will also play a role within the context of its role as RAMSAR focal point, as will PO-RALG, which works closely with Local Government Authorities (LGAs) to coordinate implementation at landscape level. In all cases, an important role in coordinating the implementation on the ground will be largely reserved to the District Offices.

1.4 Barriers addressed by the project

Figure 2 identifies a number of key barriers to sustainable land management and commodity production as a means to improve conservation outcomes. These barriers are described in more detail below. A tabulated summary of barriers identified in relation to this project is presented in Table 2 below.

Inadequate institutional coordination and integrated planning systems for land and water use management

Managing the multiple uses and interest groups at landscape level is complex. In order to ensure that the right trade-offs between different sectoral uses of land and water (e.g. between agriculture, settlements and nature conservation) are made, adequate institutional coordination for the planning and use of these resources are in place. In the context of rice production, the extensive need for both land and water (for irrigation) is evident. Both planning and management of rice production will therefore require consideration of other sector interests, the conservation of potential HCV to be affected not least. Over recent years, important strides have been made to improve inter-institutional coordination around land and water use planning and management in Kilombero, through efforts led by NLUPC, the Rufiji Basin Water Board, as well as SAGCOT Secretariat. Yet the key sectoral Government institutions responsible for various aspects of landscape management are still inadequately coordinated and often working in isolation of each other in the development and implementation of their strategies. A multitude of plans has arisen from the multi-stakeholder processes led by these agencies, including a draft District Land Use Framework Plan, and an Integrated Water Resources Management (IWRM) Plan for the Rufiji Basin (which includes Kilombero). Nevertheless, it is recognized by all parties concerned that the existing inter-sectoral coordination for ILM, and natural resources management in particular, are inadequate. As a manifestation of this lack of coherent approach, there exists a multitude of committees,

ranging from the District Land Use Committees, the Rufiji basin IWRM multi-stakeholder group and the SAGCOT Kilombero cluster multi-stakeholder platform, the Rufiji Basin Catchment Committee, and local level committees (e.g. Water Users Associations, the Municipal and District Councils, the Ward Development Councils (WDCs) and the Village Natural Resource Committees) all involved in the planning and management of land, water and natural resources. This multitude of groups needs streamlining and coherence building. Also, some of these existing structures currently lack authority, capacity and funding to operate efficiently: e.g., the existing WUAs in Kilombero district are working on a volunteer basis but lack complete authority, lack compensation from RBWB from fees they collect, and are consequently not effective in enforcing the bylaws²³.

A key observed limitation in the current planning and management framework is a lack of real implementation, which is related to the fact that plans remain at strategic level, without clear implementation structures and actionable plans defined, and current land tenure and water governance (tariff) systems not adequately aligned. In this regard, the majority of the 99 villages in the Kilombero District have in place VLUPs, but their implementation is hampered by the absence of implementation and monitoring plans, with clearly defined roles and responsibilities. Another point of weakness in this regard is the fact that the existing land tenure and water governance (allocation and tariff) systems are not adequately aligned with land and water use plans. As a consequence, land tenure decisions are often not based on defined land and water use plans, and current pricing mechanisms for domestic and irrigation water use do not reflect the true environmental costs to manage, conserve and restore water catchments. The general weaknesses in capacity and understanding of the principles of ILM, both at the levels of administrators and the beneficiaries of such approach, the local communities, as well as a poor understanding of the importance of preserving the critical ecosystem services provided by HCV areas, are further aggravating this situation.

For the case of Zanzibar, the project landscape currently lacks a formal land- and water management plan/strategy (although a higher level, national land use plan is existing). Where local land use plans exist, they are restricted to a particular village (or Shehia) boundaries, thus failing to embrace integrated nature of the landscape and associated challenges (e.g. river management, groundwater systems and extraction, livestock and grazing, agricultural land). Water resources management in Zanzibar is based on poor and outdated data, with a clear lack of an overall plan for longer term water resources management (both ground- and surface water) for the benefit of different uses (domestic and commercial use, irrigation, the maintenance of critical ecosystem functions, etc.). Furthermore, the structures for inter-institutional coordination, information sharing and planning are inadequate, both at central government level and at the level of the Town Councils and communities (Shehias). Planning processes are consequently not adequately inclusive, resulting in conflicts and poor ownership and implementation.

As a result of this lack of coherence in both the planning and in the management of landscape management, the management of land, water and other natural resources in the landscapes is sub-optimal, with conflicts over resources resulting and trade-offs being made in a haphazard way. As a result, the longer-term sustainability of the landscapes is at risk as critical ecosystem services are undermined.

²³ Richards, N. (2019). Water Users Associations in Tanzania: Local Governance for Whom? *Water* 2019, 11, 2178.

Policy and market conditions do not provide adequate stimulus for sustainable rice agricultural practices and value chains

While the Government's ambitions towards ensuring that production of rice will further increase, potentially double, this growth will have to be managed through sustainable intensification, using climate-smart and resource efficient agricultural technologies and practices so that negative environmental implications are minimized, the natural capital that is the basis for wealth is protected, and the increased and diversified food demand can be met without risk of further loss of forests or other natural habitats. Achieving such will, however, require a conducive policy and regulatory environment. In this regard, while Tanzania has in place national strategies for development of the rice sector, strategies and standards that would ensure the environmental sustainability of such development are lacking. In particular, in the absence of a clear drive for sustainability from the existing markets (which are mainly national and regional), such Government-led conditions are crucial in order to drive for the necessary change. Unfortunately, often, current government and partner interventions create little stimulus for such, resulting in a mis-alignment between agricultural policies and strategies, and natural resource based views. This results in the fact that forests, natural habitats, and ecosystem services are generally undervalued and overexploited, while the prices of commercial products in the food system do not factor in the costs of environmental externalities present in the production process. In addition, there are a number of gaps in policies and plans leading in some cases to conflicting interests between and among sectoral central government agencies and local government structures with regard to decision-making in relation to sustainable agricultural development and value chains. It is therefore critical for the various sector policies and strategies to be developed and implemented in such a way that conflicting interventions are avoided.

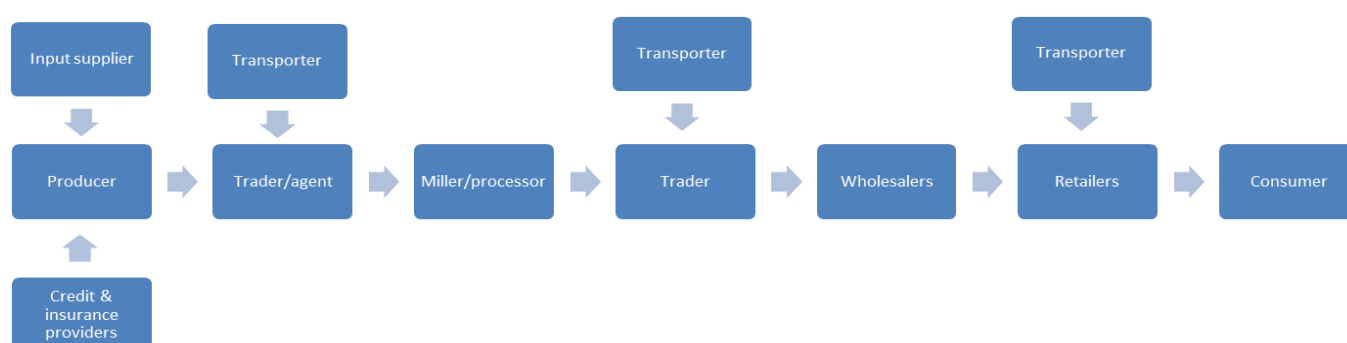
Inadequate farmer support systems and enabling conditions for private sector investment in sustainable rice value chains

Without a strong mechanism for educating and stimulating rice farmers and other value chain actors to adopt more sustainable practices, a change is not likely to come. Unfortunately, current capacity and investments in farmer support systems, through extension services and other means, as well as engagement with private sector on sustainable practices, are very limited. Existing extension services in Tanzania are considered inadequate, both in terms of numbers of extension workers (only 3,300 of the estimated 15,000 extension workers that are needed actually posted), as well as in terms of training and equipment with methods and technologies, a situation that has not improved with the decentralization of extension services to local governments who are perennially short of funds². While there have been a range of initiatives and programmes by different organizations to demonstrate and promote improved rice cultivation approaches, including in the target landscapes, more effort will have to go into building up the necessary longer-lasting support systems to help farmers transition into such. Crucial in scaling up is also the absence of functional farmer cooperatives and resource centers that would facilitate effective engagement with farmers.

It is also important, in this regard, to avoid confusion among the farmers by introducing multiple and parallel projects/interventions using different approaches and terminologies; too often different organizations implement programs differently (in most cases with similar objectives in mind) to similar farmers using different approaches. There is a need to provide 'proof of concept' and promote the most appropriate models of sustainable rice production and value chain approaches, through targeted interventions, and based on the experiences of prior initiatives.

The same principles apply for engagement with private sector. The rice value chain in Tanzania includes multiple horizontal and vertical links from the producer to the consumer. Those involved in the chain include primary producers (mainly small-scale farmers), input suppliers, credit and insurance providers, a large number of traders/agents who operate between producers and processors, processors (millers), wholesalers, retailers, transporters and consumers. The chain is fragmented, poorly organized, and largely uncontrolled (despite existing regulations), which makes engagement with private sector actors along the supply chain a complex undertaking. A schematic presentation of the Tanzania rice value chain is presented in Figure 5.

FIGURE 5 SCHEMATIC PRESENTATION OF THE TANZANIAN RICE VALUE CHAIN



Tanzania's value chain actors face a number of challenges. The many small-scale producers (farmers) are limited firstly by limitations in knowledge (of efficient farming practices and available technology); access to inputs (seeds, fertilizers etc.) is hampered by poor infrastructure, distribution challenges as well as access to credit facilities; poor access to information (on markets, climate conditions, etc.) limits effective planning of both production and marketing opportunities; high levels of post-harvest loss are related to a lack of processing and storage facilities; lack of irrigation infrastructure strongly decreases productivity, limiting production basically to one cycle per year; and the general small-scale nature of production and weakness of cooperative structures hampers the general effectiveness of the sector.

For other value chain actors, key challenges include the poor infrastructure and scattered and poorly organized nature of the producers, making both the distribution of supplies and the collection of produce a challenge. Access to credits and insurance, as well as access to market data is furthermore limiting their effectiveness in creating maximum added value.

While Tanzania does have in place structures for engagement with private sector, through for example the Tanzania Investment Center, the Rice Council of Tanzania and the SAGCOT Secretariat, a more coherent program for private sector engagement will be required in order to provide the enabling conditions that would attract the necessary long-term sustainable investments to make the transition towards sustainable rice value chain development. This will have to go hand in hand with the development of appropriate fiscal/financial incentive schemes that would provide additional stimulus for private sector to invest in such initiatives. In this regard, some of the issues raised in interviews with private sector actors are access to adequate crop risk

assurance, reliability of input supplies and input credit facilities, and the poor state of transport and irrigation infrastructure.

Resource constraints, capacity limitations and lack of proven models of improved management and land restoration

While Tanzania has committed to ambitious levels of restoration and management of its forest landscapes and wetland under the UNCCD, the Bonn Challenge / AFR100 and other international mechanisms (see section 1.3), it is clear that the country, in general, in many ways lacks the necessary capacity (skilled human resources) and (financial) resources to ensure a fully appropriate level of investments in land management and restoration. An associated cause of these problems is a lack of capacity for enforcement of the existing legislation, policy and by-laws by local authorities. Additional investments in forest and wetland management and restoration will therefore be required, which will have to go with appropriate (low cost) methods of management and restoration, the strong engagement of communities, and models that provide incentives for private sector finance and investments to come in.

An overview of the key barriers to be addressed by the project is presented in Table 2.

TABLE 2 OVERVIEW OF KEY BARRIERS TO BE ADDRESSED BY THE PROJECT

Barrier	Manifestations of the barrier
Inadequate institutional coordination and integrated planning systems for land and water use management	Inadequate integrated land and water use planning and management
	Inadequate capacity and implementation strategies for ILM
Policy and market conditions do not provide adequate stimulus for sustainable agricultural practices and value chains	Absence of agreed standards, policies and strategies for sustainable, climate smart, rice value chains
Inadequate farmer support systems and enabling conditions for private sector investment in sustainable value chains	Low capacity of existing farmer support systems and a lack of proof of concept to guide farmers in the transition towards more sustainable rice production
	Lack of clear business cases and public-private sector engagement for the development of sustainable rice value chains
Resource constraints, capacity limitations and lack of proven models of improved management and land restoration	General lack of resources and capacity for effective land management and restoration
	Lack of sustainable landscape finance opportunities

1.5 Baseline Scenario

The Government of Tanzania with partners has in place a range of programmes and initiatives related to each of the pre-described barriers, ranging from land and water use planning, advancing rice production systems as well as the restoration and management of forest, wetlands and other ecosystems. Building on the key barriers identified in section 1.3, the following section provides an overview of the current baseline situation with regard to each of the three project components. A systematic overview of the key baseline initiatives is presented in Table 2.

Land- and water use management plans and platforms

In terms of integrated approaches to land-use planning and management, the NLUPC has made major strides over the past years in rolling out land-use planning across the country. Efforts in this regard were supported through mostly donor funded initiatives, in particular under the multi-donor funded Land Tenure Support Program. Due to resource- and capacity limitations, efforts so far lack in both scope and depth. For Kilombero District, for example, a draft District Land Use Framework plan has been developed for the Kilombero cluster but the plan still remains to be officially endorsed and put into implementation. Also, while the majority of the 99 villages in the Kilombero District have in place VLUPs, these mostly end at stage 4 (zonation) thus missing stages 5 and 6, which are relevant for example to attract the right levels of development and investment and secure the full ownership of communities. Most VLUP are limited by village boundaries without cohesion in the wider geography. Considering the existence of this important land use planning basis for the District, the existence also of an IWRM Plan prepared by the Rufiji Basin Water Board (RBWB), and an actively ongoing multi-stakeholder Land use Dialogue coordinated by the NLUPC, as well as other sectoral coordination structures, a strong basis is laid for the project addressing some of the main barriers regarding effective institutional coordination and better integrated planning systems for land and water use management. In this regard, the project will be able to build on continuous support provided by the IUCN SUSTAIN project, among others.

For Zanzibar, with the Commission of Land only established in 2015, efforts towards land use planning are still in its early stages. A National Land Use plan was, however, concluded in 2002, providing a high-level basis for land use planning across both Unguja and Pemba Islands. Moreover, an attempt towards the development of an integrated land use plan for the coastal belt of the North A District was made. Although this plan was never completed or endorsed, its outcomes will serve as a baseline for efforts under this project. Both efforts were supported by the Government of Finland. Furthermore, the Commission has completed the development of a number of local area land-use zoning plans around priority communities, including Mkokotoni and Nungwe town areas in the North-Unguja landscape. The existing land use plans, however, are all at high level and lack the level of detail and analysis to provide a basis for ILM. As a result, decisions around land tenure are mostly not based on clearly defined land use plans. At present, no existing projects and programs are supporting further efforts in this regard.

A critical point of attention is the earlier mentioned fact (see section 1.3) that in both landscapes, the current pricing mechanisms for domestic and irrigation water use do not reflect the true environmental costs to manage, conserve and restore water catchment; a major shortcoming that is impeding the long-term sustainable management of the landscapes. In addressing this challenge, the project will build on existing efforts under the Water Sector Development Program (Phase II) for mainland Tanzania, and the project 'Strengthening of Water Supply and Sanitation Services Sustainability' for Zanzibar to advance policy-level discussions in regard to a long-term sustainable financing mechanism for catchment management.

The three key baseline initiatives taken into account in the design of this project are:

- The IUCN 'Sustainability and Inclusion Strategy for Growth Corridors in Africa (SUSTAIN-Africa)' project (2020-2023; \$2,500,000 for Kilombero landscape). Because of the strong similarities in scope (see Table 2 below), the project will aim to build synergies with ongoing and planned initiatives under

SUSTAIN. Also, efficiencies would be sought in potentially shared capacities for project implementation and technical assistance.

- The 'Development Corridors Partnership (DCP)' (2017-2022; \$6,200,000 covering 3 countries), led by UNEP-WCMC, will add specific value to establishing a baseline mapping of ecosystem services, climate change projections, hydrological modelling and related scenarios.
- The Care-WWF Alliance initiatives on 'implementing Integrated Green Growth (IGG) in SAGCOT region and Tanzania' (2020-2022; \$100,000) and 'Savings and Credit Groups for Food Security and Ecosystem Sustainability in Tanzania and Mozambique' (2020-2022; \$300,000), which both have components related to integrated land and water management.

A further overview and analysis of these and other baseline projects related to component 1 of the project is provided in Table 2.

[Sustainable rice production and value chains](#)

The rice sector in Tanzania, and the agricultural sector at large, has been the subject of considerable attention over the past few years, providing a good baseline of experiences and lessons learnt with regard to sustainable intensification of the rice production sector. As part of the project development process, a detailed analysis of such initiatives, including the lessons learnt, was undertaken. A summary of this analysis is presented in Annex 9.

At the policy level, an important baseline is provided by the existence of the National Rice Development Strategy for mainland Tanzania, and the Agricultural Transformation Initiative for Zanzibar. Another key element in this regard is SAGCOT's Green Growth Investment Framework, also referred to as 'Greenprint', which defines considerations with regard to issues of climate change, environmental conservation, and natural resource management as critical to the Tanzania southern agricultural growth corridor's long-term economic development for smallholder and commercial agriculture alike. Specific strategies towards the ensuring the long-term environmental sustainability of the rice value chain are, however, still lacking at this point.

Past and present support to the sector is provided by a range of donors, including the World Bank, International Fund for Agriculture Development (IFAD), African Development Bank (AfDB), Irish Aid, Japan International Cooperation Agency (JICA), Alliance for a Green Revolution in Africa (AGRA), United States Agency for International Development (USAID), Department for International Development (DFID), Food and Agriculture Organization of the United Nations (FAO), AfricaRice, the Bill and Melinda Gates Foundation and the Coalition for African Rice Development (CARD). Key in this is, among others, the World Bank funded 'Expanding Rice Production Project (ERPP)', which is geared towards increase rice produced and marketed in targeted areas of Tanzanian mainland and on Zanzibar (including Kilombero and North-Unguja). Activities supported by the project include the introduction of sustainable seed systems, improved crop productivity through better irrigation and crop management, and innovative marketing strategies. This project is expected to close just at the start of the FOLUR project, but discussions have been held to integrate critical elements and experiences as part of the transition.

The most important, currently active baseline initiatives related to rice value chain development are the following:

- The USAID ‘Feed the Future’ Initiative (2017-2022; \$70,000,000), which features investments geared towards, among others, towards the construction of modern rice irrigation infrastructure, and the promotion of new varieties and sustainable agricultural practices in general. Targets include the rice value chain in Morogoro, Iringa, Mbeya, Manyara, Dodoma and Zanzibar regions and the Zanzibar islands. Substantial support is provided to SAGCOT in particular.
- For Zanzibar specifically, the ‘Rice Irrigation Infrastructure Project’ (2019-2024; \$64,464,154 loan), implemented by KOREA Exim Bank/SMZ, supports the construction of four irrigation schemes that will use reservoirs as water sources as well as through boreholes for irrigating rice fields (i.e. Kilombero, Pangeni and Upenja JKU areas).
- The ongoing EU support to SAGCOT (2018-2021; \$4,900,000), with support to the smallholder rice sector in the Morogoro (including Kilombero) and Iringa regions.
- The Care-WWF Alliance project on ‘Savings and Credit Groups for Food Security and Ecosystem Sustainability in Tanzania and Mozambique’ (2020-2022; \$300,000), which provides a baseline related to sustainable finance mechanisms for the transition to sustainable agriculture.
- Tanzania Social Action Fund (TASAF) (2019-2022; \$373,640,000): The new phase (II) of the TASAF Project, will support household level (and community level) initiatives that target areas of interest to this proposed project including small scale irrigation schemes, water supply, etc.

Besides these specific projects and programs, recognition should also be given to the various core activities undertaken by a number of project partners, in particular:

- Tanzania Agricultural Research Institute (TARI): The TARI center in Ifakara (Kilombero) is the designated focal institute for research related to the rice sector. As such, the centers current activities include training of Certificate/Diploma students – forming a good human resource base for extension officers in the rice value chain; training of extension services; and developing drought resistant, high yielding rice cultivars/varieties.
- The Agricultural Seed Agency (ASA), which collaborates with TARI to research, produce, certify and supply rice seeds across the country – including Kilombero and Zanzibar.
- SAGCOT Center Limited: Mandated with a broad level promotion of the SAGCOT initiative, the center provides important services in terms of facilitating private sector engagement and policy advice in regard to the agricultural sector; the rice sector in particular being targeted under the Kilombero Cluster.
- RCT, which together with SAGCOT Center, functions as a facilitator of bring private sector interests to the policy front.

[Landscape management and restoration](#)

Strategies for forest landscape restoration have been in place since 1967, with the proclamation of the National Community Forestry Program (Village Afforestation Program). Over the years, the Tanzanian Government has designed and implemented major programs and projects aimed at restoring degraded lands. While earlier the focus was largely on soil and water conservation, and several projects were implemented (e.g. Dodoma Soil Conservation Program; Natural Resource Conservation Program in Iringa region), in 2006, the Government began implementing a more comprehensive Strategy for Urgent Actions on Land Degradation and Water Catchments to reduce overgrazing, deforestation, wildfires, and unsustainable practices (of farming, irrigation,

fishing, mining and waste disposal). Planting 1.5 million trees per annum in each district became a requirement. Recently, a 5-year (2016-2021) National Tree Planting and Management Strategy has been drafted to reverse the negative trend of rapid rates of deforestation and forest degradation in the country. The strategy responds to the National Forest Resources Monitoring and Assessment (NAFORMA) findings, which show that wood demands significantly exceed supply by approximately 19.5 million cubic meters every year. Forest landscape restoration has also been addressed in other programs and strategies including the National Forest Program, Biomass Energy Strategy, National REDD+ Strategy and National Climate Change Strategy.

While historically, the management of forests was characterized by extensive state control without much involvement of local community, a key part of the Government's current strategy is on the devolution of authority and responsibilities for forest management to communities through various forms of participatory forest management²⁴. Although under recent Government direction there seems to be return to stronger state control, the aspect of community engagement and empowerment is strongly enshrined in both Tanzanian culture and its prevailing Government policies.

Tanzania has good experiences with sustainable landscape finance initiatives. In particular, there have been several experiences related to the establishment of Payment-for-Ecosystem-Services (PES) schemes, the best known case being the PES scheme for the Sigi river catchment management, which is assuring freshwater to supply to Tanga Town. At present, there is an ongoing attempt to establish a PES scheme for the upper catchment area of the Kilombero Valley through USAID WARIDI project. However, this scheme is currently on hold as the private sector partner (Kilombero Plantations Limited) has gone bankrupt.

In addition to Government core programs as well as district level programs funded through operational budgets received from the Central Government, the current project baseline is constituted by a large number of programs, at district, regional and national level, geared towards implementing the above-mentioned policies, strategies and commitments, including in the target landscapes. Among the currently ongoing projects for this baseline are:

- The 'Restoration in Supply chains (RESUPPLY)' project (2019-2022; \$150,000), funded by the German Ministry for the Environment, which is intended to undertake, among others, assessments on opportunities for forest landscape restoration (FLR) in the Kilombero Valley, cost-benefit analyses of restoration approaches, as well as studies into landscape finance options for the same;
- Reforest Africa (2016-2030), a project set up to test and implement both active and passive restoration methods for the Udzungwa-Kilombero ecosystem, as well as to develop a comprehensive restoration plan for the Udzungwa-Kilombero ecosystem;
- The World Bank funded project 'Resilient Natural Resource Management for Tourism and Growth (REGROW)' (2017-2023; \$150,000,000), which will contribute to conservation and management of areas in upstream catchment areas of Kilombero (Udzungwa Mountains National Park).
- Tanzania Social Action Fund (TASAF) (2019-2022; \$373,640,000): The new phase (II) of the TASAF Project, will support household level (and community level) initiatives that target areas of interest to

²⁴ Various forms of community forest management appear in Tanzania, including the establishment of Village Forest Land Reserves, which are characterized by far going devolution of responsibilities and authority to communities, as well as Joint Forest Management, with shared responsibilities between state and communities, such as through Community Forest Management Agreements (COFMAs) in Zanzibar.

this proposed project including soil and water conservation measures (e.g. terracing, afforestation, sea water protection structures), small scale irrigation schemes, water supply.

- The Evergreen / Ecosystem based agriculture project by Care Tanzania (2020-2025; \$1,242,000), which focuses on the restoration of coastal forests and degraded agricultural lands in key landscapes in Zanzibar.

More details on the most relevant baseline projects are presented in Table 2.

TABLE 2 OVERVIEW AND ANALYSIS OF BASELINE PROJECTS AND PROGRAMS

Title	Executing agency	Barriers reduced by baseline activities	Landscape(s)	Baseline-related outcomes	Timeline	Budget (US\$)
Sustainability and Inclusion Strategy for Growth Corridors in Africa (SUSTAIN-Africa)	IUCN	<p>Strong similarities in scope across the three components, with components of work around ILM, sustainable value chains and landscape restoration. Kilombero is one of two landscapes targeted by SUSTAIN. Key baseline activities under SUSTAIN include:</p> <ul style="list-style-type: none"> • Support to both landscape and local land use planning • Facilitating Kilombero Multistakeholder Platform • Commodity value chain assessment (incl rice) • Opportunity assessment for investing in natural infrastructure • Enhance policy coherence across ministries on implementation of selected policy and market instruments • Innovative and bankable models for ILM • ROAM assessment for restoration opportunities • Development of community-based forest enterprise model with investable revenue streams 	Kilombero	<p>Outcome 1.1</p> <p>Outcome 2.1</p> <p>Outcome 2.3</p> <p>Outcome 3.1</p>	2020-2023	2,500,000 (estimated budget for Kilombero landscape specifically)
Catalyzing Private Sector Commitment to Implement the	IUCN	Synergies with component 3 of FOLUR. In particular, synergies with output 1.3 related to financial incentive schemes for investments in forest landscape restoration. FOLUR will	Kilombero & North Unguja	Outcome 3.1	2019-2022	900,000

Bonn Challenge – A Platform for Success - Bonn Challenge and Private Sector		benefit from the platform set up under this IUCN project in particular as a baseline for its restoration activities.				
Implementing IGG in SAGCOT region and Tanzania	CARE-WWF Alliance	Support development of Kilombero Cluster Development Framework; mainstreaming IGG principles and support Kilombero Multi-Stakeholders Forum; building capacity to local stakeholders and awareness to increase understanding of the sustainable agriculture and IGG.	Kilombero	Outcome 1.1 Outcome 2.1	2020-2022	100,000
Savings and Credit Groups for Food Security and Ecosystem Sustainability in Tanzania and Mozambique	CARE-WWF Alliance	Contribute to increase water flow to Great Ruaha than connect to Kilombero basin and scaling up inclusive value chain approaches including digital market linkage, financial inclusion and Integrated Land and Water Management approaches.	Kilombero	Outcome 1.1 Outcome 2.3	2020-2022	300,000
Evergreen Ecosystem based agriculture project	/ CARE Tanzania - lead	Restoration of coastal forests and degraded agricultural lands in key landscapes in Zanzibar.	North Unguja	Outcome 3.1	2020-2025	1,242,000
Save the Mangrove Project	WWF Tanzania	Restoration of mangrove forests on Zanzibar	North Unguja	Outcome 3.1	2020-2022	77,708
Development Corridors Partnership (DCP)	UNEP-WCMC (and partners)	The DCP will contribute in particular towards ecosystem mapping and analysis, hydrological assessment and related scenario planning in the Kilombero landscape, as part of its broader work on the SAGCOT agricultural development	Kilombero	Outcome 1.1 Outcome 3.1	2017-2022	6,200,000 (spread over different resource corridors)

		corridor. Furthermore, work on climate change projections and the impact thereof on the Rufiji basin, as well as willingness-to-pay and willingness-to-accept compensation study related to potential PES in the area will provide value inputs into the ILM processes.				
Feed the Future (FtF) Tanzania	USAID	Baseline provided, among others, through the project's support to smallholder farmers be more competitive in producing and marketing, e.g. through the construction of modern rice irrigation infrastructure, and the promotion of new varieties and sustainable agricultural practices in general. Targets include the rice value chain in Morogoro, Iringa, Mbeya, Manyara, Dodoma and Zanzibar regions and the Zanzibar islands. Substantial support is provided to SAGCOT in particular.	Kilombero & North Unguja	Outcome 2.2	2017 – 2022	70,000,000 (note: budget spread over different geographies)
Rice Irrigation Infrastructure Project	MAINRL	This baseline initiative, implemented through a loan by KOREA Exim Bank/SMZ supports the construction of four irrigation schemes that will use reservoirs as water sources; four reservoirs are planned to be constructed to supply 427 hectares, of which the largest, Kinyasini dam (217 ha) will supply water to Kibokwa and Kinyasini areas in the North-Unguja landscape. In addition, the project will support investments in Zanzibar's 'Kilombero valley', through boreholes for irrigating rice fields (i.e. Kilombero, Pangenji and Upenja JKU areas). FOLUR will link closely to these planned irrigation schemes, complementing these investments in infrastructure with appropriate planning and technical support in order to make sure that this new rice development	North Unguja	Outcome 2.2	2019-2024	64,464,154

		scheme is happening in the most sustainable way.				
EU support to the Southern Agriculture Growth Corridor Initiative of Tanzania (SAGCOT)	FAO/HELVETA/RCT	The three components of this program include (i) Improve Competitiveness and Increase Postharvest Management Capacity of Smallholder Farmers in the Rice Value Chain - implemented by FAO; (ii) 'Rice Postharvest Management (RIPOMA) – implemented by HELVETA; and (iii) Enhancing Competitiveness of Smallholder Rice Farmers in Morogoro region - jointly implemented by AKF and RCT.	Kilombero	Outcome 2.2	2018-2021	4,900,000
Restoration in Supply chains (RESUPPLY) project	IUCN	The project is intended to undertake, among others, assessments on opportunities for forest landscape restoration (FLR) in the Kilombero Valley, cost-benefit analyses of restoration approaches, as well as studies into landscape finance options for the same.	Kilombero	Outcome 3.1	2019-2022	150,000
Forest restoration plan for the Greater Udzungwa-Kilombero Ecosystem	Reforest Africa/University of York	The project will test and implement both active and passive restoration methods for the Udzungwa-Kilombero ecosystem, as well as to develop a comprehensive restoration plan for the Udzungwa-Kilombero ecosystem, therewith providing an important baseline for the restoration activities planned under FOLUR.	Kilombero	Outcome 3.1	2016-continuous	300,000 (estimate)
Resilient Natural Resource Management for Tourism and Growth (REGROW)	World Bank	The project will contribute to conservation and management of areas in southern Tanzania, including the upstream catchment areas of Kilombero Forest Reserve and Udzungwa Mountains National Park, by improving PA Management, strengthening alternative livelihoods for targeted communities, and by strengthening landscape management and	Kilombero	Outcome 3.1	2017-2023	150,000,000 (spread over southern Tanzania)

			infrastructure investments (the latter focusing on Ruaha national park).				
Tanzania Action (TASAF) – Phase II	Social Fund	World Bank	The new phase (II) of the TASAF Project, will support household level (and community level) initiatives that target areas of interest to this proposed project including soil and water conservation measures (e.g. terracing, afforestation, sea water protection structures), small scale irrigation schemes, water supply. The scheme provides an opportunity to support community engagement in on-the-ground activities/investments under component 2.2 and 3.1 in particular.	Kilombero & North Unguja	Outcome 2.2 Outcome 3.1	2019-2022	373,640,000 (country-wide)

1.6 Coordination with other relevant GEF & non-GEF Initiatives

As may be concluded from section 1.5, there is considerable scope for synergies with a range of ongoing and planned projects. In this regard, the project will seek coordination and cooperation as appropriate with these projects through the various line Ministries involved in their coordination. Also, at the landscape level, the multi-stakeholder platforms will provide a platform for continuously monitoring synergies in this regard.

Specific reference should be made to a number of GEF-funded initiatives that have a link with the Tanzania FOLUR project, to mention:

- The UNEP/GEF 'Supporting the implementation of integrated ecosystem management approach for landscape restoration and biodiversity conservation in Tanzania' (\$11,205,872; approved for implementation), which is implemented within the broader framework of the GEF Restoration Initiative (TRI). The project provides an important basis for the proposed child project, as it intends to lay the institutional basis for landscape restoration in Tanzania, as well as design and implement targeted restoration plans in a number of key landscapes in the SAGCOT area (but excluding the Kilombero Cluster).
- The UNDP/GEF project 'Safeguarding Zanzibar's Forest and Coastal Habitats for Multiple Benefits' (\$5,181,671; under development), which proposes a landscape approach to safeguard Zanzibar's terrestrial and coastal forest habitats for multiple development benefits. A geographical overlap exists in relation to one of the selected project sites: Kiwengwa-Pongwe Forest Reserve (KPFR). Close coordination with this project will therefore be required in order to avoid overlaps.
- The IFAD/GEF supported project 'Reversing Land Degradation trends and increasing Food Security in Degraded Ecosystems of Semi-arid Areas of Tanzania (2017-2021; \$7,155,963)', implemented as part of the GEF 6 Integrated Approach Pilot "Fostering Sustainability and Resilience for Food Security in Sub-Saharan Africa". The objective of this project is to reverse land degradation trends in central Tanzania and Pemba (Zanzibar) through sustainable land and water management and ecosystem-based adaptation. Geographically, this project has no specific overlap with of the FOLUR project, but close coordination at the level of policy engagement, and sharing of lessons learnt will be required.

Particular synergies will also be sought with the parallel GEF7-funded FAO/GEF Drylands Sustainable Landscape project. Initial discussions between the project teams have highlighted a number of potential synergies to be created:

- Overall project management and coordination:
 - Opportunity for creating synergies at the project coordination level, e.g. through the MNRT /TFS coordination role; and through potential joint/back-to-back PSC meetings
 - Potential for a joint knowledge sharing platform hosted through the MNRT
- Synergies around ILM approaches:
 - Opportunities for cross-learning, working on potential guidelines (e.g. development of VLUPs/implementation plans/working beyond administrative boundaries)
 - Cooperation around capacity building and awareness raising (e.g. developing joint training and awareness raising packages; advisory services; capacity-building)
- Potential synergies on rice value chain work
 - Opportunities for cross learning and capacity building

- Link between DSL work on value chains and work at policy level under FOLUR (sustainable rice development plan)
- Other synergies:
 - Potential synergies towards strengthening SMEs: cross-learning, technology development, etc.
 - Synergies around landscape restoration and management

Beyond projects focused on Tanzania, furthermore, the Tanzania FOLUR Child Project will benefit from exchanges with other FOLUR focal countries, in particular those with a focus on the rice sector (China, India, Indonesia, Thailand, and Vietnam). In this regard, the global FOLUR platform will provide a mechanism for:

- Capacity building through learning activities, knowledge tools and resources, and general experience sharing through the Global FOLUR Community of Practice (Pillar A)
- Engagement with value chain actors (private sector, investors) and access to resources and opportunities for policy engagement, finance and leverage opportunities, standards and guidelines, etc. (Pillar B)
- Access to a global platform for knowledge products and outreach materials, as well as global and regional forums (Pillar C)

Noted in this regard should be that Tanzania, while one of the largest rice producing countries in Africa still being relatively modest compared to the other larger rice producing countries in the FOLUR portfolio, has a lot to gain from such exchanges.

SECTION 2: PROJECT EXECUTION STRATEGY

2.1 Project Objective and Theory of Change

The objective of the project is ***To promote integrated land and water management, restoration, and sustainable rice value chains to prevent deforestation and land degradation in priority landscapes in Tanzania.***

The proposed child project promotes an integrated approach that combines aspects of sustainable food systems and deforestation free supply chains, with broader landscape level planning, management and restoration, for the preservation of ecosystem services in some of Tanzania's key rice cultivation areas. In this regard, building off the existing baseline, as presented in section 1.5, the project will:

- Support the development of an ILM approach for the target landscapes, through a multi-stakeholder process, in order to provide for a landscape management framework that gives space for rice production and other uses, while securing space for the preservation and restoration of critical ecological systems;
- Support the development of sustainable and socially inclusive value/supply chains for the rice production sector, including governance, finance and market approaches that will drive sustainable value chains; and

- Support the development and implementation of concrete landscape restoration and management activities in the target landscapes, including strengthening enabling conditions for upscaling. The focus here will be on areas degraded by or providing key environmental services to the rice sector.

In line with this, the project's Theory of Change is formulated as follows:

If, in the Kilombero and North-Unguja landscapes, the project promotes environmentally sustainable, more intensive, climate smart rice farming; if the project, in those landscapes, at the same time helps conserve key HCV areas through the development and implementation of ILM Plans at district and village level, which will guide the further development of rice farming and other types of land use (basically determining the 'where' rice farming would be allowed to happen and where not because of environmental sensitivities); and if, simultaneously, the project promotes the restoration and improved management of key degraded areas (areas degraded by unsustainable farming practices or areas providing key ecosystem services to the rice farming sector); then the rice production sector in Kilombero and North Unguja districts will be more able to meet the increasing market demand for rice without threatening the long term conservation of the landscapes' GEBs.

A central notion in this Theory of Change is the presumption that farmers will be motivated to change their current rice farming methods because building their capacity in climate-resilient and more efficient farming will lead to a higher and sustainable return on production. This has the added benefit of reducing the need of farmers to expand rice farming into other areas, which can help conserve key HCV areas together with the implementation of the ILMP. This paradigm shift in the way that farmers think and operate will need to go hand in hand with the creation of enabling policy conditions and motivations for Government to effectively set the necessary guidance and management frameworks for land use planning, agricultural development and landscape management and restoration, not only in the target landscapes, but throughout the country. Furthermore, private sector stakeholders will need to be engaged and incentivized to deploy more sustainable supply chain approaches and invest in effective landscape management and restoration. In this way, through setting the example at landscape level, while institutionalizing recommended best practice approaches and solutions, and by creating the necessary enabling conditions for upscaling, the project will seek to bring transformational change.

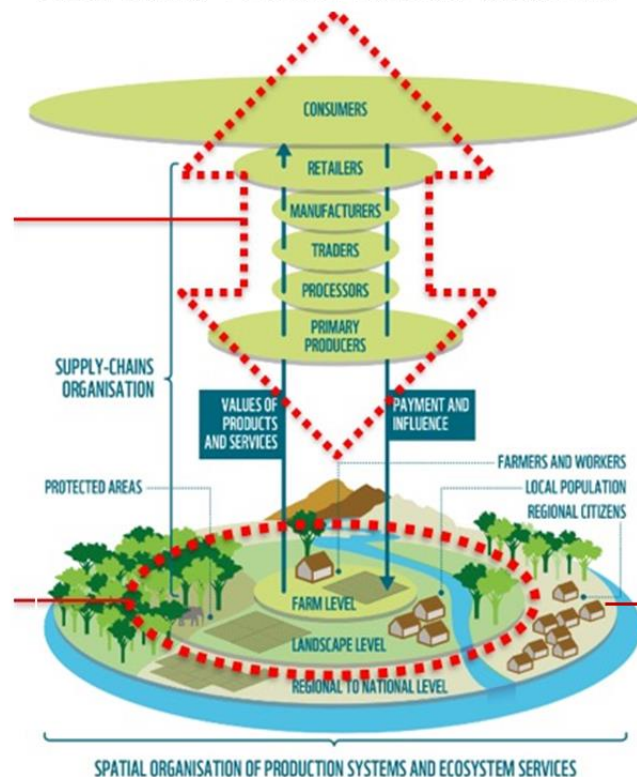
The Tanzania FOLUR Child Project will benefit greatly from exchanges with other FOLUR focal countries, in particular those with a focus on the rice sector (China, India, Indonesia, Thailand, and Vietnam). In this regard, the global FOLUR platform will provide a mechanism for capacity building through learning activities, knowledge tools and resources, and general experience sharing through the Global FOLUR Community of Practice; engagement with value chain actors (private sector, investors) and access to resources and opportunities for policy engagement, finance and leverage opportunities, standards and guidelines; and access to a global platform for knowledge products and outreach materials, as well as global and regional forums.

A schematic representation of the three axes of action as presented above is presented in Figure 6. It should be noted that the three main axes of action as presented will work closely together, in the sense that the land and water use management plans developed and strengthened under Axis 1 will define where work under the other two axes (sustainable rice production and value chain; and ecosystem restoration/management) will focus. Also, the work on sustainable agricultural supply chains will be limited to areas designated under land use planning framework, and not lead to expansion into areas set aside for conservation. A more detailed representation of the linkages between the various aspects of the Theory of Change is presented in Annex 3.

Three axes of integrated food systems, land use and restoration action

Axis 2.
Sustainable
value chains

Axis 3.
Conservation
and
restoration



Axis 1.
Land- and
water use
Management

FIGURE 6 SCHEMATIC REPRESENTATION OF INTEGRATED FOOD SYSTEMS, LAND USE AND RESTORATION ACTION

2.2 Project site selection

The geographical size of the landscapes and their diversity in terms of the issues addressed by the project warrants a focus on specific areas within the two landscapes where the issues are most apparent. In this regard, a provisional project site selection process was completed as part of the PPG stage. The details are presented in Annex 6.

The selection process for the short listed focal areas for site-based interventions considered a number of criteria considered essential for the project, as follows:

1. **Presence of competing environmental (biodiversity) and agricultural (rice) development interests:** The project would focus on sites where the expansion of the rice sector in particular conflicts with interests from an environmental conservation perspective, e.g. where encroachment into forests, wetlands or other biodiversity areas is either already happening or bound to happen, or vice-versa where there are existing conflicts and/or concerns related to natural resources use, including water and land, that are impacting on these rice expansion plans.
2. **Potential for successful implementation of project activities:** This involves assessing:

- a. The interest and willingness of communities and other partners to engage in project activities;
 - b. The presence of past or existing projects and initiatives on which this project might build; and
 - c. Technical and financial viability, e.g. local factors that may influence the technical and financial feasibility of the improved farming practices or the potential for successful restoration or improved management of the ecological values of the sites.
3. **Convergence of interests between Government sectors:** The project will build on areas or issues already identified by Government as priorities. This may include e.g. existing reserved areas and community forest areas, water protection areas, agricultural strategies, irrigation plans/project areas, among others.

Based on the above criteria, the provisional selection of sites selected for on-the-ground intervention are the Ruipa and Mngeta clusters for Kilombero landscape, and the Kinyasini-Kisongoni-Chaani and Kiashange-Mkokotoni Catchments for Northern Unguja landscape (reference made to the maps presented in Annex 6). A provisional list of specific project activities in each of the identified project sites is presented in Table 3 of Annex 6.

A final selection of project intervention sites will be made during the actual project implementation phase. Various levels of analysis, in this regard, are foreseen as part of the project intervention framework, including in particular Output 1.1.1, which will provide a stronger basis for site selection. The process of selection of final project sites will be based on the pre-agreed selection criteria as defined in this annex and, with a final decision on sites to be validated by the Project Steering Committee, upon proposal by the Project Management Unit.

2.3 Project Components and Expected Outcomes

Based on the overall theory of change, the project is divided into four individual components, the first three of which are focusing on one of the main axes of FOLUR action, and the fourth providing for the supporting coordination and monitoring, evaluation and learning aspects of the project:

Component 1 involves the application of an Integrated Landscape Management approach, including developing land-use plans and related water protection plans, and operationalize their implementation by creating an enabling environment.

Component 2 focuses on the development of sustainable and socially inclusive value/supply chains for the rice production sector, including the development of supporting governance, finance and market approaches that will drive sustainable value chains.

Component 3 involves the development and implementation of concrete landscape restoration activities in the target landscapes, including the creation of enabling conditions for upscaling.

Component 4, focuses on coordination, cooperation, and M&E, including knowledge sharing, learning, and synthesis and communication of experiences nationally and regionally (see following section).

The individual project outcomes, outputs and activities are designed to structurally address the identified project barriers (section 1.4), building on the existing baseline conditions (section 1.5). An overview of the project intervention rationale, in this regard, is presented in Annex 5. An overview of the expected outcomes and outputs under each of these components is presented in Table 3.

TABLE 3 OVERVIEW OF PROJECT COMPONENTS, OUTCOMES AND OUTPUTS

Component	Outcomes	Outputs
1. Development of integrated landscape management (ILM) systems	1.1. Strengthened integrated landscape planning and management of Kilombero and Unguja landscapes based on an enhanced understanding of land and water use in the target landscapes	<p>1.1.1. HCV areas and priority ecosystems including priority areas for restoration identified, mapped, and threat analysis undertaken</p> <p>1.1.2. Implementation framework for Integrated Landscape Management for Kilombero Valley and new Integrated Landscape Management Plan for Kinyasini-Kisongoni-Chaani and Kiashange-Mkokotoni catchment areas</p> <p>1.1.3. Local area (village) land use plans, based on priority areas identified in the Landscape Management Plans</p> <p>1.1.4. Policy paper for improved land tenure and water governance systems to support implementation of the land and water use plans</p> <p>1.1.5. Training and awareness raising program on ILM</p>
2. Promotion of sustainable food production practices and responsible value chains	2.1. Agreed national strategies and enabling conditions for the development of sustainable rice value/supply chains	<p>2.1.1. Sustainable value chain development plan for the rice production sector, including identifying linkages to regional rice value and supply chains</p> <p>2.1.2. Sustainable value chain guidelines, standards, and training packages for public and private sector value chain actors in the rice sector, with recognition of international best-practice</p>
	2.2. Adoption of improved rice farming practices in the target landscapes through farmer support systems for sustainable rice value chains	<p>2.2.1. Training and capacity building on sustainable (climate smart, agro-ecological, conversion free) rice production approaches through capacity building of extension services and rice production cooperatives/resource centers</p> <p>2.2.2. Priority sustainable value chain initiatives in the rice production sector supported and operationalized (building on 2.2.1)²⁵</p>
	2.3. Investment and finance through private sector for sustainable value chains	2.3.1. Opportunities analysis for private sector investments in sustainable rice production value chains in the target landscapes with clear business cases

²⁵ initiatives will be further identified in project development

		2.3.2. A collaborative agreement and platform for engagement between public, private and civil society actors on sustainable rice value chain development
3. Conservation and restoration of natural habitats	3.1. Improved management and restoration of natural ecosystems through the implementation of priority land and water use plans, with the active involvement of communities and private sector	3.1.1. Restoration of degraded lands in priority locations based on the ILM plans (output 1.1.3) 3.1.2. Management of priority HCV areas within the target landscapes through proven models (e.g. certification, Village Forest Land Reserves and PPP) 3.1.3. Fiscal/financial schemes to incentivize investment for restoration in degraded lands, targeting small-scale farmers and larger private sector
4. Project Coordination and M&E	4.1. M&E plan implemented and learning exchanges with other FOLUR countries facilitated to aid scaling up and adaptive management	4.1.1. Project progress continuously monitored and mid-term and final evaluation conducted 4.1.2. Project achievements and results documented and KM products developed for replication and scaling up 4.1.3. Active participation in FOLUR learning network facilitated

A detailed description of each of the four project components is presented below.

The general approach and logic of intervention is similar for both landscapes. However, it should be noted that the actual baseline situation differs between the two landscapes (see section 1.5) and therefore the intervention strategies under each of the Components differs:

- A key difference between the two landscapes is the fact that for the Kilombero landscape, work on integrated land use planning has been going and in many cases plans are already in place, while in the case of the Unguja landscape, very little is existing in this regard. Therefore, the project's focus in the Kilombero landscape will be on analysing and finalizing these existing plans, enhancing cross-sectoral cooperation in their implementation, and developing concrete village level land use plans and related implementation and monitoring plans. For the Unguja landscape, on the other hand, the project will engage in more fundamental development of ILM plans, before entering into the level of implementation structures and local land use planning.
- A second difference is related to the nature of rice farming. In both landscapes, rice farming is and has been expanding rapidly, but the characteristics of these developments are different. In the case of Kilombero, attempts to industrial scale production have already been made through Kilombero Plantation Limited, while rice farming in Unguja remains fully small-scale. On the other hand, there are ongoing investments in irrigation infrastructure for rice farming in Unguja that will likely change the

level and nature of production quite substantially. The project will take into account these differences in the design of its approaches and activities under its value chains axes.

- Finally, there are substantial differences in the nature of ecosystem sensitivities, with Kilombero being host to a number of HCV areas including natural parks, nature and forest reserves, wildlife corridors and an important wetland system. In Unguja, the sensitivities in the project landscape vary from smaller forest reserves to critical water protection areas. These differences in sensitivities will be taken account into the design of restoration and management approaches under Component 3.

A more systematic overview and rationale for the intervention strategies is provided in Annex 5. Where appropriate, these differences in approaches are highlighted in the component descriptions below.

Component 1: Development of integrated landscape management (ILM) systems

Component 1 is designed to address the identified barrier of 'Inadequate institutional coordination and integrated planning systems for land and water use management'. In this regard, activities defined under the component are geared towards the application of an ILM approach for the target landscapes, through a multi-stakeholder process, and creating an enabling environment that incentivizes private sector engagement towards sustainable landscape management practices. Particular consideration in the development of these plans will be given to the inclusion of vulnerable groups (e.g. the nomadic groups present in the Kilombero Valley) and gender perspectives. The key anticipated outcome from this component is: Strengthened integrated landscape planning and management of Kilombero and Unguja landscapes. At the landscape level, the project will support the development and implementation of Integrated Landscape Management Plans at catchment level, which take into account the trade-offs to be made between the expanding land and water use for rice cultivation, and other land and water users in the targeted landscapes, including areas reserved for conservation. At the village level, the project will similarly support the development and implementation of village land use plans to mitigate the impact of expanding rice cultivation on land- and water use in the project areas. The main rationale behind this component lies in the need to reduce the potential expansion of rice and other agricultural production over conservation areas. In particular, land use planning would be critical in terms of controlling expansion of rice cropping into forest and wetland systems (including the spillover effect).

An overview of the more specific outputs and planned interventions under this component is presented below.

Outcome 1.1: Strengthened integrated landscape planning and management of Kilombero and Unguja landscapes based on an enhanced understanding of land and water use in the target landscapes

By working on integrated landscape planning and management for the two target landscapes, this outcome will provide the basis for improved management systems for the landscapes. A key point of attention will be the link between water resources management (critical for both the important wetland systems in the Kilombero Valley and the crucial groundwater resources in North-Unguja) and land-use management systems. A description of the key outputs and activities under this outcome is presented below.

Output 1.1.1: HCV areas and priority ecosystems including priority areas for restoration identified, mapped, and threat analysis undertaken

In order to properly advise the integrated landscape planning processes in both landscapes, a baseline assessment will be required to determine the status of threats and impacts around the key natural assets in the geographies, principally areas of HCV, including forests, wildlife corridors, rivers and wetlands, etc. Fortunately, a lot of work in this regard has already been undertaken, in particular for the Kilombero

landscape which has been the topic of various studies and assessments in the past. Further work is also being planned under some of the baseline projects mentioned in section 1.5 (i.e. DCP, Resupply, Reforest and SUSTAIN). As part of this project's PPG-phase an initial remote sensing based mapping exercise was undertaken to determine the most critical areas for attention for the project (see Annex 6).

Activities under this output will be managed through a sub-grant to NCMC/SUA, under the supervision of the PMU. Various other partner institutions may be involved as appropriate, with IUCN functioning as a supporting partner for undertaking a ROAM²⁶ assessment (in a complementary manner to the planned ROAM²⁷ assessment under the IUCN-led SUSTAIN project). The assessment will focus on the Kilombero river sub-catchment area for mainland Tanzania, and the Kiashange-Mkokotoni and Kiashange-Mkokotoni catchments for Zanzibar, and in particular on areas with potential conflicts between rice farming and HCV areas (with reference to Annex 6 for an initial identification of focal areas in this regard). Key activities under this output include:

- Desktop study combined with ground-truthing (field visits), stakeholder consultations and gender sensitive stakeholder mapping, and possibly remote sensing to identify, map/describe HCV and rice growing areas, including related threats to and impacts on critical ecosystems (e.g. degraded areas), and identify opportunities for improved landscape management and restoration (ROAM).
- Assessment of surface water areas, wetlands, groundwater resources and natural ponds (which act as reservoir and fish nursery areas) for protection and conservation. This part of the assessment will provide crucial details that will help establish the links between land and water management in the landscape.
- Assessment of potential climate-change related impacts that would have to be taken into account in the landscape and land-use management plans (Component 1), sustainable rice value chain strategies and initiatives (Component 2) and management and restoration activities (Component 3) to be developed and implemented as part of the Project.

Besides providing valuable inputs into the landscape management plans for the target landscapes (Output 1.1.2), the results of this assessment will also provide more precise details to determine the target areas for on-the-ground interventions under output 1.1.3 (local area land use plans), as well as project components 2 (output 2.2.2 related to sustainable value chain initiatives) and 3 (outputs 3.1.1 and 3.1.2 related to restoration and management).

²⁶ ROAM stands for Restoration Opportunities Assessment Methodology, an assessment methodology developed by IUCN and the World Resources Institute (WRI), which provides a framework for countries to rapidly identify and analyse areas that are primed for FLR and to identify specific priority areas at a national or sub-national level. See e.g. <https://www.iucn.org/theme/forests/our-work/forest-landscape-restoration/restoration-opportunities-assessment-methodology-roam>

²⁷ ROAM stands for Restoration Opportunities Assessment Methodology, an assessment methodology developed by IUCN and the World Resources Institute (WRI), which provides a framework for countries to rapidly identify and analyse areas that are primed for FLR and to identify specific priority areas at a national or sub-national level. See e.g. <https://www.iucn.org/theme/forests/our-work/forest-landscape-restoration/restoration-opportunities-assessment-methodology-roam>

Output 1.1.2: Implementation framework for Integrated Landscape Management in the Kilombero Valley and new Integrated Landscape Management Plan for Kiashange-Mokotoni and Kinyasini-Kisongoni catchment areas

As noted in section 1.3, one of the key barriers to effective management of the two landscapes is the fact that the current planning and management systems for land and water use management are inadequate. This is particularly important in the context of designating areas for rice and other agricultural crop production vis-à-vis areas set aside for the conservation of critical ecosystems. Under this output, the project will address this barrier by focusing on the development and operationalization of ILM plans through a consultative process involving key project stakeholders (in particular affected communities, but also private sector actors), taking into account the various sector interests, the opinions and needs of communities in the landscapes, as well as the threats (including climate change) as identified under output 1.1.1. As the baseline for both landscapes is quite different (see section 1.5 and Annex 5), the approach in this will be different for both landscapes:

- For Kilombero, in view of the existence of an Integrated Water Resources Management Development Plan (IWRMP) for the Rufiji Basin, as well as a Land use Framework Plan for Kilombero District, the focus will be primarily on reviewing and consolidating these plans in the form of an ILM framework and subsequently formalizing and establishing coherent institutional systems for their implementation. This exercise will be undertaken through a consultancy, under the supervision of the Kilombero Landscape Coordination Unit (LCU) and in close coordination with RBWB, NLUPC and the District Authorities. The following specific activities are foreseen: (i) the identification and definition of key institutional roles related to ILM – in relation to the existing land and water use plans – including structures for coordination between the institutions involved; (ii) a gaps and needs assessment that will define the key barriers and factors (e.g. capacity gaps, coordination mechanisms) to be addressed in order for these institutions to become effective; and (iii) targeted support for these issues to be addressed (e.g. structuring governance and operations, development of bylaws for WUAs, building capacity, establishment of tariff and fine systems, etc.), through financial and technical support to the key institutional partners (primarily the District Authorities, NLUPC and RBWB). The resulting implementation framework will address institutions from top to bottom, including national level (Ministries), district level and village level (e.g. WUAs, Land Use Committees and Village Natural Resource Committees). A key mechanism for facilitating this process is the existing Kilombero multi-stakeholder platform, which is maintained under the auspices of the NLUPC, with the support of the SAGCOT Secretariat and District Authorities (see section 2.4 for a description of the constitution of this platform). The intention of the project will be to bring more coherence by merging the different stakeholder groups, as well as reviewing and strengthening the guiding principles of such platforms.
- For Zanzibar, in the absence of any concrete plans, focus will be on the development of an ILM Plan for the Kiashange-Mokotoni and Kinyasini-Kisongoni catchment areas. These plans will be crucial within the context of the ongoing construction of the Kisongoni irrigation scheme, by providing the basis for upstream catchment area management (in particular areas around streams and groundwater catchment areas that are feeding into the system), as well as downstream, where rice farming will be taking place. All activities will be managed by the Unguja LCU, in close coordination with ZAWA, CoL, VPO-2 and the Local Authorities, and will involve a number of key steps: (i) analysis of current land and water use in the catchment area, including relation thereof to the existing threats to ecosystems as identified under output 1.1.1; (ii) a multi-

stakeholder scenario planning exercise for the catchment, involving consultations and workshops with public and private sector stakeholders and communities; (iii) drafting of the actual ILM Plan; and (iv) establishment of appropriate inter-institutional systems for the implementation of this Plan (similar to the case of Kilombero). Implementation of this component will involve a consultancy to advise and support the development of ILM plan and undertake an institutional review, a sub-contracts to a consortium of CoL/ZAWA/VPO-2 to develop the actual plan; and sub-contract(s) to partner institution(s) (primarily CoL, ZAWA, VPO-2 and Local Authorities) to support implementation of recommendations.

Output 1.1.3: Local area (village) land use plans, based on priority areas identified in the ILM Plans

In the particular setting of Tanzania, most land and in many cases natural resources such as forests, are owned and managed by villages. It is crucial, therefore, that the broader ILM plans developed under output 1.1.2 are translated into more tangible land use plans at village level, which take into account the local circumstances, views and needs of the communities. In this regard, the project will support villages located in sensitive areas²⁸ to develop and implement such plans, as well as turn these into action. The process of developing these plans will be highly consultative and bottom up from community perspective, and combined with trainings and focus group discussions around aspects of social and environment safeguards, human rights and gender considerations. The development of these plans will go hand in hand with site-specific environmental and social assessments as per the Environmental and Social Management Framework (ESMF) presented in Annex 12. A preliminary assessment of priority areas, and related villages, to be targeted under this output was undertaken during the project PPG phase (see Annex 6). Focus here, again, will be on specific areas within the wider project landscapes, where there are (potential) conflicts between rice growing and HCV areas. A final selection of specific project areas will be made during the project implementation (according to the procedure described in section 2.2.), benefiting in particular from the threats analysis under output 1.1.1, as well as the ILM plans referred to under activity 1.1.2. Specific activities to be supported by the project are summarized below.

- For Kilombero, this activity will be undertaken by NLUPC and the Kilombero LCU, and facilitated on the ground by the Kilombero District Council and LCU. Based on the existing baseline (section 1.5), activities will involve: (i) final selection of target villages; (ii) finalization of village land use plans from stage 3/4 to stage 5 and 6, which will include the development of concrete management plans and building capacity to implement the same; (iii) supporting the approval and gazettement of these plans at district level; (iv) capacity development of communities for the effective enforcement and implementation of these plans, including the development of business plans and income generating activities that will contribute to effective natural resources management.
- For Zanzibar, activities will focus on the development, finalization and implementation of Local Area land use plans in North A and North B districts, managed by CoL (under sub-contract to the LCU), and facilitated by the District Authorities and LCU. Activities will include (i) community-based planning exercises involving meetings and consultations in target Shehias; (ii) supporting the approval and gazettement of these plans at district level; and (iii) capacity building for the development and implementation of local area land use

²⁸ It should be noted that sensitive areas in this case may actually be located away from the actual natural resources to be protected; e.g. areas of intensive agricultural expansion that may have an effect on ecosystems (e.g. wetlands) further downstream.

plans targeting local communities, Shehias administration and Town Council officials (see also activity 1.2.2).

Technical support to the village land use planning will be provided by Care Tanzania, based on their experience with joint village land-use planning, and the application of mobile technology.

The project will support the development of land use plans for at least 5 villages/Shehia's in each of the landscapes. The process of development of these plans will be highly consultative, using existing village governance structures where possible (e.g. the village land use committees), and taking into account gender and other social parameters. Key areas of focus will be on the priority clusters identified as part of the site selection process; provisionally, the Ruipa and Mngeta clusters for Kilombero landscape, and Kinyasini-Kisongoni-Chaani and Kiashange-Mkokotoni Catchments for Unguja. Specific focus will be on villages/areas targeted for on-the-ground activities under components 2 and 3.

Output 1.1.4: Policy paper for improved land tenure and water governance systems to support implementation of the land and water use plans

Two of the main instruments for sustainable land and water management are the systems for land tenure and water governance (e.g. water allocation, permitting and tariff systems). These are crucial, therefore, for effective ILM, including within the context of avoiding rice farming / conservation competition. In order to ensure the effective implementation of the land and water use plans described above, the project will support a review of options for improved land tenure and water governance, including compliance monitoring and enforcement of the same. This output will be advised, in part, by output 1.1.2. Activities foreseen to deliver on this output include:

- An assessment of the effectiveness of the current land tenure and water governance systems in the landscapes in terms of ensuring and stimulating sustainable land and water management.
- The development of a policy paper with concrete proposals for alternative land tenure and water governance systems that take into account the need for sustainable land and water management in the target landscapes.
- An assessment of the cost related to the implementation of the proposed sustainable landscape governance system, and an opportunities analysis and feasibility study into possible landscape financing mechanisms (e.g. water tariff systems, PES schemes) for the same.

It should be noted that experiences with PES schemes around the world are mixed, as among others demonstrated by the GEF's own assessment report of the same²⁹. Options will therefore be carefully considered and weighed against parameters of viability. The advantage in this regard is that in Tanzania various similar initiatives have already been operational for a while, such as the Ruvu Basin watershed management PES scheme, providing an important experience base³⁰. To be considered here would be a PES scheme based on tradeable watershed services, which consists of negotiating watershed management arrangement between

²⁹ GEF Investments on Payments for Ecosystem Services Schemes (2014), Global Environment Facility, https://www.thegef.org/sites/default/files/publications/28252nomarks_0.pdf.

³⁰ Fisher, Brendan & Kulindwa, Kassim & Mwanyoka, Iddi & Turner, R. Kerry & Burgess, Neil D. (2010). "Common pool resource management and PES: Lessons and constraints for water PES in Tanzania," *Ecological Economics*, Elsevier, vol. 69(6), pages 1253-1261, April.

farmers, communities, tourism operators and other users of watershed services bid for a share of these services. In addition, as part of project preparation, promising discussions were held with key institutional players, most critically the Tanzania National Electricity Supply Corporation (TANESCO), which is reliant on the continuity of the Kilombero Valley water inflow into the proposed hydropower station at Stiegler's Gorge. Similarly, ZAWA in Tanzania has indicated profound interest in developing such scheme.

In implementing this activity, RBWB and ZAWA will take lead for coordinating the water governance aspects for Kilombero and Zanzibar respectively, while NLUPC and Commission for Land will coordinate on land tenure aspects. Separate consultancies are foreseen for both landscapes to undertake the assessment and come up with clear recommendations, with technical assistance provided by the Project Coordinator / Sustainable Food Systems Expert. Efforts under this output will be implemented in close collaboration with Water Sector Development Program (Phase II) for mainland Tanzania, and the project 'Strengthening of Water Supply and Sanitation Services Sustainability' for Zanzibar.

Output 1.1.5: Training and awareness raising program on Integrated Landscape Management

In order for the project to be successful and to ensure the long-term sustainability of its outcomes, it is important that national and local administrators and stakeholders are equipped with the technical capacity to engage on the development and implementation of ILM approaches. It will also be important to engage and build awareness among local stakeholders, in particular the communities targeted for local area land-use planning (output 1.1.3), about the objectives of ILM, its benefits and needs. In this regard, the project will undertake the following activities:

- Support a series of training programs on ILM. The project will work in close collaboration with key knowledge institutions (notably NLUPC, SUA, IRA) to build sustainable training curriculums. This is achieved by (i) assessing the training needs; (ii) preparing tailored training modules; and (iii) undertaking training in each of the target landscapes. The target is to train at least 200 individuals (central government staff, district staff and other local government officials, WUA's and other community committee members and CSOs), with a fair gender balance in mind (>40% women). A specific focus of training will include aspects related to social and environmental safeguards, human rights and gender.
- Undertake a local outreach and awareness-raising campaign targeting communities and local actors in order to sensitize the affected population in regards to the scope and objectives of the project and to engage the population in further refining its approaches. Priority will be given to villages located in priority areas targeted for project activities. The project aims to have a minimum of 20 such events through three inter-connected activities: (i) identifying appropriate message and means for local outreach and awareness-raising campaign; (ii) defining appropriate outreach and awareness mechanisms; and (iii) supporting mandated agencies in the districts to engage in outreach and awareness raising campaign. The Project budget foresees in specific focus group training and discussions with communities related to issues of social and environmental safeguards, human rights and gender.

These capacity building and awareness raising activities will be developed and undertaken (in particular in Kilombero) in coordination with the IUCN SUSTAIN project and the UNEP/GEF TRI Project. The training programs will be designed and delivered by NLUPC, in cooperation with IUCN, relevant local knowledge institutions and the Project Coordinator / Sustainable Food Systems Expert.

Component 2: Promotion of sustainable food production practices and responsible value chains

Component 2 focuses on the development of sustainable and socially inclusive value/supply chains for the rice production sector, including the development of supporting governance, finance and market approaches that will drive sustainable value chains. It should be noted that the National Rice Development Strategy⁶ includes the objective to double rice production by 2030, an objective that risks leading to further large-scale land conversion. However, as earlier trials with SRI have demonstrated, there is considerable potential to increase yield per hectare (which currently is among the lowest in the world). This should go hand-in-hand with efforts towards better land (and water) management, as addressed under Component 1. The key anticipated outcomes from this component are:

1. Agreed national strategies and guidelines for the development of sustainable rice value/supply chains
2. Adoption of improved rice farming practices in the target landscapes through farmer support systems for sustainable rice value chains
3. Investment and finance through private sector for sustainable value chains

A description of the specific outputs and key activities under each of these outcomes is presented below.

Outcome 2.1: Agreed national strategies and enabling conditions for the development of sustainable rice value/supply chains

As noted in section 1.3, the absence of agreed standards and strategies for sustainable, climate smart rice value chains, is a bottleneck in achieving long-term sustainable development in the sector. While there have been many projects and initiatives that have demonstrated positive results, the scaling up of such initiatives are hampered by the lack of a consolidated, harmonized approach. The project will build on the existing experiences in Tanzania, as well as best practice experiences from elsewhere, to develop a sustainable rice value chain development plan, including a review of existing policies and the development of guidelines and training packages and activities that will be key to rolling out this plan. It should be noted, in this regard, that the National Rice Development Strategy does recognize the risks related to environmental sustainability and climate change, although details of mitigation approaches are missing. The proposed sustainable rice value chain development plan as proposed under this project will therefore serve as an annex to the existing National Strategy.

The process of developing the sustainable rice value chain development plan and guidelines will involve key actors along the value chain, including producers (traditional small-scale farmers), input suppliers, traders and agents; millers, wholesalers, and retailers, as well as service providers such as research and training institutions (TARI, ZARI, SUA), extension services, financial service providers, farmer cooperatives and resource centers, transporters and supporting internal aid agencies and institutions.

The overall purpose of promoting sustainable rice value chains at the Kilombero Landscape is to achieve reduction in water use, input use efficiency, reduced land degradation (soil nutrient, biomass cover), combat soil erosion and river siltation (caused by particulate terrestrial clastic material from eroded rice fields into the Kilombero river), reduction in greenhouse gas emissions, increased resilience against climate change and biodiversity conservation.

Output 2.1.1: Sustainable value chain development plan for the rice production sector, including linkages to regional rice value and supply chains

Building on the experiences from past and ongoing projects and programs in the rice sector, and considering international best practice experiences from elsewhere, the project will support the development of a sustainable value chain development plan for the rice production sector. The value chain plans will target both national and regional (mainly East African) markets. The development of this plan will be done through a sub-contract to TARI and RCT, and a supplementary sub-contract to ZARI to fill in the Zanzibar part of the plan, under the guidance of the MoA for mainland Tanzania and MAINRL for Zanzibar as the final custodians of the plan, with technical assistance provided by the Project Coordinator / Sustainable Food Systems Expert. The key activities to be undertaken in this regard are:

- Conduct a desktop and field assessment of the existing rice value chain with the purpose of highlighting potential areas of improved environmental sustainability and climate change resilience, including a review of past and present experiences in Tanzania and experiences on approaches from elsewhere in addressing any challenges in this regard. This analysis will build on the work already accomplished during the PPG phase (see Annex 9).
- A market analysis for the rice value chain identifying key opportunities for sustainably produced rice, which will be led by RCT.
- A review of the existing national agricultural policies and strategies, including the National Rice Development Strategy (for mainland Tanzania) and the Agricultural Transformation Initiative (for Zanzibar), resulting in a set of proposals for improvements in this regard from a sustainability perspective.
- The development of a nationally appropriate sustainable, climate smart, rice value chain development plan, through a consultative process involving key stakeholders from public and private sector, as well as local communities.
- Mainstreaming the elements of this plan into existing strategies and policies. Separate sub-grants will be provided to MoA and MANLF to support this process.

The sustainable value chain development plan will complement the existing National Rice Development Strategy (for mainland Tanzania) and the Agricultural Transformation Initiative (for Zanzibar), by providing detailed technical guidance for ensuring the long-term sustainable development of the sector. As such, its execution would be ensured through various designated technical partners active in the sector, as identified in the plan. Considering the large number of Government and donor funded initiatives in the rice sector in Tanzania, the plan would be expected to provide direction to such initiatives rather than operating as a stand-alone plan.

Output 2.1.2: Sustainable value chain guidelines, standards, and training packages for public and private sector value chain actors in the rice sector, with recognition of international best-practice

Based on the review of experiences and best practice standards undertaken as part of output 2.1.1, the project will support the development of a set of practical guidelines and training packages for public and private sector value chain actors in the rice sector. These guidelines and training packages will translate the outputs of the review process into practical tools for stakeholders (farmers, extension agents, and other value chain actors)

and therewith facilitate the roll-out of the sustainable rice value chain development plan. The training packages will among others form the basis for the training programs foreseen under output 2.2.1. The development and roll out of these training packages will be done through a consultancy assignment (under contract to the central PMU) under the guidance of the MoA for mainland Tanzania, and MAINRL for Zanzibar, with the technical support of RCT, TARI and ZARI, among others, with technical assistance provided by the Project Coordinator / Sustainable Food Systems Expert. Specific activities related to the output include:

- A desktop study/analysis of existing best practice guidelines and standards.
- Consultation workshops with stakeholders to validate the guidelines. Noted that consultations will be gender sensitive, in consideration of the roles of women and men in the rice sector.
- Write-up and roll-out of localized guidelines to key value chain actors.

Outcome 2.2: Adoption of improved rice farming practices in the target landscapes through farmer support systems for sustainable rice value chains

Outcome 2.2 is geared towards building the capacity of farmers and other key value-chain service providers actors (e.g. input suppliers, processors) in the application of sustainable (climate smart, agro-ecological, conversion free) rice production, based on the strategies and guidelines developed under Outcome 2.1. The aim is to improve land management and productivity for agricultural land through the application of more appropriate rice farming practices. The strategy is to work both through traditional training approaches and extension services, strengthening and where necessary supporting the establishment of cooperative structures and rice resource centers, as well as through practically supporting a number of key initiatives in priority areas in the landscape (see Annex 6); provisionally, the Ruipa and Mngeta clusters for Kilombero landscape, and Kinyasini-Kisongoni-Chaani and Kiashange-Mkokotoni Catchments for Unguja. Noted here that the specific target villages under this outcome should ideally overlap with those covered under output 1.1.3.

Output 2.2.1: Training and capacity building on sustainable (climate smart, agro-ecological, conversion free) rice production approaches through capacity building of extension services and rice production cooperatives/resource centers

Based on the guidelines and training materials developed under output 2.1.3, the project will implement the following activities:

- Strengthen the capacity of existing incubation/resource centers for specialized skills in Good Agricultural Practices (GAP) related to the rice sector. A consultant will be recruited by the PMU to support this activity. TARI and the ZARI will be the primary target in this regard, but others (e.g. Centre for Agricultural Mechanization and Rural Technology, SUA and the State University of Zanzibar) may be involved as appropriate.
- In cooperation with these resource centers, the project will support capacity building of extension services through training and provision of training materials. The strategy on this will be a train-the-trainers approach, whereby a group of extension agents will receive first-hand training on sustainable rice production approaches, which will subsequently be rolled out to other agents. Dedicated sub-grants will be established with the Kilombero District Office (for Kilombero) and MAINRL (for Zanzibar) to upgrade and provide the necessary services in this regard.

- In cooperation with the district extension services, TARI and Zanzibar Agricultural Research Council, the project will support targeted training workshops for farmers in the identified priority areas (Annex 6). Farmers will be selected based on their willingness, the location of their activities vis-à-vis environmental sensitivities as well as where possible evidence of a certain level of capacity (e.g. based on current yield, methods, etc.). Furthermore, farmer-to-farmer learning exchanges will be facilitated, both within each of the landscapes, and between the landscapes. The target in this is to train at least 400 farmers, with a fair gender balance in mind (>40% women). As needed, gender specific sessions may be considered in the roll-out of the trainings.
- Finally, the project will support (or help establish where not existing) rice farmers associations, cooperatives and/or resource centers in the priority project areas so that farmers work as a unit. The formation and functioning of such organized farmers groups will be key elements in coordinating and upscaling relevant project interventions, but will also facilitate access to inputs, support services, market access and information, etc. by individual farmers, and is therefore a key element of the capacity building strategy. The project will support, among others, the development of input supply and technical advisory services necessary for the development of sustainable rice production, access to market information and financial services, as well as creating added value for sustainably produced rice through branding (and potential certification). A specific focus will be on strengthening the role of women in the decision-making structures of the cooperatives and centers. Furthermore, Care Tanzania will be engaged to help build the capacity of farmer groups through the provision of specific tools and technology (such as Chomoka for access to market information) and the development of financial solutions (collective investment and micro-credit schemes).

Output 2.2.2: Priority sustainable value chain initiatives in the rice production sector supported and operationalized (building on 2.2.1)

Based on the sustainable rice sector development strategy and guidelines (outcome 2.1), the project will support a number of targeted interventions geared at operationalizing some of the key strategies and initiatives required to achieve more sustainable and productive rice value chain development in the priority areas in the landscape. As such the project will support the following activities:

- Hold workshops and consultation with farmers and other stakeholders to identify and get agreement on a set of initiatives to be promoted and supported under the project. The results of these consultations will be consolidated by the central project PMU, who will further analyze and organize the proposed interventions within the light of achieving a good balance of viable initiatives across various potential areas of work. Technical criteria to be used for this selection will, among others, include the demonstration value (opportunity for replication and scaling up), technical and financial viability, and the availability of technical support at landscape level. The PMU will subsequently propose a final set of initiatives for approval by the project steering committee.
- Based on the characteristics of the project areas, in particular the observed challenges to be resolved, design targeted initiatives, including establishment of related technical assistance and capacity building packages for operationalizing these initiatives. Specialized services for this design process may be sourced either from within the partner organizations (e.g. TARI, ZARI) or from external service providers (consultants).

- Support the practical operationalization of the selected priority initiatives: examples could be introducing improved seed varieties; testing specific farming methods that are less wasteful and lead to higher yield and more efficient land and water use, such as rainwater harvesting systems; reducing the use of harmful pesticides and fertilizers; improved processing methods, improving storage facilities; re-use of waste materials (e.g. rice husks for energy production, animal feed and building materials); creating efficiencies in transport and marketing systems, etc. A provisional list of eligible activities to be funded under the project is presented in Table 4. The project will focus on providing both technical assistance and where appropriate small-scale equipment and inputs. In principle, investments in infrastructure will fall outside of the scope of the project, but there may be cases where some investments are needed in this regard. In any case, all support will adhere to the environmental sustainability guidelines as presented in the environmental and social safeguards framework presented in Annex 12 to avoid adverse environmental impacts. Where potential environmental risks may be anticipated, due process will be followed to assess such risks and develop appropriate mitigation plans.
- Establish mechanisms for scaling up these initiatives, in terms of developing concrete proposals and business plans, but also designing related TA / extension services support systems, etc. This should go hand-in hand with the development of relevant financial/investment support facilities as addressed under outcome 2.3.

For the implementation of these initiatives, the project will use both grants and provision of materials directly to farmer groups, as well as sub-contract to partner organizations that may support initiatives on the ground.

TABLE 4 LIST OF ELIGIBLE ACTIVITIES UNDER OUTPUT 2.2

Category	TA/INV	Potential activities
Farm inputs	INV	<ul style="list-style-type: none"> • Introduction of improved rice seed varieties through Tanzania's Agricultural and Seed Research Center and TARI
	TA	<ul style="list-style-type: none"> • Promotion of more environmentally friendly pesticide and fertilizer systems³¹
On farm practices	INV	<ul style="list-style-type: none"> • Pilot water efficient rice production techniques, improved field levelling, upgrading /construction and operation of proper field intakes and drainage infrastructure to better control water levels in the fields, proper maintenance of irrigation and drainage canals
	INV	

³¹ The project will not allow the procurement or use of formulated products that are in World Health Organization (WHO) Classes IA and IB, or formulations of products in Class II, unless there are restrictions that are likely to deny use or access by lay personnel and others without training or proper equipment. The project will follow the recommendations and minimum standards as described in the United Nations Food and Agriculture Organization (FAO) International Code of Conduct on the Distribution and Use of Pesticides and its associated technical guidelines, and procure only pesticides, along with suitable protective and application equipment, that will permit pest management actions to be carried out with well-defined and minimal risk to health, environment, and livelihoods. The project will not fund nor include the promotion or usage of pesticides. On the contrary, it will aim to reduce the amount of chemical fertilizers and pesticides used through strengthening of farmer capacity on the proper use of chemicals/non-chemical alternatives for pest management (e.g. integrated pest management and good agriculture practice).

	TA/INV	<ul style="list-style-type: none"> • Piloting enhanced soil fertility management practices, including cover cropping, mulching, crop rotation, intercropping, minimum/zero tillage, crop residue management • Promote rainwater harvesting and efficient irrigation through technical assistance and subsidizing small structures
Off-farm measures	INV	<ul style="list-style-type: none"> • Provide tools to measure and monitor water flow/use in rivers and streams to WUAs
	TA	<ul style="list-style-type: none"> • Facilitate farmers' access to climate information: train and facilitate farmers to receive weather forecast messages from Tanzania Meteorological Authority (TMA)
	INV	<ul style="list-style-type: none"> • Support to market access through (mobile phone) technology for farmer groups to establish a more reliable supply chain for their produce
Post-harvest activities	TA	<ul style="list-style-type: none"> • Train farmers on harvesting, threshing, drying, cleaning, weighing, milling, grading, storage, packing, etc.
	INV	<ul style="list-style-type: none"> • Fund the construction of postharvest storage structures in a few selected collection centers (cooperatives / resource centers)
	INV	<ul style="list-style-type: none"> • Reuse of rice husks waste into useful environmental friendly briquettes, building materials or animal feed

The number of actual initiatives to be supported by the project are bound, initially, by the limitations of the project budget. The aim is to support at least 5 initiatives in each of the landscapes. However, through engagement with other (donor funded and non-donor funded) initiatives, as well as with private sector partners (including impact financiers), the project will seek to use its funding as leverage for scaling up this work. Oversight and coordination of the initiatives will be provided by the landscape coordination units, in cooperation with MoA, MAINRL and the respective District Authorities in the target landscape.

Outcome 2.3: Investment and finance through private sector for sustainable value chains

As noted in section 1.3, many farmers and other value chain actors currently lack the financial means to make the necessary investments for improved, and more efficient and sustainable practices that deliver not only longer-term environmental benefits, a factor which was highlighted repeatedly in discussions with stakeholders in the project areas. Access to finance and investment is therefore a key bottleneck in achieving the necessary changes to occur. A key barrier in the development of sustainable rice value chains is furthermore the lack of coherent and constructive dialogue and engagement between public and private sector stakeholders, as well as civil society organizations active in the rice sector. This lack of engagement blocks the development of new initiatives and investments that could lead to improvements in the sector. The project will therefore support an opportunity analysis for enhanced public and private sector investments in sustainable rice production value chains, as well as facilitate public-private sector dialogue through the establishment of a Compact and related platform for public-private sector in the rice sector.

Output 2.3.1: Opportunities analysis for public and private sector investments in sustainable rice production value chains in the target landscapes with clear business cases

Access to finance is a major bottleneck for smallholder farmers, such as in the case of Tanzania, to make the conversion from traditional, low-tech and low-yield approaches, to more climate resilient, efficient production methods. Longer-term investment capital is needed so that smallholder farmers and SMEs can invest in and

adapt their businesses. There exists a wide array of initiatives and case studies in regard to financial instruments to stimulate investments in climate smart, more sustainable agricultural practices. The typical categories here include:

1. Grant schemes of varying nature, often donor driven.
2. Loans, both concessional and none concessional, e.g. credit facilities for input supplies, purchase of equipment, etc.
3. Guarantees and other risk-sharing mechanisms, such as crop-insurance
4. Equity, often related to investments in infrastructure for irrigation, processing facilities, etc.
5. Performance-based mechanisms

The project will work with private sector financiers and other actors (banks and other finance institutions, microfinance institutions, value chain actors such as input suppliers and processors, impact investors and social lenders, etc.), to develop opportunities for private sector investment in sustainable rice value chain development in Tanzania. Furthermore, the project will work with Government institutions such as TADB, NGOs and bilateral and multilateral aid agencies active in the agricultural sector, to identify opportunities for public sector driven support instruments and packages. The project will also build on the successful village credit and savings schemes developed through the Care-WWF Alliance as a model for achieving local-level access to finance. As such, key activities to be supported by the project will be:

- An opportunity analysis for public and private sector investments in sustainable rice value chains, including opportunities for blended finance solutions, etc., with a direct link to the sustainable rice sector development plan and guidelines developed under outcome 2.1, and the value chain initiatives supported under outcome 2.2.
- Consultations with relevant stakeholders to identify and agree on concrete opportunities, including the enabling conditions to be created for such (with reference, among others, to the policies, regulations and fiscal and financial incentive schemes delivered as part of output 2.1.2).
- The development of concrete business cases, supported by financial feasibility analysis, for the identified opportunities.

The SAGCOT Secretariat and RCT will be the lead institutions for this initiative, under sub-contract to the central PMU, with technical assistance provided by the Project Coordinator / Sustainable Food Systems Expert. The aim will be to develop at least 4 concrete business opportunities/cases.

Output 2.3.2: A collaborative agreement and platform for engagement between public, private and civil society actors on sustainable rice value chain development

The project will invest in strengthening public-private sector dialogue on sustainable rice production value chains in the target landscapes. The approach will build on experiences in the Ihemi cluster of SAGCOT, by supporting a series of consultations and facilitated workshop sessions between public and private sector actors, as well as civil society organizations, with the objective of developing and signing a Compact between public (District, Regional and Central Government level) and private sector (farmers, financial institutions and other value chain actors) partners. This Compact will be the basis for regular public-private sector dialogue in regard to:

- Water and soil management, and environmental sustainability
- Enforcement of regulations
- Public-private sector investment opportunities
- Financial incentives for sustainable production through preferential taxes and levies
- Infrastructure investments and management

The SAGCOT Secretariat will be the lead institution for this initiative, working under sub-contract to the central PMU, in close cooperation with the concerned Regional/District Authorities and Town Councils, with technical assistance provided by the Project Coordinator / Sustainable Food Systems Expert.

Component 3: Conservation and restoration of natural habitats

Component 3 is geared towards the development and implementation of concrete landscape restoration activities in the target landscapes, including the creation of enabling conditions for upscaling of such initiatives. The key outcome defined under this component is: Improved management and restoration of natural ecosystems through the implementation of priority land and water use plans, with the active involvement of communities and private sector. The target areas for restoration and/or improved management will be defined based on output 1.1.1. A provisional analysis of potential project sites is presented in Annex 6. Key areas of focus in this will be on the priority clusters identified as part of the site selection process; provisionally, the Ruipa and Mngeta clusters for Kilombero landscape, and Kinyasini-Kisongoni-Chaani and Kiashange-Mkokotoni Catchments for Unguja. For both restoration and management work, the project distinguishes three ecological zones (to be clearly defined under output 1.1.1):

1. The agricultural development zone, which may also be called the midstream area, where rice expansion is currently happening. Restoration in these areas will basically target the rehabilitation of degraded land in order to render them appropriate for agricultural activities, by deploying agro-ecological and other regenerative approaches.
2. The upstream water catchment areas for which conservation provides the preservation of water flow and other ecological functions to downstream users (including rice farmers that depend on these). Much of the forest reserves are based in this zone; restoration and management approaches in this area will therefore be mainly geared towards the preservation and restoration of the integrity of these forest landscapes.
3. The downstream area, which is affected by upstream users and activities. This includes, among others degraded farmlands as well as natural wetland systems in the Kilombero Valley which have undergone severe transformation due to both land degradation and changes in freshwater inflow. In these areas, the focus will therefore be primarily on restoring land suitable for cultivation (rice in particular), as well as general wetland restoration and management.

Component 3 will be coordinated by MNRT/FBD and MAINRL/DFNR for mainland Tanzania and Zanzibar respectively, with the supporting role of IUCN (technical assistance the development of appropriate land and soil management and restoration approaches) and various other partners as highlighted below.

The key outputs and activities related to this component are described below.

Outcome 3.1: Improved management and restoration of natural ecosystems through the implementation of priority land and water use plans, with the active involvement of communities and private sector

Output 3.1.1: Restoration of degraded lands in target locations based on the landscape plans (output 1.1.3)

Based on the analysis delivered through output 1.1.1, the project will support key restoration activities in priority areas in the selected landscapes, with the overall aim to restore at least 35,000 ha of forest land and wetlands. An initial assessment of potential restoration sites is presented in Annex 6. Their final selection will be guided by a number of criteria, including the importance of the ecosystem itself; the current level of degradation and threats as determined through output 1.1.1; and the potential for successful restoration (see Annex 6). The specific restoration methods will be tailored to each of the project sites, building on the experiences of pilot restoration work already support through other initiatives. Table 5 provides an overview of potential eligible approaches and activities to be supported under this output.

TABLE 5 LIST OF ELIGIBLE ACTIVITIES UNDER COMPONENT 3.1.1

Developing restoration and management plans
Assisted natural regeneration
Physical rehabilitation
Tree planting using native species
Introducing agroforestry
Strengthening tree nurseries (or establishing new ones where not available)
Capacity building and awareness raising

It should be realized, though, that restoration to an original ecosystem state may not always be realistic, in particular in areas where large-scale conversion into crop land has already happened. In such case, the project will promote a keystone structures³² restoration approach to restore some of the key ecosystem functions. The project will benefit from the baseline to be established by the RESUPPLY project, which will undertake, among others, assessments on opportunities for forest landscape restoration (FLR) in the Kilombero Valley, a cost-benefit analyses of restoration approaches, as well as studies into landscape finance options for the same; as well as Reforest Africa, a project set up to test and implement both active and passive restoration methods for the Udzungwa-Kilombero ecosystem. The project will:

- Define priority areas for restoration (based on output 1.1.1 and according to the site selection analysis and criteria presented in Annex 6).
- Work with community and private sector groups to define specific restoration plans.
- Support selected communities in priority conservation areas to implement specific forest and wetland restoration activities. Specific plans in this regard will be developed through the LCUs and sign-off by the

³² A.D. Manning, J. Fischer and D.B. Lindenmayer, 2006, Scattered trees are keystone structures – Implications for conservation, Biological Conservation, 132, 311-321.

PMU. It is anticipated that sub-contracts will be established both directly with local community group, as well as with local partner organizations active in the landscapes.

- Support TFS, DFNR and TAWA in undertaking relevant restoration activities in prioritized state-owned forest and wetland areas. Sub-contracts will be established with these executing partners for this purpose.
- Monitor the success of these restoration efforts and measure their impact on carbon sequestration and other ecological functions. NCMC/SUA will be contracted for this purpose.

In accordance with the Environmental and Social Management Framework presented in Annex 12, the proposed activities will be subject to site specific environmental and social impact assessment.

Output 3.1.2: Management of priority HCV areas within the target landscapes through proven models (e.g. certification, Village Forest Land Reserves and PPP)

The focus of this output will be on improving the management of critical forests and other ecosystems in the target landscapes, with the purpose of conserving and potentially enhancing their present values in terms of biodiversity and other ecosystem functions. The aim in this is to bring at least 5,000 ha of HCV lands under improved management, consequently avoiding the loss of these critical habitats. The selection of sites, advised by output 1.1.1, will be guided by a number of criteria, including the relative biodiversity and other ecosystem values of the areas, as well as the opportunities for improved management to successfully contribute to their conservation. Table 6 provides an overview of potential eligible approaches and activities to be supported under this output.

TABLE 6 LIST OF ELIGIBLE ACTIVITIES UNDER COMPONENT 3.1.2

Management of priority HCV areas
Development of management plans and related management regimes (community-based, private sector, state-managed)
Supporting the process of designating forest reserves (e.g. district forest reserves, village forest reserves)
Establishing enclosures and demarcation (note: subject to clear social safeguards assessment and measures)
Development of alternative livelihoods opportunities (e.g. fishing, beekeeping, eco-tourism and other non-destructive resource use approaches)

Key project activities include:

- Define priority areas for improved management (based on output 1.1.1 and according to the site selection analysis and criteria presented in Annex 6).
- Work with communities, district authorities and private sector groups to define specific management approaches and plans. Specific plans in this regard will be developed through the LCUs and sign-off by the PMU.

- Support selected communities and potentially private and public sector partners to implement specific management plans in priority conservation areas. It is anticipated that sub-contracts will be established both directly with local community group, as well as with local partner organizations active in the two landscapes.
- Support TFS, DFNR and TAWA in undertaking relevant restoration activities in prioritized state-owned forest and wetland areas. Sub-contracts will be established with these executing partners for this purpose.
- Monitoring of the success of these management efforts and measure their impact on carbon sequestration and other ecological functions. NCMC/SUA will be contracted for this purpose.

In accordance with the Environmental and Social Management Framework presented in Annex 12, the proposed activities will be subject to site specific environmental and social impact assessment.

Output 3.1.3: Fiscal/financial schemes to incentivize investment for restoration in degraded lands, targeting small-scale farmers and larger private sector

There is currently no specific financing support mechanism to support sustainable landscape management and restoration in the two landscapes. In this regard, it is important to note here that private sector is a key player, in particular in the Kilombero landscape, given that the district has set aside 8.8% (124,323.07 hectares) of its land as investment area for further agricultural development in particular. As per 2016 data, there were 110 individuals and private companies occupying land allocated for investments in Agriculture alone.

The project will support the following specific activities:

- Support a broad-level options and opportunity analysis for sustainable landscape management and restoration financing, considering public, private and blended finance opportunities, including PES approaches, Impact Investments, carbon financing, etc.
- Support the development of concrete business cases for private and public investment in landscape management and restoration. In this regard, the project will develop business cases and proposals for viable investments which would generate landscape management and restoration benefits. This will require engagement with stakeholders across various economic sectors (including agroforestry, fisheries, livestock keeping, agriculture, beekeeping, ecotourism, etc.).

This process will be supported through a consultancy managed by the PMU, with technical assistance provided by the Project Coordinator / Sustainable Food Systems Expert, and will further involve a range of stakeholders, including relevant Government Agencies and state-owned companies (e.g. TANESCO, ZAWA, RBWB, WUAs) as well as potential private investors. It is intended that this component of the project will be outsourced to a suitable consultancy office specialized in this field of work.

Component 4: Project Coordination and M&E

Component 4 focuses on coordination, cooperation, and M&E, including knowledge sharing, learning, and synthesis and communication of experiences nationally and regionally (see following section). The key outcome of this component is defined as: M&E plan implemented to aid scaling up and adaptive management. The key outputs and activities related to this component are described below.

Outcome 4.1: M&E plan implemented and learning exchanges with other FOLUR countries facilitated to aid scaling up and adaptive management

Output 4.1.1: Project progress continuously monitored and mid-term and final evaluation conducted

The project's Monitoring and Evaluation framework will include project-specific indicators and GEF Core Indicators that will contribute to the wider FOLUR Impact Program. Reference is made, in this regard, to the provisional results framework presented in Annex 8.

An annual planning and reflection workshop will be organized with landscape and national level stakeholders to evaluate the child project's strategies and approach. Bi-annual (6 monthly) reporting, a midterm evaluation, and a terminal evaluation will track project-level progress and allow for learning and synthesis of experiences. Key activities in this regard are:

- Preparation of regular progress reports.
- Organize annual reflection workshops.
- Measuring and monitoring of key indicators (according to M&E plan).
- Undertaking mid-term and final evaluations.

The majority of monitoring and evaluation work will be supported by the Monitoring, Evaluation, Learning & Knowledge Management (MELKM) Program Officer along with the Project Coordinator / Sustainable Food Systems Specialist and LCUs. In addition, various partner organizations (notably NCMC/SUA, TAFORI and TARI) will be contracted for measuring key indicators that are relevant to monitoring the success-rate of the project.

Output 4.1.2: Project achievements and results documented and KM products developed for replication and scaling up

Learning and knowledge management are a key ingredient for upscaling of the project approaches towards other geographies. To this extent, the project will establish a partnership with national research and knowledge management institutions in various sectors, with the intention to build up the systems, research base and curriculums, for the new generation of initiatives. Key institutions to be involved in this regard are TARI, Zanzibar Agricultural Research Council, Tanzania Forestry Research Institute (TAFORI) and SUA. The key activities related to this output are:

- Developing, consulting, editing & refining lessons learned documents, outcome stories, policy briefs etc.
- Participating in peer reviews, technical contributions, data and analysis toward global knowledge products and flagship reports.

The Project Management Unit will furthermore undertake local-level outreach and dissemination of the experiences of the project through media outreach, target-group meetings and other means. The collection, development and distribution of knowledge management products will be under the responsibility of the project MELKM Program Officer (hosted by the PMU). Consultants may be engaged to provide support as and when required.

Output 4.1.3: Active participation in FOLUR learning network facilitated

The project will develop a knowledge management strategy during project development to ensure knowledge is appropriately (i) captured, (ii) analyzed, and (iii) shared and incorporated into the project strategy when relevant. A key focus of the knowledge management strategy will document lessons/steps towards Integrated Land and Water Use Planning, Sustainable Value Chains (rice) and models for effective forest land management and restoration. The project will develop knowledge products that could be shared with the wider FOLUR Learning Network, and the project team and stakeholders will also be participating in learning and experience exchange events organized under this umbrella. The Tanzania FOLUR Child Project will seek for cross-fertilization with other Child Projects under the FOLUR IP, including through:

- Technical notes/ blueprints for design and dissemination as well as lessons learned re: integrated landscape management planning in different types of landscapes.
- Repository of training and other forms of TA for adoption of restoration and conservation practices in selected natural habitats.
- Know-how and lessons learned for strategies, approaches, guidelines, etc. for sustainable rice value chain development.

From this perspective, the Tanzania FOLUR team will seek active engagement with the Global FOLUR Community with regard to concrete opportunities for learning exchange, knowledge management and capacity building. Box 1 presents an initial shortlist of such opportunities.

Box 1 SHORTLIST OF OPPORTUNITIES FOR ENGAGEMENT WITH THE FOLUR GLOBAL PLATFORM

Knowledge Management

- Policy paper for improved land tenure and water governance systems to support implementation of the land and water use plans (Output 1.1.4)
- An assessment of the cost related to the implementation of the proposed sustainable landscape governance system, and an opportunities analysis and feasibility study into possible landscape financing mechanisms (e.g. water tariff systems, PES schemes) for the same (Output 1.1.4)
- Opportunities analysis for public and private sector investments in sustainable rice production value chains in the target landscapes with clear business cases and proposed fiscal/financial incentive schemes (Output 2.3.1)

Capacity building

- Designing, developing and operationalizing landscape management plans, including at local level (Outcome 1.1). GP contribution here could be on training, guidance, lessons, rather than on the ground activity.
- A baseline assessment will be required to determine the status of threats and impacts around the key natural assets in the geographies (Output 1.1.1)
- Sustainable value chain development plan for the rice production sector, including linkages to regional rice value and supply chains (Output 2.1.1)
- Development of a set of practical guidelines and training packages for public and private sector value chain actors in the rice sector (Output 2.1.3)

- Training on sustainable (climate smart, agro-ecological, conversion free) rice production approaches (capacity building of extension services) (Output 2.2.1)
- Support capacity building of extension services through training and provision of training materials. The strategy on this will be a train-the-trainers approach, whereby a group of extension agents will receive first-hand training on sustainable rice production approaches, which will subsequently be rolled out to other agents (Output 2.2.1)

More specifically, the project has allocated budget to attend regional learning events organized by the FOLUR Global Platform Project. The project will also finance exchange visits with other FOLUR countries. These activities will be designed in close coordination with FOLUR partner countries to maximize learning and information exchange during the life of the project, and include among others:

- Participation in annual Global FOLUR meetings
- Participation in regional commodity platform gatherings
- Participation in training workshops.

In addition, the project will contribute to the following Global Platform reporting requirements:

- Core GEF indicators (annually)
- Project Results Framework indicators (annually)
- Global Platform Indicators (annually)
- Descriptive case studies – the project will submit at least one outcome story annually
- Indicators identified in the Global Platform’s gender strategy (annually)

The coordination of activities related to this output will be under the responsibility of the MELKM Program Officer (hosted by the PMU).

2.4 Institutional Arrangements

A schematic presentation of the institutional arrangements for project implementation is presented in Figure 7. The various elements of this setup are further discussed below.

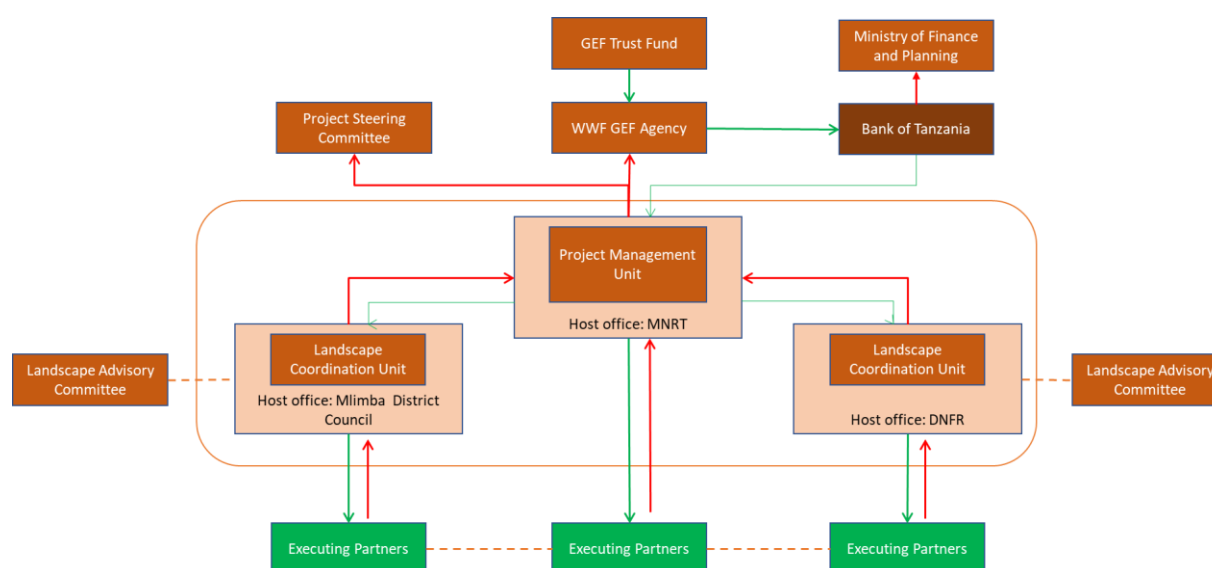


FIGURE 7 SCHEMATIC REPRESENTATION OF THE PROJECT INSTITUTIONAL SETUP: RED LINES INDICATING REPORTING; GREEN LINE INDICATING FUNDING STREAMS

The Forest and Beekeeping Division (FBD) of the Ministry of Natural Resources and Tourism (MNRT) will be the Lead Executing Agency for the project. Financial oversight will be assured by the Ministry of Finance and Planning, which will also act as the contracting party for the GEF grant on behalf of the Government of the URT³³.

The basic constitution of the project management structure as presented in Figure 7 consists of a central Project Management Unit (PMU), hosted by MNRT/FBD, and two landscape coordination units (LCU) for Kilombero and Unguja, respectively. The role and functioning of these units is further presented below. The Director of Forests will act as Project Director and be charged with the responsibility of overall administration and supervision of the PMU. The Permanent Secretary, MNRT, will take the overall fiduciary responsibility of the project.

The PMU will be accountable to a Project Steering Committee (PSC), whose constitution and roles are further explained below.

Co-executing partners may be engaged both through the central PMU (for matters that are national/project level) as well as through the LCUs, where it concerns landscape specific roles. An overview of the main executing partners is presented in Table 7 below.

TABLE 7 OVERVIEW OF EXECUTING PARTNERS

Mainland Tanzania	Zanzibar
Ministry of Natural Resources and Tourism Ministry of Agriculture Vice-President's Office President's Office - Regional Administration Local Government	Second Vice-President's Office, Zanzibar Second President's Office - Regional Administration Local Government Ministry of Agriculture, Natural Resources and Fisheries, Zanzibar

³³ To note that according to official Government of Tanzania policies, the Ministry of Finance and Planning is the officially designated contracting authority for any donor funding coming into the country.

Ministry of Livestock and Fisheries Development Ministry of Water and Irrigation National Carbon Monitoring Centre - Sokoine University Tanzania Forestry Research Institute (TAFORI) National Land-use Planning Commission SAGCOT Secretariat Tanzania Forest Services Agency Morogoro Regional and District Commissioners Tanzania Agricultural Research Institute (TARI) - KATRIN Ifakara TAWA Ifakara Rice Council of Tanzania Farmer cooperatives / resource centers Local technical partners (t.b.d., e.g. AWF, TFCG, Reforest) as appropriate	Ministry of Land, Housing, Energy and Water Zanzibar Water Authority Zanzibar Utility Regulatory Authority Zanzibar Commission for Lands Zanzibar Commission for Tourism Association for Tourism Investors (ZATI) Zanzibar Agricultural Research Institute Town Councils North A & North B Relevant Shehia's Local technical partners (t.b.d.) as appropriate
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Project Management Unit

Day-to-day project management and implementation will be the responsibility of the **Project Management Unit (PMU)** housed within the MNRT office. The PMU will consist of a Project Coordinator / Sustainable Food Systems Specialist, supported by a Senior Accountant, a full time Monitoring, Evaluation, Learning & Knowledge Management (MELKM) Program Officer and a Project Assistant. Short-term specialist expertise will be contracted according to need and availability of financial resources. This includes, in particular, a retainer contract for a gender and safeguards consultant(s) to support the further development, implementation and monitoring of the project's gender and safeguards strategies (see sections 2.6 and 2.7).

The PMU will be responsible for the overall planning of project activities; guiding, supporting and supervising project implementation; procuring goods and services; financial management of the project resources; and monitoring and reporting on implementation and financial progress. The specific roles and responsibilities of the PMU are presented in detail in Annex 7 (Table 2). It will work in collaboration with line ministries and other government services including the Regional and District Authorities to define performance-based MoUs based on their respective roles in the project, including backstopping arrangements according to the needs and priorities of the target authorities. Project procurement will be undertaken by MNRT's dedicated procurement team in line with WWF and Government procurement guidelines.

Landscape Coordination Units

The Tanzania FOLUR Child Project covers two landscapes, a large range of Government and non-governmental partners, and requires expertise across a range of topics including conservation, value chains, landscape planning, and restoration. As mainland Tanzania and Zanzibar have separate Government structures (under the United Republic of Tanzania) a landscape coordination unit (LCU) is needed for each landscape (Kilombero and Unguja). Each LCU will be managed by a Landscape Project Coordinator and will report up to the PMU hosted in MRT in Dodoma, and will also coordinate with a respective landscape advisory committee.

The execution services provided both LCU's include:

- Technical and financial oversight of landscape-level activities;

- Ensuring proper stakeholder engagement, implementation of the Gender Action Plan, and compliance with WWF-GEF safeguards (see ESMF and PF) at the landscape level;
- Issuing and managing contracts to consultants;
- Issuing and managing sub-grants to local partner organizations;
- Undertaking stakeholder consultations and hosting trainings;
- Providing logistical support for meetings and travel;
- Providing technical assistance and advice;
- Building local level capacity at host Government institutions and other key executing partners.

The specific roles and responsibilities of the LCUs are presented in detail in Annex 7 (Table 2).

Kilombero LCU

The Kilombero LCU will be hosted by the Kilombero District Council, with Management oversight and coordination of project execution provided by the District Project Management Team (DPMT). This will ensure government ownership, allow for a maximum interaction between the project teams and the respective host Government Agencies, in specific in relation to the key role of the partner organizations to build local capacity for future sustainability and upscaling. An MOU will also be signed between MNRT and Kilombero District Council for their role in hosting the LCU. The LCU will consist of a full-time Landscape Project Coordinator to be recruited by the project, complemented with 2 full-time community extension officers responsible for the coordination and implementation of field-level activities and engagement with communities. Furthermore, relevant technical staff from the District Office will undertake supporting duties, in particular: the District Natural Resources Management Officer; the District Environmental Officer; the District Agricultural Officer and Extension Officer; the Livestock Officer and the Livestock Extension Officer; the Fisheries Officer; the District Treasurer and Community Development Officer/Gender focal desk, and the District Planning Officer – under the overall guidance of the District Executive Director.

Unguja LCU

The Unguja LCU will be hosted and coordinated by MAINRL/DFNR to ensure government ownership, allow for a maximum interaction between the project teams and the respective host Government Agencies, in specific in relation to the key role of the partner organizations to build local capacity for future sustainability and upscaling. An MOU will be signed between MNRT and MAINRL/DFNR for their role in hosting the LCU. The LCU will consist of a full-time Landscape Project Coordinator to be recruited by the project, complemented with 2 full-time community extension officers responsible for the coordination and implementation of field-level activities and engagement with communities. Furthermore, relevant staff from MAINRL, VPO-2 and the North A&B Districts will undertake supporting duties and participate in regular joint meeting to coordinate project activities on the ground. MOUs will be signed between MNRT and Kilombero District Council and MAINRL/DFNR respectively for their role in the day-to-day facilitation and oversight of the functioning of the LCUs.

Project Steering Committee and Landscape Advisory Committees

A PSC chaired by the Permanent Secretary of MNRT, with representation of the relevant sector ministries and other key executing partners, and WWF GEF Agency, will be established to provide oversight and strategic guidance for the project.

The PSC will convene twice a year to provide oversight on implementation, and approval of annual work plans and budgets; provide strategic guidance to project management; initiate follow-up actions on lessons and findings from the project; as well as review progress reports and achievements. The Project Coordinator / Sustainable Food Systems Specialist will act as the secretariat of the PSC, and ensure that adequate documents and proposals are prepared ahead of each PSC meeting and that notes are taken and duly disseminated. The PSC will play a critical role in project monitoring and evaluation by ensuring the quality of these processes and products, and using evaluations for performance improvement, accountability and learning. The PSC will furthermore ensure that required resources are committed and will arbitrate on any conflicts within the project or negotiate solutions to any problems encountered with external bodies.

The PSC will be composed of the PS or designated representatives of:

- Ministry of Natural Resources and Tourism (MNRT)
- Ministry of Agriculture (MoA)
- Ministry of Water and Irrigation (MoWI) / RBWB
- Ministry of Lands, Housing and Human Settlements Developments (MLHHS) / NLUPC
- Ministry of Finance and Planning (MFP)
- Vice President's Office (VPO)
- Kilombero District Council
- Minister of Agriculture, Natural Resources, Livestock and Fisheries (MAINRL)- Zanzibar
- Second Vice President's Office (VPO-2) – Zanzibar
- Ministry of Lands, Housing, Water and Energy (MLHWE)
- North A&B Town Councils
- WWF GEF Agency

The existing Kilombero Multi-stakeholder Platform will function as a Landscape Advisory Committee (LAC), which will support the Kilombero LCU in terms of project strategies, workplan and implementation from the perspectives of the project partners, as well as to ensure wider outreach to the respective constituencies of the project partners. The platform consist of the District Executive Directors of the respective project districts, as well as of the representatives of the following ministries and agencies: MNRT, MoA, MoWI, MLHHS, Ministry of Livestock and Fisheries Development, Ministry of Industry and Trade, VPO – Division of Environment (DoE), PO-RALG, Regional Commissioner Morogoro, NLUPC, Tanzania Forest Services (TFS) Agency, TAWA (Ifakara), National Carbon Monitoring Centre, Sokoine University of Agriculture (NCMC/SUA), Rufiji River Basin Water Board, SAGCOT Secretariat, TARI, TAFORI. The platform furthermore involves relevant stakeholders from private sector (e.g. Kilombero Valley Teak Company, Kilombero Plantations Limited and RCT), as well as from relevant civil society organizations (e.g. Africa Wildlife Foundation, Tanzania Forest Conservation Group, WWF, IUCN, Care).

For the Unguja landscape, in the absence of an existing forum, a dedicated Multi-stakeholder LAC will be established. The LAC will involve representation from North A and North B Town Councils, MAINRL, VPO-2 – Department of Environment (DoE), ZAWA, MLHWE - Department of Urban and Rural Planning, President's Office - Regional Administration, Local Governments and Special Departments, Ministry of Finance, ZURA, Zanzibar Commission for Tourism (ZCT), Regional Commissioner North A&B, ZARI, as well as representatives from private sector (e.g. Zanzibar Association for Tourism Investors), local communities (Shehas) and civil society organizations (e.g. ANGOZA and Zanzibar Climate Change Alliance).

Project supervision

As the GEF Project Agency, WWF GEF Agency will provide technical and financial supervision and implementation support of the project and support on issues affecting timely and quality project implementation. WWF GEF Agency will undertake implementation support, including yearly supervision missions. A key responsibility of the supervision is to review quality of outputs and progress against the targets set in the project's logical framework.

Financial management

A financial agreement shall be signed between WWF US, as the GEF Project Agency, and the Ministry of Finance and Planning, on behalf of the Government of URT. Funds will be deposited in a dedicated account hosted by the Bank of Tanzania (BOT).

The MNRT PMU will be the central financial management hub of the Project responsible for data processing and reporting. The PMU will manage and oversee fund transfers to partner executing agencies on the basis of activity tagged. The LCUs will receive funds directly from the National Bank of Tanzania accounts under the Ministry of Finance, based on instructions by MNRT. The PMU will facilitate financial reporting and generation of withdrawal applications.

Program accounting procedures shall follow the Public Finance Act and the Public Procurement Act together with their accompanying Regulations, and shall furthermore adhere to WWF GEF Agency standards.

2.5 Stakeholder Engagement

The project will comply with WWF's Standard on Stakeholder Engagement and with the project-specific Stakeholder Engagement Plan (SEP – see Annex 4).

Project Preparation Phase

The project design process involved in-depth engagement with key stakeholders in the project. The earlier foundations of the project were laid during a stakeholder workshop organized in November 2017, when key Government stakeholders from both Zanzibar and mainland Tanzania came together to discuss the idea for the project and engage in an in-depth co-design process. Since then, the project has undergone a number of stakeholder engagement processes, including:

1. Key workshops and stakeholder meetings:
 - a. Nine project design and preparation workshops for national level stakeholders and partners where held over the course of the 2½ year project development period (November 2017, Zanzibar; May 2018, Dodoma; June 2018, Dar es Salaam; September 2018, Morogoro; March 2019, Zanzibar; October 2019, Zanzibar and Ifakara; January 2020, Zanzibar and Dodoma).
 - b. A project preparation Kick-off Workshop for the Project Preparation Team and other key stakeholders was held in July 2019 to provide an orientation on the GEF Project Preparation process and requirements (July 2019, Zanzibar).
 - c. Biweekly virtual meetings of the Project Preparation Team (PPG period).
 - d. A project validation workshop (October 2020, Dodoma).
 - e. Meetings of the Project Design Steering Committee (January 2020, Dodoma; June 2020, Dodoma).

2. Field-level consultations (including meetings with a range of local stakeholders, community groups, site visits, field inspections, and focus group discussions), including:
 - a. Field visits by the Project Preparation Team– to assess the situation in the target landscapes, identify key threats and barriers, gather initial baseline information on selected areas, inform site selection as well as to collect community and other local stakeholders views and concerns on issues and proposed activities (October 2019).
 - b. Various field visits by gender and safeguards specialists in the context of the gender and safeguards assessment work (March – June 2020).
3. Individual consultations with key project stakeholders and partners to discuss specific issues, obtain baseline data, review indicator targets, comments on activities, etc. Over 100 individual meetings were held over the period of the project design, involving meetings with:
 - a. Central Government Authorities
 - b. Local Government Authorities
 - c. Technical research and knowledge institutions/centers
 - d. Bilateral and multilateral donors
 - e. Non-Government Organizations active in the sectors addressed by the project
 - f. Private sector partners and their representative business associations
 - g. Financial institutions and service providers
 - h. Representatives of local communities
4. Presentations and interactions with other existing forums, including among others:
 - a. Presentation of the project concept to the Union Meeting on Cooperation and Implementation of International Agreements (February 2018, Dar es Salaam).
 - b. Presentation and discussion of the concept at the GEF National Constituency Workshop (January 2019, Dodoma).
 - c. Presentation and discussion of the project concept at the Kilombero Multi-Stakeholder Platform meeting (October 2019, Ifakara).

To facilitate close engagement of stakeholders in the design process, a number of key mechanisms were established:

1. A high level Project Steering Committee, constituted by the Directors of MNRT/FBD (chair), MoA, VPO, VPO-2, MAINRL/DFNR and MFP. The key functions of this Committee were to
 - oversee the appropriate design of the project in line with Government priorities
 - guide the Project Design Team in their assignment; and
 - endorse the final project documents
2. An Ad Hoc Project Design Working Group, constituted by the designated technical focal points from all project partners. The responsibilities of this group were to:
 - advise the Project Design Team in its assignment
 - provide input into the project design from the perspectives of the project partners
 - participate in the project design and validation workshops; and
 - ensure wider outreach to the respective constituencies of the project partners
3. A Project Preparation team, constituted by WWF, the Lead Consultant and associate project design consultants, as well as selected technical experts from the key technical partners, in particular

MNRT/FBD, MoA, NLUPC, SAGCOT Secretariat, MAINRL/DFNR, VPO-2, the Zanzibar Commission of Land (CoL) and NCMC.

Based on these mechanisms, the project was designed through a co-design process, which meant that objectives, outcomes, strategies and approaches were all jointly designed and decided upon between the key stakeholders. A number of key points should be mentioned in this regard:

- A key outcome of consultations at political level included the opportunity provided by the project to strengthen the linkages and coordination between the Zanzibar and mainland Tanzania with regard to both rice sector development and related conservation aspects. The Tanzania FOLUR Child Project is seen as a key vehicle to drive for more coherent Government policies and strategies in this regard. A key decision resulting from this was the decision to select a target landscape each for Zanzibar and mainland Tanzania.
- The choice of landscapes was a crucial aspect of the project, and the subject of multiple debates with stakeholders on both the Zanzibar and mainland Tanzania side. The eventual choice for Kilombero and Unguja was guided primarily by Government plans for rice sector development in these two landscapes.
- Similarly, the choice for rice as a target crop was driven by current Government policies for doubling rice production in the country, both for domestic supply and its export potential.
- At community level, furthermore, consultations rendered important feedback with regard to previous experiences with regard to the promotion of SRI as an approach towards more efficient rice production. Based on feedback from the community groups, as well as discussions with partner organizations in the agricultural sector, an extensive analysis of experiences with the promotion of SRI technology was commissioned (see Annex 9), which provides the basis for strategies laid out in Component 2 of the project.
- Similarly, experiences expressed by communities with regard to earlier attempts at ILM, helped design Component 1 of the project in a way that the technical process of land use planning should be combined with an adequate level of community engagement, capacity building and awareness raising, to ensure that the plans coming out of these processes are adequately 'owned' by communities.

The close engagement of stakeholders in the project preparation process as presented above ensured a high level of ownership across the various project partners and beneficiaries, and therefore an important basis for the multi-sectoral and multi-stakeholder approach foreseen for the project.

Project Implementation Stage

The implementation of the project will involve a large number of stakeholders, at different levels and from different sectors of society. In this regard, the project design process involved a process of clarifying and confirming the various roles and responsibilities of these stakeholders, the details of which are presented in Annex 7.

The primary responsibility for the implementation of the Stakeholder Engagement Plan will be with the PMU, primarily through the role of the Project Coordinator / Sustainable Food Systems Specialist, under supervision by the PSC. Other project partners will be involved in various aspects of its implementation.

The key institutional mechanisms for stakeholder engagement during project implementation are described in section 2.3. These are:

1. The Project Steering Committee
2. The Multi-stakeholder Landscape Advisory Committees (for Kilombero and Unguja landscapes)

Under the coordination of the LCU's for both landscapes, further dedicated stakeholder groupings will be established on need-basis around specific aspects of the project. These will include, among others:

- Village Land Use Planning Committees to facilitate the process of development of Village Land Use Plans;
- Target group forums to facilitate engagement between farmer groups and other value chain actors in the rice sector (Component 2); and
- Target group around specific land and ecosystem restoration activities.

Component 4 of the project will furthermore involve the creation of specific learning networks related to the wider FOLUR Impact Program, which will facilitate the participation of key stakeholders in these processes, including the dissemination of information, lessons learnt and other materials.

Further details of the stakeholder engagement strategies proposed for the project are presented in Annex 4. The main objectives of the Stakeholder Engagement Plan are to:

- establish mechanisms that ensure high level of ownership across project partners, affected and interested parties throughout the project life cycle to align with the multi-sectoral and multi-stakeholder project approach;
- facilitate close engagement and grievances mechanisms of stakeholders in the further development and throughout implementation and closure of the project;
- establish time frame and methods that ensure stakeholder consultation and disclosure of project information through the project life cycle; and
- establish and manage communication and engagement mechanisms across partners, affected and interested parties in a transparent, timely and clear manner.

Annex 4 presents a detailed overview of the stakeholders involved or benefiting from the project, the specific interests/stake, as well as strategy for their engagement in terms of means of engagement, the focus of such engagement as well as the timing and frequency of such engagement.

2.6 Gender

In compliance with WWF's Gender Policy, the Tanzania FOLUR Child Project undertook a detailed gender assessment and action plan during the PPG stage. The main purpose of this assessment is to ensure gender sensitive implementation and effects of the project through the identification of appropriate measures for integration of gender-specific activities and approaches. The results of this assessment are documented in the form of a Gender Review report and Gender Mainstreaming Action Plan.

The Gender Review was prepared based on the following information: a) desk review of the WWF Gender Policy, Zanzibar's Policy on Protection and Development of Women (2001) and Gender Policy (2010), mainland Tanzania's National Strategy for Gender in Development, as well as related national policies, strategies and third party data and information sources; b) consultations, focus group discussions and key informant

discussions held in March (Zanzibar) and October (Kilombero) 2020 at District and Village/Shehia levels. The complete Gender Review report and Gender Mainstreaming Action Plan as presented in Annex 11.

Summary of conclusions of the Gender Review

The gender situation in Zanzibar and mainland Tanzania as contextualized by the literature review includes several barriers needing attention. The key conclusions can be summarized as follows:

- In general, the targeted areas include *gender imbalances* in: policy and community life, legal and customary laws, land management planning, tenure rights, trust in public institutions, income and market access. These factors are potential barriers for gender mainstreaming processes in the Project.
- The consultations in Zanzibar and Kilombero concluded that *women are vulnerable groups* and that consequently, all activities in the Project that require stakeholder engagement need to target and measure the participation of vulnerable individuals (including women) and respond to their needs.
- *Limited access to information* was indicated as a major barrier for women's inclusion. The report shows that men can access information on financial opportunities and natural resource management practices more readily than women. Consequently, the project needs to ensure equal information access through ideal practices such as making regular village visits for buy-in dialogues (particularly including vulnerable members).
- Women and men were found to have *different roles and livelihood incentives*; family wellbeing for women and income generation for men. Their preferences were impacted by: environmental changes (rainfall and heat); economic forces (e.g. cash cropping from public sector); cultural pressures (customary law); demographic change (population increase) and; institutional initiatives (access to services and technology). These root issues need to be addressed through gender sensitive planning, and monitoring & evaluation.
- *Time poverty* was a factor identified as causes for women's vulnerability. A common programming mistake is to "force" inclusion by adding quotas or other measurements for women's participation, without concerning overall workloads. Consequently, to address time concerns the Project's strategy should be to diversify women's livelihood options, and simultaneously establish collaborative household and agricultural practices among women and men.
- *Cultural and religious barriers* were identified for women as a barrier to inherit land and to access certain services. To avoid lacking incentives among women for responsible value chains and land restoration, the Project needs to ensure women's inclusion in management committees, access to legal advisors and safer tenure. On the other hand, community members indicated that gender roles are changing. An opportunity therefore is to identify "Ideal case families" and run learning events for community members on benefits from women leadership in conservation.
- In both Zanzibar and Kilombero, *activities of economic interest to women* were identified to include: farming of permanent crops, tree planting, decrease in shifting cultivation, application of user-friendly crop medicines and fertilizers, processing skills (including rice polishing and packing), ownership of a tractor, construction of fences to limit livestock interference. Women's perceived barriers to these interests included: customary practices, inappropriate gender dynamics (workload), climate change, and lack of land ownership.

- The review indicates that *women in the project areas are highly dependent on natural resources* for livelihoods. Project interventions that ensure water access, food availability, and access to health facilities are appreciated by women in the targeted areas.
- To respond to current gender issues the project needs to simultaneously attend to a *growing emancipation of women's* participation and learning to organise appropriate and informed actions. Provision of negotiation skills, legal rights training and support for collaborative efforts (purchase and management costs and practices), will support the ambitions for the project.
- The communities in Zanzibar and Kilombero were found to *lack internal monitoring systems* for incomes, expenditures, number of plantations and products. This limits effective natural resources management and livelihood generation. The Project may respond by developing educational programs and supporting the installation of women-led M&E systems, which should integrate gender mainstreaming mechanisms that ensure the inclusion and benefits for all individuals. For instance Participatory Planning Monitoring and Evaluation committees can be formed and mobilized.

A summary of relevant gender entry points per project component is presented below:

Component	Gender entry point
Development of integrated landscape management (ILM) systems	Landscape management systems should effectively involve men and women in local communities. Close collaboration with local stakeholders and disadvantaged groups is necessary to ensure participatory learning, management, and community buy-in. ³⁴ Consequently; the Project needs to ensure enhanced understanding of land and water uses by all stakeholders, including vulnerable groups, to establish effective management systems.
Promotion of sustainable food production practices and responsible value chains	Value chains should respond to the needs and benefits of the most vulnerable individuals affected. ³⁵ Improved rice farming practices and support system in Project should apply to both women and men and encourage female-led business opportunities. Private sector investment should strategically support businesses led by vulnerable individuals.
Conservation and restoration of natural habitats	For habitats to be restored local people need to feel a sense of land ownership and control, which requires secured tenure rights and access to social institutions. ³⁶ Investment schemes need to support small scale farmers and benefit both men and women.
Project Coordination and M&E	The M&E planning needs to ensure integrated learning with communities. Learning opportunities should be based on local needs and support local led data management by

³⁴ Guijt, I. (2014). Participatory Approaches, Methodological Briefs: Impact Evaluation 5, UNICEF Office of Research, Florence.

³⁵ FAO (2018). Developing gender-sensitive value chains - Guidelines for practitioners. Rome, Italy.

³⁶ Gilmour, D (2016). Forty year of community-based forestry. Food and Agriculture Organization of the United Nations. Rome, Italy.

	men and women. Also, gender disaggregated data collection should be applied where possible in the monitoring program. ³⁷
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³⁷ UNESCO (2009). On target: a guide for monitoring and evaluating community-based projects. United Nations Educational, Scientific and Cultural Organisation. Paris, France

More specific recommendations for gender-specific actions and approaches are presented in the Gender Action Plan in Annex 11. In addition, the Action Plan defines a number of general strategies to ensure gender sensitive implementation of the project, including:

- Allowing for sufficient institutional capabilities to effectively implement gender-responsive activities, monitor and evaluate, and communicate about gender aspects of the project;
- Provide staff with basic training on gender dimensions specific to the project to increase understanding and capacity on gender mainstreaming;
- Ensure that information regarding the project is accessible to both women and men equally before during and after the project; and
- Ensure that project activities are always accessible to women, taking into account location, timing, transportation issues, household responsibilities, permission from male family member(s), etc. which may affect their availability to attend and participate.

Recommendations have been integrated as much as possible in the respective project activities.

Roles and responsibilities

Responsibilities for the implementation and oversight of the recommendations of the Gender Review are presented in the Gender Action Plan in Annex 11. The overall responsibility for ensuring the implementation of the Gender Action Plan lie with MNRT, as Lead Executing Agency, with oversight by the Project Steering Committee and the WWF GEF Agency. The PMU and LCUs, and more specifically the Project Coordinator / Sustainable Food Systems Specialist and Landscape Coordinators, will be responsible for the practical implementation of specific measures and activities, as well as related monitoring and reporting. The Project will recruit a part-time gender specialist to support the PMU and LCUs in an advisory and supporting role.

Financial arrangements

In order to appropriately cater for the implementation of above-mentioned measures, project budget has been allocated for the following:

- Costs for a part time gender specialist (consultant or staff) to work with the PMU and LCUs for the full 5 years of the project period; and
- Budget for travel costs, training workshops and meetings for gender specific consultations.

2.7 Safeguards

In compliance with WWF Environmental and Social Safeguards Framework (ESSF), as detailed in WWF's Environmental and Social Safeguard Integrated Policies and Procedures (SIPP), the Tanzania FOLUR Child Project was screened according to the Standard on Environmental and Social Risk Management. The Project has been and has been categorized as a Category "B" project, given that it is essentially a conservation initiative expected to generate significant positive and durable social, economic and environmental benefits. Any adverse environmental and social impacts are site specific and can be mitigated. The proposed project triggered the following standards:

- The Standard on Natural Habitat has been triggered as a precaution to encourage the Executing Agency to be cautious when carrying out activities inside sensitive ecosystems. Overall, activities of the Project will produce significant conservation benefits and any potential adverse environmental

impacts on human populations or environmentally important areas including forests, grasslands, and other natural habitats are expected to be very limited.

- While the proposed project will not allow land acquisition, involuntary resettlement, or displacement of people from their homes, the Standard on Involuntary Resettlement is triggered because there might be certain access restrictions to HCV forests/lands and the associated natural resources in order to enhance biodiversity and ecosystem functions. A Process Framework has been prepared as part of the ESMF to conform to WWF's Environment and Social Safeguards Framework.
- There are 120 different ethnic groups throughout Tanzania, with 100 dialects spoken. As a precautionary approach, the Standard on Indigenous People is triggered as there might be ethnic groups that are considered indigenous people present in the project landscape. Within the Kilombero landscape (mainland Tanzania), nomadic herders from the Maasai and Barabaig ethnic groups could be found in or near the project area. Guidance on ensuring proper consultation with these ethnic groups will be included in the Stakeholder Engagement Plan and the ESMF.
- The activities are not expected to trigger the Standard on Pest Management as the proposed activities do not include the promotion or usage of pesticides but will aim to reduce the amount of fertilizers and pesticides used through strengthening of farmer capacity on the proper use of chemicals and fertilizers (e.g. integrated pest management and good agriculture practice).
- The Standard on Community Health, Safety and Security is triggered as there are potential negative environmental and health impacts and implications for labor standards related to on-farm practices and post-harvest activities under Output 2.2, as well as small construction projects primarily for small-scale infrastructure under Output 3.1.1 and Output 3.1.2, if not carried out properly. There shall be guidance on mitigation measures in the ESMF to address these impacts.
- Although the project does not involve any land acquisition or resettlement, the Project triggers the WWF's Standard on Involuntary Resettlement as certain activities, such as land use planning (Component 1) and management of high value conservation areas (Component 3) may result in the restriction of access to natural resources and the livelihood activities of certain project affected people. The ESMF therefore includes a Process Framework, which describes the process by which affected communities participate in identification, design, implementation and monitoring of relevant project activities and mitigation measures.

Since the exact location and/or nature of potential investments have not yet been determined, an Environment and Social Management Framework (ESMF), including a Process Framework (PF), was prepared to conform to WWF's Environment and Social Safeguards Framework. The ESMF, including the PF, outlines the principles, procedures, and mitigation measures for addressing environmental and social impacts associated with the project in accordance with the laws and regulations of the United Republic of Tanzania (URT) and with the WWF SIPP. The ESMF was prepared based on the following information: a) desk review of the WWF SIPP and URT's environmental and social assessment policies; and b) consultations and focus group discussions held in September and October 2020 with 136 stakeholders at District and Village/Shehia levels. The complete ESMF is presented in Annex 12.

Since the precise scope of site-specific activities that will be implemented as part of the project will only be determined during the implementation phase, site-specific social and environmental impacts are uncertain at this stage. Therefore, the development of site-specific Environmental and Social Management Plans (ESMPs)

will be required to be undertaken pursuant during project implementation, based on the general guidance provided by the ESMF. Potential site-specific environmental and social impacts that have been identified in this regard are summarized below. Details of potential mitigation measures, as well as related procedures and guidelines for the development of the ESMPs are described in the ESMF in Annex 12.

The project will have a direct and tangible effect on a large number of communities and individuals residing within or in the vicinity of project sites. There is thus a need for an efficient and effective Grievance Redress Mechanism (GRM) that collects and responds to stakeholders' inquiries, suggestions, concerns, and complaints. The GRM shall constitute an integral part of FOLUR and assist the PCU and LCUs in identifying and addressing the needs of local communities. The GRM should be constituted as a permanent and accessible institutional arrangement for addressing any grievances arising from the implementation of project activities. The Project's GRM will be administered by the PCU in coordination with the two LCUs. Detailed guidelines for the establishment and operation of the GRM are presented in the ESMF.

Roles and responsibilities

Responsibilities for the implementation and oversight of environmental and social safeguards measures related to the project are outlined in ESMF. The overall responsibility for ensuring that safeguards are implemented lie with MNRT, as Lead Executing Agency, with oversight by the Project Steering Committee and the WWF GEF Agency. At more practical level, the PMU and LCUs, and more specifically the Project Coordinator / Sustainable Food Systems Specialist and Landscape Coordinators, will be responsible for the practical implementation of safeguards measures, as well as related monitoring and reporting. The Project will recruit an environmental and social safeguards specialist to support the PMU and LCUs in an advisory and supporting role.

Financial arrangements

In order to appropriately cater for the implementation of above-mentioned measures, project budget has been allocated for the following:

- Costs for a part time environmental and social safeguards specialist (consultant or staff) to work with the PMU and LCUs for the full 5 years of the project period; and
- Budget for travel costs, training workshops and meetings for safeguards monitoring.

It should be noted that the ESMF and Process Framework (Annex 12) specifies that the project budget would cover potential compensation to project affected people related to the implementation of the Process Framework (i.e. resulting from the GRM). At this stage, no amount has been earmarked for such events, but as necessarily, budget adjustments will be made to accommodate for this.

2.8 Monitoring and Evaluation

The Project will be monitored through the Results Framework (see Annex 8). The Results Framework includes 1 or 2 indicators per Outcome. As far as possible, the baseline has been completed for each indicator along with feasible targets. A methodology for measuring indicator targets is provided. Indicator targets are Specific, Measurable, Achievable, Relevant, and Time-bound (SMART), and disaggregated by sex where applicable. Component 4 of the Results Framework is dedicated to M&E, knowledge sharing and coordination.

Relevant Core indicators have been included to provide a portfolio level understanding of progress towards the GEF Global Environmental Benefits (GEBs), based on the indicators defined for the FOLUR Impact Program

A Monitoring, Evaluation, Learning & Knowledge Management (MELKM) Program Officer will be recruited as part of the PMU, and will be responsible for gathering M&E data for the annual results framework tracking, and providing suggestions to the PMU Project Coordinator / Sustainable Food Systems Specialist to improve the results, efficiency and management of the project. The LCUs will be responsible for facilitating and consolidating data for the results framework for each respective landscape.

The following is a summary of project reports:

M&E/ Reporting Document	How the document will be used	Timeframe	Responsible
Inception Report	<ul style="list-style-type: none"> Summarize decisions made during inception workshop, including changes to project design, budget, Results Framework, etc. 	Within three months of inception workshop	PMU Project Coordinator / Sustainable Food Systems Specialist and Monitoring, Evaluation, Learning & Knowledge Management (MELKM) Program Officer, with inputs from landscape coordination units
Quarterly Field Report	<ul style="list-style-type: none"> Inform PMU on progress, challenges and needs of activities in field. 	Every three months	Field team
Quarterly Financial Reports	<ul style="list-style-type: none"> Assess financial progress and management. 	Every three months	PMU F&A officer, with inputs from landscape coordination units
WWF Project Progress Report (PPR) with RF and workplan tracking for the 12-month PPR.	<ul style="list-style-type: none"> Inform management decisions and drafting of annual workplan and budget; Share lessons internally and externally; Report to the PSC and GEF Agency on the project progress. 	Every six months	PMU Project Coordinator / Sustainable Food Systems Specialist and MELKM Program Officer, with inputs from landscape coordination

			units
Mid-term Project Evaluation Report	<ul style="list-style-type: none"> • External formative evaluation of the project; • Recommendations for adaptive management for the second half of the project period; • Inform PSC, GEF and other stakeholders of project performance to date. 	Midterm	External expert or organization
Terminal Project Evaluation Report	<ul style="list-style-type: none"> • External summative evaluation of the overall project; • Recommendations for GEF and those designing related projects. 	Before project completion	External expert or organization

Independent formal evaluations have been budgeted by the project and will adhere to WWF and GEF guidelines and policies. The Midterm Evaluation will be conducted within six months of the midpoint of the project and the Terminal Evaluation will be completed before the official close of the project. The evaluations provide an opportunity for adaptive management as well as sharing of lessons and best practices for this and future projects. The Operational Focal Point will be briefed and debriefed before and after the evaluations and will have an opportunity to comment on the draft and final report. An annual planning and reflection workshop has been budgeted for the PMU and project partners to review project progress and challenges to date, taking into account results framework tracking, work plan tracking, stakeholder feedback and quarterly field reports to review project strategies, risks and the theory of change (ToC). The results of this workshop will inform project decision making (i.e., refining the ToC, informing PPRs and AWP&Bs).

In addition to project-level reporting, the project will also contribute to the following Global Platform reporting requirements:

- Core GEF indicators (annually)
- Project Results Framework indicators (annually)
- Global Platform Indicators (annually)
- Descriptive case studies – the project will submit at least one outcome story annually
- Indicators identified in the Global Platform’s gender strategy (annually)

2.9 Budget

Project Budget Overview

The total project budget amounts to US \$80,055,671, out of which US \$7,368,808 is GEF funding and US \$72,686,863 is co-financing from various sources. An overview of co-financing sources is presented in Table 8.

TABLE 8 OVERVIEW OF CO-FINANCING SOURCES

Sources of Co-financing	Name of Co-financier	Type of Cofinancing	Investment Mobilized	Amount (\$)
Recipient country Government	MNRT	In-kind	Recurrent expenses	\$100,000
Recipient country Government	MNRT	Grant	Investment mobilized	\$150,000
Recipient country Government	VPO	In-kind	Recurrent expenses	\$250,000
Recipient country Government	VPO-2	In-kind	Recurrent expenses	\$8,000
Recipient country Government	NLUPC	In-kind	Recurrent expenses	\$125,000
Recipient country Government	NLUPC	Grant	Investment mobilized	\$113,000
Recipient country Government	MoW	In-kind	Recurrent expenses	\$125,000
Recipient country Government	MoW	Grant	Investment mobilized	\$105,000
Recipient country Government	MoA	In-kind	Recurrent expenses	\$150,000
Recipient country Government	MAINRL	In-kind	Recurrent expenses	\$150,000
Recipient country Government	MAINRL	Cash	Recurrent expenses	\$10,000
Recipient country Government	MAINRL	Loan	Investment mobilized	\$63,304,154
Civil society organization	WWF Tanzania	Grant	Investment mobilized	\$1,871,709
Civil society organization	IUCN	In-kind	Recurrent expenses	\$4,950,000
Civil society organization	IUCN	Grant	Investment mobilized	\$1,100,000
Recipient country Government	ZAWA	In-kind	Recurrent expenses	\$125,000
Recipient country Government	CoL Zanzibar	In-kind	Recurrent expenses	\$40,000
Recipient country Government	CoL Zanzibar	Grant	Recurrent expenses	\$10,000
Total Co-financing				\$72,686,863

The budget is relatively evenly spread over the 5 years of implementation, with a reduced budget (at ~70% of average) for the initial year (in light of the usual start-up delays) and a slight reduction in year 5, in light of the project's phase out.

A summary of the project budget is presented in Table 9.

TABLE 9 SUMMARY OF THE PROJECT BUDGET

TOTAL PROJECT	
CATEGORY	PROJECT TOTAL
PERSONNEL	1,729,779
THIRD PARTY FEES & EXPENSES	500,087
GRANTS & AGREEMENTS	2,920,082
TRAVEL, MEETINGS & WORKSHOPS	1,101,422
SUPPLIES	521,312
OTHER OPERATING COSTS	535,613
EQUIPMENT AND VEHICLES	60,513
TOTAL PROJECT COSTS	7,368,808

COMPONENT 1: Development of integrated landscape management (ILM) systems	
CATEGORY	COMPONENT TOTAL
PERSONNEL	\$ 365,533
THIRD PARTY FEES & EXPENSES	\$ 135,000
GRANTS & AGREEMENTS	\$ 490,000
TRAVEL, MEETINGS & WORKSHOPS	\$ 298,564
SUPPLIES	\$ 29,330
OTHER OPERATING COSTS	\$ 142,367
EQUIPMENT AND VEHICLES	\$ 16,800
TOTAL PROJECT COSTS	\$ 1,477,594

COMPONENT 2: Promotion of sustainable food production practices and responsible value chains

CATEGORY	COMPONENT TOTAL
PERSONNEL	\$ 543,739
THIRD PARTY FEES & EXPENSES	\$ 235,087
GRANTS & AGREEMENTS	\$ 1,100,082
TRAVEL, MEETINGS & WORKSHOPS	\$ 439,681
SUPPLIES	\$ 361,234
OTHER OPERATING COSTS	\$ 205,488
EQUIPMENT AND VEHICLES	\$ 27,185
TOTAL PROJECT COSTS	\$ 2,912,495

COMPONENT 3: Conservation and restoration of natural habitats

CATEGORY	COMPONENT TOTAL
PERSONNEL	\$ 325,701
THIRD PARTY FEES & EXPENSES	\$ 45,000
GRANTS & AGREEMENTS	\$ 1,150,000
TRAVEL, MEETINGS & WORKSHOPS	\$ 145,502
SUPPLIES	\$ 112,443
OTHER OPERATING COSTS	\$ 101,331
EQUIPMENT AND VEHICLES	\$ 16,529
TOTAL PROJECT COSTS	\$ 1,896,505

COMPONENT 4: Project Coordination and M&E

CATEGORY	COMPONENT TOTAL
PERSONNEL	\$ 212,365
THIRD PARTY FEES & EXPENSES	\$ 85,000
GRANTS & AGREEMENTS	\$ 180,000
TRAVEL, MEETINGS & WORKSHOPS	\$ 217,675
SUPPLIES	\$ -
OTHER OPERATING COSTS	\$ 36,331
EQUIPMENT AND VEHICLES	\$ -
TOTAL PROJECT COSTS	\$ 731,371

PMC	
CATEGORY	COMPONENT TOTAL
PERSONNEL	\$ 282,441
THIRD PARTY FEES & EXPENSES	\$ -
GRANTS & AGREEMENTS	\$ -
TRAVEL, MEETINGS & WORKSHOPS	\$ -
SUPPLIES	\$ 18,305
OTHER OPERATING COSTS	\$ 50,097
EQUIPMENT AND VEHICLES	\$ -
TOTAL PROJECT COSTS	\$ 350,843

A detailed description of the various components of budget is presented below.

Project Budget Notes

Staffing

An overview of the staff to be recruited under the project is presented below. All staff will be hosted by the central PMU at MNRT, reporting to the Director of FBD. Staff will be expected to spend a considerable amount of time working with the two landscape teams in Kilombero and Unguja.

TABLE 10 PROJECT STAFF

Position	Executing Unit	Summary of responsibilities	Average Annual % time	Average annual Budget	Total Component Budget
Project Management Costs (PMC)					
Project Coordinator / Sustainable Food Systems Specialist	MNRT-PMU	Overall coordination and oversight of project activities; technical advice and support to project partners and LCUs; annual planning and budgeting; main liaison towards project partners	20%	11,080	\$55,404
Finance Manager	MNRT-PMU	Overall management of project budget, including sub-contracting and procurement	100%	24,203	\$121,016
Project assistant	MNRT-PMU	Support to the project Coordinator / Sustainable Food Systems Specialist, Finance Manager and MELKM Program Officer expert in project administration	100%	14,655	\$ 73,278
Project driver	MNRT-PMU	Provide logistical support to the project operations	68%	6,548	\$32,742

Position	Executing Unit	Summary of responsibilities	Average Annual % time	Average annual Budget	Total Component Budget
TOTAL PROJECT MANAGEMENT COSTS (PMC)					\$282,441
Monitoring & Evaluation, Learning and Knowledge Management (MELKN)					
MELKM Manager	MNRT-PMU	Monitoring and evaluation of project delivery and impact; reporting; coordination of learning exercises, annual planning and reflection workshops, and engagement in global FOLUR IP; capturing lessons learnt	100%	42,473	\$212,365
TOTAL MONITORING AND EVALUATION AND KNOWLEDGE MANAGEMENT					\$212,365
Component 1					
Project Coordinator / Sustainable Food Systems Specialist	MNRT-PMU	Technical assistance and support on issues related to Integrated Landscape Management	25%	13,986	\$69,932
Landscape Program Manager	Kilombero	Coordination and oversight of project activities at landscape level; technical assistance; liaison towards local project partners	30%	12,487	\$62,435
Field extension officer 1	Kilombero	Support the implementation of field level activities at community-level	28%	6,540	\$32,704
Field extension officer 2	Kilombero	Support the implementation of field level activities at community-level	28%	6,540	\$32,704
Programme administrative officer	Kilombero	Support the Landscape Program Manager in project administration	28%	3,567	\$17,839
Landscape Program Manager	Unguja	Coordination and oversight of project activities at landscape level; technical assistance; liaison towards local project partners	28%	12,487	\$62,435
Field extension officer 1	Unguja	Support the implementation of field level activities at community-level	28%	6,540	\$32,704
Field extension officer 2	Unguja	Support the implementation of field level activities at community-level	28%	6,540	\$32,704

Position	Executing Unit	Summary of responsibilities	Average Annual % time	Average annual Budget	Total Component Budget
Programme administrative officer	Unguja	Support the Landscape Program Manager in project administration	28%	3,567	\$17,839
Project driver	MNRT-PMU	Provide logistical support to the project operations	9%	847	\$4,236
TOTAL COMPONENT 1					\$365,532
Component 2					
Project Coordinator / Sustainable Food Systems Specialist	MNRT-PMU	Technical assistance and support on issues related to sustainable rice value chains	25%	13,724	\$68,619
Landscape Program Manager	Kilombero	Coordination and oversight of project activities at landscape level; technical assistance; liaison towards local project partners	45%	20,069	\$100,342
Field extension officer 1	Kilombero	Support the implementation of field level activities at community-level	45%	10,512	\$52,560
Field extension officer 2	Kilombero	Support the implementation of field level activities at community-level	45%	10,512	\$52,560
Programme administrative officer	Kilombero	Support the Landscape Program Manager in project administration	45%	5,734	\$28,669
Landscape Program Manager	Unguja	Coordination and oversight of project activities at landscape level; technical assistance; liaison towards local project partners	45%	20,069	\$100,343
Field extension officer 1	Unguja	Support the implementation of field level activities at community-level	45%	10,512	\$52,560
Field extension officer 2	Unguja	Support the implementation of field level activities at community-level	45%	10,512	\$52,560
Programme administrative officer	Unguja	Support the Landscape Program Manager in project administration	45%	5,734	\$28,669
Project driver	MNRT-PMU	Provide logistical support to the project operations	14%	1,371	\$6,854
TOTAL COMPONENT 2					\$543,736
Component 3					

Position	Executing Unit	Summary of responsibilities	Average Annual % time	Average annual Budget	Total Component Budget
Project Coordinator / Sustainable Food Systems Specialist	MNRT-PMU	Technical assistance and support on issues related to landscape management and restoration	25%	16,367	\$81,837
Landscape Program Manager	Kilombero	Coordination and oversight of project activities at landscape level; technical assistance; liaison towards local project partners	27%	10,273	\$51,363.54
Field extension officer 1	Kilombero	Support the implementation of field level activities at community-level	27%	5,381	\$26,904.71
Field extension officer 2	Kilombero	Support the implementation of field level activities at community-level	27%	5,381	\$26,904.71
Programme administrative officer	Kilombero	Support the Landscape Program Manager in project administration	27%	2,935	\$14,675.30
Landscape Program Manager	Unguja	Coordination and oversight of project activities at landscape level; technical assistance; liaison towards local project partners	27%	10,273	\$51,363.54
Field extension officer 1	Unguja	Support the implementation of field level activities at community-level	27%	5,381	\$26,904.71
Field extension officer 2	Unguja	Support the implementation of field level activities at community-level	27%	5,381	\$26,904.71
Project driver	MNRT-PMU	Provide logistical support to the project operations	9%	833	\$4,168
TOTAL COMPONENT 3					\$325,701

Third Party Fees and Expenses

TABLE 11 THIRD PARTY FEES AND EXPENSES

Consultant Expertise	Summary of responsibilities	Executing Unit	Project year(s)	Total Project Budget
Monitoring and Evaluation and Knowledge Management				

Consultant Expertise	Summary of responsibilities	Executing Unit	Project year(s)	Total Project Budget
Mid-term evaluation	Undertake mid-term project evaluation		3	25,000
Final evaluation	Undertake final project evaluation		5	25,000
Consultancy to support preparation of lessons learnt report and briefs	Support the preparation of lessons learnt reports and briefs for both local (national) and international (FOLUR network) use		4-5	25,000
TOTAL MONITORING AND EVALUATION AND KNOWLEDGE MANAGEMENT				75,000
Component 1				
Consultancy gender and safeguards	Support the project team in integrating gender and safeguards consideration in project activities; undertake regular gender and safeguards reviews		1-5	\$50,000.00
Consultancy to undertake institutional review and support process		Kilombero	1	15,000
Consultancy to undertake assessment of opportunities for improved land tenure and water governance systems		Kilombero	1-2	15,000
Consultancy to support development of catchment management plan and undertake institutional review		Unguja	1-2	40,000
TOTAL COMPONENT 1				135,000
Component 2				
CTA / Food Systems Expert	Technical advice and coordination of activities related to sustainable food production practices and value chains		1-5	110,087
Consultancy to develop best practice standards and guidelines	Develop best practice standards and guidelines for sustainable rice production and value chains; facilitate consultative process in this regard		2	20,000
Consultancy gender and safeguards	Support the project team in integrating gender and safeguards consideration in		1-5	10,000

Consultant Expertise	Summary of responsibilities	Executing Unit	Project year(s)	Total Project Budget
	project activities; undertake regular gender and safeguards reviews			
Consultancy to support the development of targeted initiatives		Kilombero	2	20,000
Consultancy to support the development of targeted initiatives		Unguja	2	20,000
Consultancy to undertake opportunity analysis and business case development		Unguja	3	15,000
TOTAL COMPONENT 2				\$235,087
Component 3				
Consultancy to undertake assessment of options and opportunity analysis for sustainable landscape management and restoration financing	Undertake assessment of options and opportunity analysis for sustainable landscape management and restoration financing		2-3	20,000
Consultancy gender and safeguards	Support the project team in integrating gender and safeguards consideration in project activities; undertake regular gender and safeguards reviews		1-5	25,000
COMPONENT 3 TOTAL				45,000

Grants and Agreements

A large part of project activities will be coordinated and executing by the project partners. The selection of partners, in this regard, is based on the respective mandates of the organizations involved, their roles and responsibilities being determined as part of consultations held during the project design process. Most partners represent Government institutions with specific mandates related to the project activities. An overview of all grants to be managed by the project management unit is presented in Table 12.

TABLE 12 GRANTS

Name of partner	Purpose	Location	Total Project Budget
Monitoring and Evaluation and Knowledge Management			
SUA/NCMC	Sub-contract to SUA/NCMC for measuring impacts on landuse changes, restoration and management effects and carbon sequestration	Kilombero, Unguja	50,000
TAFORI	Sub-contract to TAFORI for measuring forest health and biodiversity in the project areas	Kilombero, Unguja	25,000
TARI	Sub-contract to TARI for measuring uptake of sustainable rice production and value chain methods in the target landscapes	Kilombero, Unguja	25,000
TOTAL MONITORING AND EVALUATION AND KNOWLEDGE MANAGEMENT			100,000
Component 1			
SUA/NCMC	Sub-contract to SUA/NCMC for assessment of HCV areas and priority ecosystems, threat analysis, and identification of restoration areas for both landscapes	Kilombero, Unguja	40,000
Care-WWF Alliance	Sub-contract to IUCN to support ROAM assessment for both landscapes	Kilombero, Unguja	30,000
Kilombero District Authority	Sub-contract to Mlimba District Authority for facilitation of land-use planning processes	Kilombero	20,000
North A/B District Authority	Sub-contracts to North A and B District Authority for facilitation of catchment and land-use planning processes	Unguja	30,000
Care Tanzania	Sub-contract to Care Tanzania for technical assistance and mobile phone technology on joint village land-use planning process	Kilombero, Unguja	20,000
NLUPC	Sub-contract to NLUPC to provide training on ILM to district staff and partner institutions	Kilombero, Unguja	20,000
IUCN	Sub-contract to IUCN for supporting training on ILM (in exchange with TRI project)	Kilombero, Unguja	20,000
Local knowledge institutions (various)	Sub-contract to local knowledge institutions (e.g. SUA, IRA, NLUPC) to facilitate curriculum development on ILM	Kilombero, Unguja	20,000
NLUPC, RBWB and District Office	Support for institutional reform measures	Kilombero	30,000
NLUPC	Facilitate village land use plan development	Kilombero	100,000
CoL/ZAWA/VPO-2	Catchment Management Plan	Unguja	50,000

Name of partner	Purpose	Location	Total Project Budget
Partner Institutions (CoL, ZAWA, MANRFL, VPO-2)	Implementation of recommended measures for improved ILM institutional coordination	Unguja	30,000
CoL	Local landuse planning in priority areas	Unguja	80,000
TOTAL COMPONENT 1			490,000
Component 2			
TARI/RCT	TARI, ZARI and RCT - value chain, policy and market analysis, and development of sustainable rice development plan	Kilombero, Unguja	30,000
MoA	Sub-contract to MoA for mainstreaming sustainable rice development plan	Kilombero	15,000
MANRLF	Sub-contract to MANRLF for mainstreaming sustainable rice development plan	Unguja	15,000
TARI/RCT	Sub-contract to TARI/ZARI - training and capacity building of extension services, farmers cooperatives and farmers in the landscapes	Kilombero, Unguja	60,000
Kilombero District Authority	Sub-contract to Mlimba District Office - support to strengthening extension services on improved rice practices	Kilombero	40,000
MANRLF	Sub-contract to MANRLF - support to strengthenng extension services for improved rice practices	Unguja	40,000
CARE Tanzania	Sub-contract to Care Tanzania for building capacity of farmer groups through the provision of specific tools and technology (such as Chomoka for access to market information) and financial solutions (collective investment and micro-credit schemes)	Kilombero, Unguja	40,000
SAGCOT/RCT	Sub-contract to SAGCOT and RCT - manage private sector engagement and opportunity analysis	Kilombero, Unguja	40,000
Partner Institutions	Implementation of priority initiatives	Kilombero	240,000
Farmers Groups	Implementation of priority initiatives	Kilombero	220,082
Farmers Groups	Implementation of priority initiatives	Unguja	160,000
Partner Institutions	Implementation of priority initiatives	Kilombero	200,000
TOTAL COMPONENT 2			1,100,082
Component 3			
TFS	Sub-contract to TFS for targeted restoration and management improvements on state-owned forest lands	Kilombero	150,000
DFNR	Sub-contract to DFNR for targeted restoration and management improvements onstate-owned forest lands	Unguja	150,000

Name of partner	Purpose	Location	Total Project Budget
TAWA	Sub-contract to TAWA for targeted restoration and management improvements to Kilombero wetland systems	Kilombero	100,000
Mlimba DC	Sub-contract to Mlimba DC for gazetment of district forest reserve	Unguja	20,000
IUCN	Sub-contract to IUCN for technical assistance on land and water management and restoration	Kilombero	30,000
Local Partners	Sub-contracts to local partners (e.g. AWF, TFCG, Reforest Africa) for supporting selected communities in priority conservation areas to implement specific management and restoration activities (forest, wetland and farmland)	Kilombero	200,000
CoL/ZAWA/VPO-2	Sub-contract to CoL/ZAWA/VPO-2 to develop Catchment Management Plan	Unguja	200,000
Local Partners	Sub-contracts to local partners for supporting selected communities in priority conservation areas to implement specific management and restoration activities (forest, wetland and farmland)	Unguja	100,000
Local Community Organizations	Sub-contracts to local community organizations for implementing specific management and restoration activities (forest, wetland and farmland)	Unguja	200,000
TOTAL COMPONENT 3			1,150,000

Travel

TABLE 13 TRAVEL

International or local	Purpose of travel	Number of trips	Total Project Costs
Monitoring and Evaluation and Knowledge Management			
International	Participation in global FOLUR meetings	15	63,710
International	Participation in regional commodity workshops/trainings	25	53,091
Local	Project field monitoring missions	40	21,237
TOTAL MONITORING AND EVALUATION AND KNOWLEDGE MANAGEMENT			138,038
Component 1			
Local	Travel of Project Coordinator / Sustainable Food Systems Specialist to project landscapes	20	15,927
Local	Travel of MNRT Project Director to project landscapes	11	5,809
Local	Travel of Kilombero landscape team staff to Dodoma		9,556
Local	Travel within Kilombero landscape		31,855
Local	Travel of Unguja landscape team staff to Dodoma		7,964
Local	Travel within Unguja landscape		15,927
TOTAL COMPONENT 1			87,039
Component 2			
Local	Field visits by Project Coordinator / Sustainable Food Systems Specialist	20	15,927
Local	Farmer-to-farmer learning exchanges between landscapes	30	16,396
Local	CTA/Food Systems Specialist to landscapes		22,017
Local	Travel of Kilombero landscape team staff to Dodoma		9,556
Local	Travel within Kilombero landscape		31,855
Local	Farmer-to-farmer learning exchanges at Kilombero landscape level		9,837
Local	Travel within Unguja landscape		21,237
Local	Travel of Unguja landscape team staff to Dodoma		10,618
Local	Farmer-to-farmer learning exchanges at Unguja landscape level		4,919
TOTAL COMPONENT 2			447,736
Component 3			
Local	Travel of Project Coordinator / Sustainable Food Systems Expert to project landscapes	20	15,927
Local	Travel of Kilombero landscape team staff to Dodoma		9,556
Local	Travel within Kilombero landscape		30,922
Local	Travel within Unguja landscape		15,927
Local	Travel of Unguja landscape team staff to Dodoma		7,964
TOTAL COMPONENT 3			80,297

Workshops and meetings

Cost estimates take into account the costs of meeting venue, travel of participants as well as estimated costs of accommodation for the duration of stay. Prior experience with organizing meetings has been taken into account in this regard.

TABLE 14 WORKSHOPS AND MEETINGS

Location	Describe who will be participating and the estimated number of participants.	Purpose of workshop	Number of workshops	Total Project Costs
Monitoring and Evaluation and Knowledge Management				
Dodoma, Kilombero or Unguja (alternating)	Project landscape teams and PMU (40)	Annual planning and reflection workshops	5	26,545
Dodoma, Kilombero or Unguja (alternating)	Members of the PSC (20)	Meetings of the Project Steering Committee	10	53,091
TOTAL MONITORING AND EVALUATION AND KNOWLEDGE MANAGEMENT				79,637
Component 1				
Kilombero	Kilombero landscape project Team			15,927
Kilombero	Kilombero MSP			58,091
Kilombero	Private sector stakeholders			11,255
Kilombero	Local Communities	Awareness raising		15,927
Kilombero	Local Communities	Gender and Safeguards trainings and focus group discussions		15,917
Unguja	Unguja landscape coordination team			20,387
Unguja	Unguja MSP			31,546
Unguja		Training workshops		10,609
Unguja	Local Communities	Awareness raising events		15,927
Unguja	Local Communities	Gender and safeguards trainings and focus groups		15,927
Kilombero and Unguja	Project landscape teams and PMU (40)	Gender and safeguards training for PMU and landscape teams (costs shared across the 3 components)	2	5,000

Location	Describe who will be participating and the estimated number of participants.	Purpose of workshop	Number of workshops	Total Project Costs
TOTAL COMPONENT 1				211,525
Component 2				
Dodoma	Relevant Government institutions, farmer groups, private sector, relevant CSOs (50)	Stakeholder workshops on sustainable rice value chain development plan	2	20,000
Dodoma	Relevant Government institutions, farmer groups, private sector, relevant CSOs (50)	Stakeholder workshops on best practices and standards	1	10,300
Kilombero and Unguja	Project landscape teams and PMU (40)	Gender and safeguards training for PMU and landscape teams (costs shared across the 3 components)	2	5,000
Kilombero	Field-level stakeholders	Rice Value chain and market analysis		26,546
Kilombero	Landscape coordination team			15,927
Kilombero	Farmers	Training workshops on sustainable rice production		12,551
Kilombero	Kilombero MSP			31,129
Kilombero	Farmers groups (through District Extension Services)			33,129
Kilombero	Local communities	Gender and safeguards trainings and focus group discussions with communities (place-holder		15,927
Unguja	Field-level stakeholders	Rice Value chain and market analysis		10,000
Unguja	Landscape coordination team			20,387
Unguja	Farmers	Training workshops for farmers on sustainable rice production		31,546
Unguja	Unguja MSP			21,546
Unguja	Farmers groups (through District Extension Services)			26,546
Unguja	Local Communities	Gender and safeguards trainings and focus group discussions		15,927
TOTAL COMPONENT 2				297,318

Location	Describe who will be participating and the estimated number of participants.	Purpose of workshop	Number of workshops	Total Project Costs
Component 3				
Kilombero and Unguja	Project landscape teams and PMU (40)	Gender and safeguards training for PMU and landscape teams (costs shared across the 3 components)	2	5,000
Kilombero	Landscape Coordination team			2,964
Kilombero	Local Communities	Gender and safeguards trainings and focus group discussions		15,927
Unguja	Landscape Coordination team			20,387
Unguja	Local Communities	Gender and safeguards trainings and focus group discussions		15,927
TOTAL COMPONENT 3				65,206

Supplies

TABLE 15 SUPPLIES

Equipment budgeted	Project justification for equipment	Location	Total costs
Project Management Costs (PMC)			
Laptops (3)	Functioning of PMU	PMU Dodoma	4,500
Printer-photocopier	Functioning of PMU	PMU Dodoma	3,091
Office furniture	Functioning of PMU	PMU Dodoma	2,500.
Office supplies	Functioning of PMU	PMU Dodona	5,218
Laptop + accessories	Functioning of MELKM Program Officer	PMU Dodoma	1,500
Office furniture	Functioning of MELKM Program Officer	PMU Dodoma	1,496
TOTAL PROJECT MANAGEMENT COSTS (PMC)			15,309
Component 1			
Office supplies	Functioning Kilombero Landscape Team	Kilombero	3,185
Office equipment- printer/scanner	Functioning Kilombero Landscape Team	Kilombero	1,000
Laptops	Functioning Kilombero Landscape Team	Kilombero	2,150
Communications equipment- Camera	Functioning Kilombero Landscape Team	Kilombero	1,000
Office Supplies	Functioning Unguja Landscape Team	Unguja	18,995
1 Laptop	Functioning Unguja Landscape Team	Unguja	1,500
Office Furntiture	Functioning Unguja Landscape Team	Unguja	1,500
TOTAL COMPONENT 1			29,330
Component 2			
Purchase and provision of materials (eg. Seeds, farming hardware, building and construction materials)		Kilombero	215,457
Laptops	Functioning Kilombero Landscape Team	Kilombero	6,450
Communications equipment- Camera	Functioning Kilombero Landscape Team	Kilombero	1,000
Office Supplies	Functioning Unguja Landscape Team	Unguja	20,108
Purchase and provision of materials (e.g. seeds, farming		Unguja	96,218

Equipment budgeted	Project justification for equipment	Location	Total costs
hardware, building and construction materials)			
1 laptop	Functioning Unguja Landscape Team	Unguja	3,000
office furniture	Functioning Unguja Landscape Team	Unguja	3,000
Printer/photocopier	Functioning Unguja Landscape Team	Unguja	1,000
TOTAL COMPONENT 2			361,233
Component 3			
Office Supplies	Functioning Kilombero Landscape Team	Kilombero	1,593
GPS		Kilombero	3,000
Office Supplies	Functioning Unguja Landscape Team	Unguja	18,995
Materials for Restorations (eg plant materials, hardware)		Kilombero	43,091
Materials for Restorations (eg plant materials, hardware)		Unguja	42,764
1 laptop	Functioning of the Unguja Landscape Team	Unguja	1,500
Office Furniture	Functioning of the Unguja Landscape Team	Ungaja	1,500
TOTAL COMPONENT 3			112,443

Equipment and Vehicles

TABLE 15 EQUIPMENT AND VEHICLES

Equipment budgeted	Project justification for equipment	Location	Total costs
Project Vehicle	Visits to the project landscapes require ground transport as there are no flights between Dodoma and Kilombero, or between Dodoma and Zanzibar (travel via Dar es Salaam). Also, engagements with partner institutions in Dodoma and elsewhere require frequent road transport.	PMU Dodoma	60,513
Motorbikes	Field motorbikes are the most convenient means of transport in the project landscapes.	Kilombero & Unguja	15,000
TOTAL EQUIPMENT AND VEHICLES			68,013

Other Operating Costs

TABLE 16 OTHER OPERATING COSTS

Description	Project justification	Total costs
Project Management Costs (PMC)		
Annual Project Audit		31,102
Photocopying	Functioning of PMU	6,332
Postage & Shipping	Functioning of PMU	6,332
Communications (phone, fax, AV, WP)	Functioning of PMU	6,332
Supplies	Functioning of PMU	6,332
TOTAL PROJECT MANAGEMENT COSTS (PMC)		50,097
Monitoring and Evaluation		
Research Materials and Publications	Publication and dissemination of outreach materials, lessons learnt reports, briefs, guidelines and other materials deriving from the project	30,000
Communications (phone, fax, AV, WP)	Functioning of MELKM Program Officer	6,331
TOTAL MONITORING AND EVALUATION		36,332
Component 1		

Research Materials and Publications , PMU		17,729
Research Materials and Publication	Kilombero	3,279
Office Rent, Insurance, Maintenance, Utility	Kilombero	15,927
Equipment / Vehicle Lease	Kilombero	15,927
Equipment / Vehicle Running Costs	Kilombero	19,113
Photocopying	Kilombero	3,185
Postage & Shipping	Kilombero	2,071
Communications (phone, fax, AV, WP)	Kilombero	3,185
Research Materials and Publications	Unguja	5,276
Office Rent, Insurance, Maintenance, Utility	Unguja	2,638
Equipment / Vehicle Lease	Unguja	15,927
Equipment / Vehicle Running Costs	Unguja	19,113
Photocopying	Unguja	6,332
Postage & Shipping	Unguja	6,332
Communications (pne, fax, AV, WP)	Unguja	6,332
TOTAL COMPONENT 1		142,367
Component 2		
Research Materials and Publications	Publication of best practice guidelines	28,492
Research Materials and Publication	Kilombero	5,465
Office Rent, Insurance, Maintenance, Utility	Kilombero	15,927

Equipment / Vehicle Lease	Kilombero	23,891
Equipment / Vehicle Running Costs	Kilombero	31,855
Photocopying	Kilombero	6,371
Postage & Shipping	Kilombero	5,415
Communications (phone, fax, AV, WP)	Kilombero	5,415
Research Materials and Publications	Unguja	5,276
Office Rent, Insurance, Maintenance, Utility	Unguja	2,638
Equipment / Vehicle Lease	Unguja	23,891
Equipment / Vehicle Running Costs	Unguja	31,855
Photocopying	Unguja	6,332
Postage & Shipping	Unguja	6,332
Communications (pne, fax, AV, WP)	Unguja	6,332
TOTAL COMPONENT 2		205,488
Component 3		
Research Materials and Publication	Kilombero	3,278
Office Rent, Insurance, Maintenance, Utility	Kilombero	15,927
Equipment / Vehicle Lease	Kilombero	15,927
Equipment / Vehicle Running Costs	Kilombero	1,062
Photocopying	Kilombero	1,274
Postage & Shipping	Kilombero	1,274
Communications (phone, fax, AV, WP)	Kilombero	1,593

Research Materials and Publications	Unguja	5,276
Office Rent, Insurance, Maintenance, Utility	Unguja	2,638
Equipment / Vehicle Lease	Unguja	15,927
Equipment / Vehicle Running Costs	Unguja	1,062
Photocopying	Unguja	6,332
Postage & Shipping	Unguja	6,332
Communications (pne, fax, AV, WP)	Unguja	6,332
TOTAL COMPONENT 3		101,331

Project Management Costs (PMC)

TABLE 17 PMC SUMMARY BUDGET

<i>Line item</i>	
Salaries and Benefits	282,441
Supplies	15,309
Other operating Costs	50,097
TOTAL PMC	350,843
TOTAL COMPONENT BUDGET	7,016,852
% PMC OF TOTAL PROJECT BUDGET	5%

Monitoring, Evaluation

TABLE 18 M&E

<i>Line item</i>	Description	Project M&E
Salaries and Benefits	<ul style="list-style-type: none"> MELKM Program Officer (\$106,183) 	106,182
Consultants	<ul style="list-style-type: none"> Midterm Evaluation (\$30,000) Terminal Evaluation (\$30,000) 	60,000
Grants and Agreements	<ul style="list-style-type: none"> SUA/NCMC for measuring impacts on land use changes, restoration and management effects and carbon sequestration (\$50,000) TAFORI for measuring forest health and biodiversity in the project areas (\$25,000) 	180,000

	<ul style="list-style-type: none"> • TARI for measuring uptake of sustainable rice production and value chain methods in the target landscapes (\$25,000) • Technical support to PMU operationalization and annual project review and planning (Project Design Specialist) (\$80,000) 	
Travel	<ul style="list-style-type: none"> • Project field monitoring missions (\$10,618) 	10,618
Workshops	<ul style="list-style-type: none"> • Annual planning and reflection workshop (\$13,273) • PSC meetings (\$26,546) 	39,829
Supplies		
Other Direct Costs		
TOTAL		396,620
TOTAL PROJECT BUDGET		7,368,808
% OF TOTAL PROJECT BUDGET		5.4%

SECTION 3: GEF ALIGNMENT AND JUSTIFICATION

3.1 Incremental Cost Reasoning and Global Environmental Benefits

Building off a baseline of sectoral-focused and site-specific approaches (see section 1.5), and Tanzania's commitment to 'green' agricultural expansion, the GEF funds incremental value will be to:

- Strengthen development of an ILM approach, including negotiating a land-use plan and related water allocation and protection plans through a multi-stakeholder process.
- Support the development of sustainable and socially inclusive value/supply chains for the rice production sector, including the development of supporting governance, finance and market approaches that will drive sustainable value chains.
- Support the development and implementation of concrete landscape restoration activities in the target landscapes, including the creation of enabling conditions for upscaling.

TABLE 21 SUMMARY OF INCREMENTAL VALUE AND GEBS

Component	Baseline	Strategy	Global Environmental Benefits
1. Development of integrated landscape management (ILM) systems	<p>Kilombero - draft Kilombero District Land use Framework Plan and IWRM Plan for Rufiji basin</p> <p>Zanzibar – absence of concrete ILM plans</p>	<p>Project will consolidate into ILM Framework and formalize institutional system for implementation</p> <p>Project will develop ILM plan and establish inter-intutional systems</p>	Improved planning to give space for rice production and other uses, while securing space for the preservation and

		for implementation for Kiashange-Mokotoni and Kinyasini-Kisongoni catchment areas	restoration of critical ecological systems
	Kilombero - village land use plans in place up to stage 4 (zoning) Zanzibar – no local land use plans	Implement stage 5 and 6 land use planning for at least 5 villages Will develop, finalize and implement land use plans for at least 5 villages	
2. Promotion of sustainable food production practices and responsible value chains	Various national plans related to agricultural production in place, including: National Rice Development Strategy, Green Print for SAGCOT	Develop a sustainable rice value chain development plan incorporating environmental dimensions, as an annex to the National Rice Development Strategy. Develop guidelines to facilitate implementation.	Improved land management and productivity for ag land. Reduction in water use, input use efficiency, reduced land degradation (soil nutrient, biomass cover), combat soil erosion and river siltation, reduction in CO2 emissions, increased resilience against climate change.
	Farming cooperatives and extension services in place. Investments in rice value chains are ongoing ((TARI, ASA, SAGCOT Center, RCT, USAID, IUCN, WWF-CARE). SRI approach piloted.	Implement initiatives for sustainable rice value chain, leveraging existing cooperatives, extension services, and best practices from previous/ongoing investments	
	SAGCOT Secretariat and RCT work to identify opportunities for private sector investment on an ongoing basis	Establish mechanisms for public-private partnerships in sustainable rice sector development	
3. Conservation and restoration of natural habitats	<ul style="list-style-type: none"> • RESUPPLY – opportunity assessments for forest restoration • REFOREST Africa – restoration plan for Udzungwa-Kilombero • REGROW – conservation of upstream catchment in Kilombero • Evergreen – restore land in Zanzibar 	Based on past assessments and restoration initiatives, support restoration of degraded agricultural lands, forests and wetlands, restoring land suitable for cultivation and/or restoring to preserve ecological functions	Restore forest land and wetlands
		Conserve areas in upstream catchment to and downstream area to ensure HCV areas are preserved	HCV lands under improved management
4. Project Coordination and M&E	Existing engagement in relevant regional and global platforms: e.g. the Africa Agriculture Development Program (CAADP), the African Rice Initiative (ARI), the Association for Strengthening Agricultural Research in Eastern	Enhanced learning from other FOLUR program countries through e.g. exchange of technical notes and lessons learned reports; participation in annual Global FOLUR meetings; participation in regional	Enhanced knowledge and networks underlying the above

	and Central Africa (ASARECA) and The Forum for Agricultural Research in Africa (FARA).	commodity platform gatherings; and participation in training workshops.	
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The project will contribute the following global environmental benefits:

- 40,000 ha restored
- 1,202,690 ha of landscapes under improved practices
- 11,686,815 metric tons of Greenhouse Gas Emissions Mitigated

By working at the landscape, national, and global level (through the FOLUR program), the project will build a coherent framework for achieving its objective to promote integrated land and water management, restoration, and sustainable and inclusive rice value chains to restore critical forest, wetland and other high value ecosystems in priority landscapes in Tanzania. Through this, the project will generate multiple GEBs, including improved management and protection of water and land in an area of high value biodiversity; enhanced carbon sequestration capacity through the improved management and restoration of forest landscapes; and abatement of land degradation through improved land-use planning, agricultural practices and forest landscape restoration.

Within the context of Tanzania's ambitious agricultural development goals, the project's impact will extend well beyond the specific target landscapes, and will also provide a scalable model for the wider Africa region. Important to note, in this regard, is that the focus of the project for mainland Tanzania will be on the Kilombero cluster within the SAGCOT growth corridor. The area is of specific global environmental significance as it hosts the Selous Game Reserve, a designated World Heritage Site, as well as several areas of high biodiversity significance, such as the Rufiji delta, designated as a Ramsar site, and the Eastern Arc Mountain Forests, which are internationally recognized for their high level of endemic species.

The project will furthermore contribute importantly to Tanzania's commitments and targets as set through a number of international multi-lateral environmental agreements, including CBD, UNFCCC, UNCCD and the International Plant Protection Convention (see also section 3.5).

3.2 Alignment with GEF Focal Area and/or Impact Program Strategies

The proposed child project represents an integrated approach that combines aspects of sustainable food systems with broader landscape level planning, management and restoration for the preservation of ecosystem services in some of Tanzania's key agricultural growth areas, in line with the overall focus and outcomes of the FOLUR IP. Integrating these three objectives requires a cross-sector approach led jointly by the Ministry of Agriculture and the Ministry of Natural Resources.

The project is furthermore aligned with the objectives and strategies as defined under the biodiversity and land degradation focal areas. Alignment of the project with these strategies is summarized below.

TABLE 22 SUMMARY OF ALIGNMENT WITH GEF FOCAL AREAS AND IMPACT PROGRAMS

GEF-7 Focal area	Project alignment and contributions
Biodiversity	<p>The project will contribute primarily to Objective 1: Mainstream biodiversity across sectors as well as landscapes and seascapes. Specific contributions of the project in this regard will be:</p> <ul style="list-style-type: none"> • Mainstreaming of biodiversity in Government policies and plans • Manage biodiversity in production landscapes • Secure high conservation value forest areas in production landscape • Strengthening general enabling conditions for biodiversity management
Land degradation	<p>The project will contribute primarily to Objective 1: Support on the ground implementation of sustainable land management to achieve land-degradation neutrality. Specific contributions of the project in this regard will be:</p> <ul style="list-style-type: none"> • Promoting sustainable land (and water) management • Restoration of degraded production landscapes • Diversification of crop and livestock systems • Creating Enabling Environments for land degradation neutrality
FOLUR IP	<p>The project will deliver on all four FOLUR IP result areas:</p> <ul style="list-style-type: none"> • Promotion of sustainable food systems • Reduction of negative externalities in value chains • Deforestation-free commodity supply chains • Landscape-scale restoration for production and ecosystem services <p>In doing so, the project follows the global FOLUR program structure</p> <ul style="list-style-type: none"> • Development of Integrated Landscape Management systems • Promotion of sustainable food production practices and commodity value chains • Restoration of natural habitats • Project management, coordination and <p>The Tanzania FOLUR Child Project is structured around similar components to allow for maximum synergies and cross-interaction through the learning and exchange networks to be established under the FOLUR Global Platform project lead by the World Bank.</p>

3.3 Socioeconomic Benefits

The project will deliver clear socio-economic benefits on a number of fronts:

1. By focusing on improved rice production methods, and streamlining the rice value chain, the project will directly benefit participating farmer groups and other rice value chain actors. In this regard, earlier pilots in Tanzania have demonstrated the potential of sustainable rice intensification to generate substantial increases in yield per acre (cases of up to 10-fold have been reported), with associated economic benefits.

2. Direct benefits to local communities are also expected from the proposed restoration and management of land, forest and wetland ecosystems, by generating associated increases in productivity, and benefits from forest (both timber and non-timber forest products) and wetland (e.g. fish) products.
3. Overall the above direct project benefits will increase income and jobs. Through its specific gender focus, furthermore, the project will result in more inclusion/access by women to productive activities.
4. In the longer run, the project will increase the resilience of the ecosystem which will ensure the longer-term economic function of such systems in many different ways, both through direct services such as the productivity of lands, water provisioning, fish and forest products, as well as through indirect ecosystem services such as opportunities for tourism development related to the forest reserves, wildlife corridors and biodiversity-rich wetland systems.
5. Finally, through the project's investments in capacity building and awareness raising, it will open up opportunities for individuals and partner organizations to develop spin-off opportunities related to ILM, sustainable agriculture, and restoration/management of land and ecosystems.

3.4 Risks and proposed Mitigation Measures

An overview of the key risks and mitigation measures related to the project is provided below.

TABLE 23 KEY RISKS AND MITIGATION MEASURES

Risks	Rating P = probability I = Impact	Preventive Measures
Difficulty in establishing the collective endorsement of and support for the ILM approach among government ministries, civil society and the private sector.	P = Moderate I = Moderate	The project will, from the outset, perform multi-sectoral and multi-stakeholder engagement that will unite Government institutions, civil society organizations and private sector. Furthermore, capacity building and awareness raising on the benefits of ILM will be a key aspect of component 1.
Development priorities for human settlements, agricultural and irrigation schemes, transportation infrastructure and industry take precedence over conservation and NRM plans supported by the project	P = High I = Moderate	This is a systemic problem requiring the mainstreaming of environmental and biodiversity safeguards into development planning. The project will support this through capacity development on ILM and environmental management processes for key sectors, awareness raising and engagement of all sectors in project planning and implementation, and promote agricultural solutions that are compatible with the environmental sensitivities in the project areas.
Investments in improved rice value chains will result in increased agricultural interests and investments that put pressure on land, water and other natural resources	P = Moderate I = High	It is critical for the three components of the project to work together in order to avoid adverse impacts of improved agricultural practices. In particular, the project will put emphasis on well-grounded land-use plans that pose the necessary controls on agricultural expansion. The opportunity of signing 'contracts' with communities and farmer groups will also be investigated..
Government institutions governing the targeted landscapes have inadequate capacity or resources for ILM and the implementation of rice	P = Moderate I = Moderate	Capacity building initiatives have been embedded in each of the project Components. Moreover, a dedicated programming for learning and sharing of experiences with other FOLUR countries has been defined as part of Component 4.

Risks	Rating P = probability I = Impact	Preventive Measures
value chain and landscape restoration activities		
Critical ecosystem services are undermined by climate change and variability, and natural disasters.	P = High I = Moderate	The integrated land and water management approach of the project will consider potential climate change impacts and incorporate risk reduction and mitigation considerations. This will take into account, for example, increased climate variability, changes in hydrological flow, and potential species range shifts.
Delays and disruptions as a result of pandemics (COVID), elections or other disrupting situations	P = High I = Moderate	Crisis situations such as those posed by the COVID pandemic, or around Government elections, will undoubtedly have delays, in particular where it comes to field level activities, consultations (meetings) etc. In such cases, the project workplan will be adapted to respond to the situation.

TABLE 24 CLIMATE CHANGE RISK ANALYSIS

Climate Risk	Manifestation in the project areas	Impact
Temperature Increase	In the next 75 years, the rate of temperature increase will change from .5°C to 3.4°C, with a particularly faster rate of warming in the south-western part of the country (Kilombero district). ³⁸ In just 10 years the average temperatures will have increased by 1.4°C. According to the UNISDR, Tanzania was rated the 25 th most at risk country in the face of disaster.	The agricultural sector will suffer as climate change impacts are seen. There are temperature thresholds for agricultural crops at which point the crops become less productive. The varying temperatures may also disrupt regular crop growing cycles. ³⁹ Pest and crop disease have also been shown to increase with increasing temperatures. Agricultural activities in Zanzibar that face changes due to inconsistent temperatures include fishing, farming and seaweed farming. ⁴⁰
Rainfall and flood	Today, upwards of 70% of all natural disasters in Tanzania are climate change related and directly linked to droughts and floods ^{41,42} . The Kilombero district is expected to have an increase in annual	Inconsistent and variable rainfall patterns will lead to increased flooding in the Kilombero valley in particular. This, in turn, can impact on crop yields, cause destruction to infrastructure, soil erosion and affect water quality within the

³⁸ United Republic of Tanzania (2015) Intended Nationally Determined Contributions (INDCs). Submission to the United Nations Framework Convention on Climate Change, 29 September 2015. Downloaded from <http://newsroom.unfccc.int/unfccc-newsroom/tanzania-submits-itsclimate-action-plan-ahead-of-2015-paris-agreement/>. Accessed 19 November 2020.

³⁹ Harris et al., 2014: Updated high-resolution grids of monthly climatic observations – CRU TS3.10: The Climatic Research Unit (CRU) Time Series (TS) Version 3.10 Dataset, Int. J. Climatology, 34(3), 623-642, doi: 10.1002/joc3711; updated from previous version of CRU TS3.xx (most recent use in CCKP: TS3.24).

⁴⁰ Makame Omar Makame & Sheona Shackleton (2020) Perceptions of climate variability and change in relation to observed data among two east coast communities in Zanzibar, East Africa, Climate and Development, 12:9, 801-813, DOI: 10.1080/17565529.2019.1697633

⁴¹ United Republic of Tanzania (2015)

⁴² Näschen et al. (201), Impact on Climate Change on Water Resources in the Kilombero Catchment of Tanzania, Water, 11(859)

Climate Risk	Manifestation in the project areas	Impact
	rainfall by about 9.9% by year 2050. ⁴³ Rainfall variation is furthermore expected to increase, with more intense rain in some seasons, November-April.	water table. This is detrimental to the agricultural sector in particular, but may also impact directly on biological diversity and ecosystem health. Flood events can also cause forced migrations of communities and individuals, and result in increased prevalence of pests and diseases, etc.
Sea Level Rise	Rising temperatures coupled with ocean expansion and ice melt will affect sea-levels along the coast of Tanzania, in specific along the coastal regions of the Zanzibar Island ⁴⁴ . Global sea level rise is expected to be between .2 meters and .6 meters over the next century.	Impacts from sea level rise affect the Zanzibar island Unguja district through loss of coastal wetlands, coastal flooding, coastal erosion, saltwater intrusion and potentially forced migration of coastal communities. ⁴⁵
Drought and reduced water volumes in water bodies	Climate change has caused the country to experience more severe and recurring droughts over the past 40 years. Dry days are going to increase in frequency causing evaporation and decreased water availability. Specifically, River flow in the Kilombero district (the Ruhudji and Mpanga Rivers) is expected to decrease between 1 to 5% due to climate change. ⁴⁶	Droughts affect the agricultural sector in Tanzania significantly as 80% of the population in the project area depends on agriculture for their livelihoods and food source. Drought reduces water availability and disrupts irrigation causing issues with crop yield and productivity. Looking at future climate change models, several crops predicted to produce smaller yields include banana, beans, cassava, rice, sorghum and sunflower. ⁴⁷ This may lead to a shift in the types of agricultural crops that farmers rely on. ⁴⁸

TABLE 25 COVID-19 RISK ANALYSIS

Risk category	Potential Risk	Mitigations and Plans
Restrictions in movement and closure of offices	Tanzania currently does not have in place any COVID-related restrictions for the movement of people. There is a chance that this will happen if the situation worsens. Also, travel of international experts/staff has not been possible since Q2, a situation that will	The project will work virtually where appropriate. Meetings and workshops will follow government guidance, and health and safety protocols will be adhered to.

⁴³ Harris et al., 2014

⁴⁴ Global Climate Partnership (2012). The Economics of Climate Change in Zanzibar.

⁴⁵ Irish Aid. 2018. Tanzania Country Climate Change Risk Assessment Report. Irish Aid, Resilience and Economic Inclusion Team, Policy Unit.

⁴⁶ RAM (Ramsar Advisory Mission) Report. 2017. Kilombero Valley, United Republic of Tanzania, Ramsar Site No. 1173

⁴⁷ CIAT; World Bank. 2017. Climate-Smart Agriculture in Tanzania. CSA Country Profiles for Africa Series. International Center for Tropical Agriculture (CIAT); World Bank, Washington, D.C. 25 p.

⁴⁸ URT. 2015a. Tanzania Climate-smart Agriculture Programme. Ministry of Agriculture Food Security and Cooperatives, United Republic of Tanzania (URT).

Risk category	Potential Risk	Mitigations and Plans
	likely continue over the course of project implementation.	
	If the situation would worsen, it is possible that Government offices would close for periods, and staff may not be accessible.	The project will rely on landscape coordination units to reduce travel. Virtual meetings will be done as needed.
Changes in baseline and potential project co-financing sources	There is a risk that certain baseline activities will be delayed or even cancelled as a result of funding streams being diverted for other purposes	The PMU will closely monitor project baseline and co-financing sources to ensure leverage of baseline activities and secure the expected project co-finance.
Stakeholder engagement process	COVID-19 may impact work with local communities, local government partners, and central level partners.	Local level workshops and engagement with communities will be in compliance with national and local government guidelines. Where needed, adjustments will be made in terms of planning, the size/constitution of field teams, the size of the groups to be consulted, etc. Additionally, COVID protocols will be developed and followed, such as testing, and supply of sanitizer and masks. In any case where either party is not comfortable to engage in discussions, it will not proceed. As much as possible, remote connections will be sought, for example via local government offices visiting communities. In all cases, continued attention will be given to ensuring the voices of women, youth, and any underrepresented community members.
Enabling environment	So far, there are no signs of a change in priority from Government due to COVID, but further escalation of the crisis may well have effect in this regard.	As the PMU and the majority of project partners are based in government, and given the focus on value chain development, it is expected that government will continue to prioritize the work related to this project.
Future risk of similar crises	It is not anticipated that this project will have adverse impacts that might contribute to future pandemics, for example, there will be no focus on increasing the human-wildlife interface or any actions that cause degradation.	This aspect of risk has been considered in the ESMF/PF and will be further considered in the development of site specific safeguards plans.

TABLE 26 COVID-19 OPPORTUNITY ANALYSIS

Opportunity Category	Potential	Project Plans
Can the project do more to protect and restore natural systems and their ecological functionality?	High potential: The proposed project will contribute to restoring ecosystems and function in the target landscapes.	At the core of the project ToC is the strategy to reduce threats from agricultural expansion into wildlife habitat and consequently reduce the threat of habitat loss and fragmentation that is at the basis of zoonotic diseases.
Can the project include a focus on production landscapes and land use practices within them to decrease the risk of human/nature conflicts?	High potential: The target landscapes selected for the Tanzania FOLUR Child Project are among the key production landscapes in the country.	Various approaches in the project plans will decrease the risk of human/nature conflicts: improved land use planning will more clearly delineate conservation areas from other types of land use; restoration and improved management of habitats (e.g./ forest landscapes, wildlife corridors) will reduce wildlife intrusion into farmlands .
Can the project promote circular solutions to reduce unsustainable resource extraction and environmental degradation?	Limited potential: no specific circular economy activities foreseen, but opportunities to build this in.	The project may consider approaches for reuse and recycling of materials used in farming practices; e.g. packaging materials.
Can the project innovate in climate change mitigation and engaging with the private sector?	Medium-level potential: The project will include close engagement with private sector, by developing a public-private sector compacts and engagement platform. Climate change considerations have been integrated in the project design (see Climate Risk Screening Tool in Annex 13)	Specific targets on improved environmental management will be part of the compact (agreement) to be signed between public and private sector. Issues such as energy efficiencies and the use of renewable energy solutions could be part of this. Climate change considerations have been integrated in the project design (see Climate Risk Screening Tool in Annex 13)

Through the above parameters, the project has the potential to contribute to Green Recovery efforts, in a way that future agricultural development in Tanzania, in particular in the rice sector, is built on the principles of preservation of ecosystem integrity, and low ecological and carbon footprint.

3.5 Consistency with National Priorities or Plans

The project is strongly anchored into Tanzania's 5-year Development Plan, Zanzibar Vision 2050, as well as relevant national development plans in the agricultural, water resources and natural resources sectors, for both mainland Tanzania and Zanzibar.

Component 1 is aligned with the National Land Policy, which defines the framework for land use planning in the country, which defines the framework for national, regional and local land use plans in the country. The project will follow procedures in line with the guidelines provided in the policy.

Component 2 specifically contributes to the implementation of the Agricultural Sector Development Program II, the Agriculture Climate Resilience Plan, and the National Rice Development Strategy, the SAGCOT Green-print, all for mainland Tanzania, and the Agricultural Transformation Initiative for Zanzibar. As the rice sector is key in terms of both food security and its potential for export, the project also contributes to Tanzania mainland's National Strategy for Growth and Reduction of Poverty and the Zanzibar Strategy for Growth and Reduction of Poverty as a key driver of broad-based and pro-poor economic growth. Tanzania's NDCs to the UNFCCC furthermore define a range of measures for reducing the impacts of agricultural expansion on ecosystem, including up-scaling the level of agricultural land and water management, and increasing yields through climate smart agriculture, which are clear targets under the project. Component 2 also contributes to the NBSAP (2015-2020), specifically Target 7: "By 2020, biodiversity and agriculture related policies, laws and strategies promote sustainable management of forest, agricultural and aquaculture ecosystems are reviewed and implemented."

Component 3, finally, will deliver on Tanzania's key targets related to the UNCCD. At national level, the URT is aiming to achieve full land degradation neutrality by year 2030. Specific targets and measures to avoid, minimize and reverse land degradation include: restoring 11,011,950 ha of forests through sustainable forest management, and preventing and avoiding decline of land productivity of forests on 2,640,600 ha by 2030; improving land productivity of shrub and grassland on 1,714,500 ha by 2030; improving land productivity of croplands on 8,462,500 ha by 2025; improving land productivity of wetlands on 361,275 ha by 2030; increasing soil organic carbon in cropland to 54.5tons/ha by 2030; and reducing soil erosion by 19 tons/ha. In this regard, the project is furthermore aligned with Tanzania's Forest Policy and Act, Regulations and related National Forest Programs for mainland Tanzania, as well as their equivalents in Zanzibar. This also contributes to the NBSAP (2015-2020), specifically Target 14: By 2020, ecosystems that provide essential services, related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, local and vulnerable communities.

More generally, the project will help Tanzania deliver on its commitments to the CBD, UNFCCC, UNCCD and the International Plant Protection Convention, as well as AFR100, the African Resilient Landscapes Initiative (ARLI), the African Landscapes Action Plan (ALAP) and the broader Climate Change, Biodiversity and Land Degradation (LDBA) program of the African Union. The project will furthermore accelerate progress towards achieving the 2030 Sustainable Development Goals Agenda and the Paris climate agreement. It also contributes directly to the National Climate Change Strategy (2012) and the Zanzibar Climate Change Strategy (2014), and the national REDD+ strategy and Action Plan. Specific mention should be made to Government plans for the development of the 2125 MW Julius Nyerere Hydropower Station. As this project depends primarily on the inflow of freshwater through the Kilombero river, the improved catchment management measures and restoration activities foreseen under this project will be of direct benefit to the viability of this project.

3.6 Innovativeness, Sustainability & Potential for Scaling up

Innovation

The project aims to bring a new spectrum of tools and systems to Tanzania that will enable Government to work towards a sustainable landscape-level approach through a combined focus on land- and water-use planning and management, combined with sustainable value-chain approaches that will bring viability and sustainability to agricultural sector. The approach aims to match the country’s aspirations towards sustainable agricultural expansion with consideration of broader environmental and social management aspects, including the country’s aspirations and commitments towards the conservation of its valuable forest, wetlands and other critical ecosystems. At the more technical level, specific innovations brought by the project will include the introduction of innovative landscape finance mechanisms and business cases for landscape restoration and investments in sustainable agricultural value chains.

Sustainability

By building on the existing strong baseline of existing Government and partner programs and initiatives, and by systematically involving key partners and stakeholders in the program development and implementation, the program’s long-term sustainability will be an in-build element. In this regard, the program will address the following key parameters of sustainability:

Institutional Sustainability:

Through the participatory design process, from this initial concept development, the ownership and involvement of all key Government agencies has been secured, ensuring continuity. An important factor in this is that strong links are established towards the various Government policies, plans and programs; in particular, outcome 2.1 is geared towards mainstreaming the principles of sustainable rice value chains in Government policies and plans. Furthermore, cross sectoral planning will be ensured through the Landscape Coordination Committees. A further factor is the fact that the project will have a strong focus on building capacity of local government staff at district and ward levels. This will ensure that experiences, lessons learned, and best practices generated by the project are maintained within the government structure. Capacity building and awareness raising activities are furthermore integrated in each of the three components of the project, ranging from capacity building on ILM approaches and methods to trainings and capacity building for both farmers and Government staff on sustainable rice value chain approaches.

Financial Sustainability:

Firstly, the project builds strongly on the existing programs and initiatives supported from Government budget, at both national and local level. This support will continue beyond the scope of the project. Secondly, each of the 3 substantive components has built in the establishment of mechanisms for ensuring that the landscape plans and investments proposed under the project will become self-sustainable. The focus herein will be on harnessing both public and private capital and expertise to finance investments in sustainable land management and value chains. The key elements of the project strategy, in this regard, are:

TABLE 27 OVERVIEW OF FINANCIAL SUSTAINABILITY MECHANISMS BUILT INTO THE PROJECT

Project component	Mechanisms for sustainability
Component 1	<ul style="list-style-type: none"> • Development of inter-institutional systems with clear responsibilities to be built into institutional mandates and budgets (output 1.1.2) • Development of business plans and income generating activities that will contribute to effective natural resources management at village level (output 1.1.3) • Development of sustainable landscape financing mechanisms in the form of e.g. water tariff systems and PES schemes⁴⁹ (output 1.1.4)
Component 2	<ul style="list-style-type: none"> • Mainstreaming of sustainable rice sector development approaches in existing strategies and policies will ensure uptake in relevant Government budgets (output 2.1.1) • Strengthening of farmer groups (cooperatives, associations) will focus on creating clear added value through e.g. branding of products, generating additional income that can be used for sustainability (output 2.2.1) • Similarly, selected value chain initiatives will need to demonstrate clear added value in terms of cost savings and additional income (output 2.2.2) • Opportunity analysis and business case development for the establishment of financial support systems (output 2.3.1) • Establishment of public-private partnership to generate additional investments and private sector engagement in sustainable rice value chain initiatives (output 2.3.2)
Component 3	<ul style="list-style-type: none"> • The development of fiscal conditions and financial support systems for landscape management and restoration (output 3.1.3)

Social sustainability:

The engagement of non-governmental stakeholders, including communities and the private sector, is a key factor in assuring the long-term sustainability of GEF investments in the sector. In this regard, a considerable part of the project is dedicated to enhancing stakeholder participation in landscape management, sustainable agricultural value chains and investments, and restoration, including the establishment of the necessary incentive and benefit-sharing systems that are crucial to ensure their longer-term engagement. A key factor in this is development of the landscape and village land use plans, which are expected to continue to manage the interface between rice production and HCV areas.

Scaling up

By linking field level interventions with national level policy dialogue and capacity building at local and national level, the project is also set to lay the foundations for up-scaling sustainable landscape options in other districts within the target landscapes and beyond. It should be noted, in this regard, that the project will not be able to address the entire landscape from a restoration and management perspective,

⁴⁹ Discussion in this regard were held with key institutional players, most critically the Tanzania National Electricity Supply Corporation (TANESCO), which is reliant on the continuity of the Kilombero Valley water inflow into the proposed hydropower station at Stiegler's Gorge. Similarly, ZAWA in Tanzania has indicated profound interest in developing such schemes.

but it will lay the basis for expansion. Furthermore, the project will set an example for replication beyond Tanzania itself into the wider region. Specific mechanisms build into the project in this regard include:

- Capacity building on ILM approaches to key Government and non-Government stakeholders (output 1.1.5).
- The development of a national-level sustainable rice value chain development plan, which will provide a broader perspective on sustainable rice sector development across Tanzania (output 2.1.1);
- The development of guidelines and training packages, as well as the roll-out of related training sessions, on sustainable rice value chain development;
- Opportunity analysis and development of public-private sector partnerships around sustainable rice sector development (outputs 2.3.1 and 2.3.2); and
- The development of fiscal/financial schemes to incentivize investment for restoration in degraded lands, targeting small-scale farmers and larger private sector (output 3.1.3).

3.7 Lessons learned during project preparation and from other relevant projects

The project design benefitted from experiences from other GEF and non-GEF projects and initiatives in two different ways. Firstly, Component 2 of the project is building on the experiences as presented in Annex 9. Key aspects in this are the past initiatives to introduce the system of Sustainable Rice Intensification (SRI) in Tanzania, which represents a multi-pronged approach towards increasing efficiencies in the sector through a combination of improvements in, among others, seed varieties and other inputs (e.g. fertilizers), production methods (e.g. planting, weeding, harvesting) as well as investments in technology (e.g. irrigation infrastructure, water saving technologies). The roll-out of the SRI system has had a lot of local success in boosting productivity and reducing land- and water use needs substantially, but also certain failures. In particular, experiences show that the transition of small-scale farmers from their existing low-productivity farming methods to SRI has to be accompanied by both strong technical assistance as well as a package of financial support tools, including crop insurance schemes. Other key lessons learnt are presented in Annex 9.

Furthermore, the project design considers several key lessons learned from other GEF and non-GEF projects. These include relevant experiences related to pursuing integrated land-water management of natural resources through sustainable and inclusive value chains, the management and restoration of protected and other critical biodiversity areas, and approaches related to community involvement in participatory forest and water management. An assessment of key lessons learnt from other GEF projects in Tanzania is presented in Annex 10.

Furthermore, a few important lessons learnt can be documented based on the experiences of the project preparation process. In particular:

1. The project design process has taken a long time to mature, in fact it started in November 2017. However, the intensive process of stakeholder engagement in the preparation process, including a total of 9 workshops and numerous bilateral consultations with individual stakeholders is the basis for a very strong ownership of the project.

2. The project started as a purely sectoral initiative, focusing on sustainable forest management. However, along the way, it became clear to stakeholders that without addressing the key drivers behind forest degradation, in particular agricultural expansion, Tanzania's forest ecosystems could not be saved. This realization in itself was an important basis for the current multi-sectoral approach of the project.
3. At the political level, as aspects such as environment, forest, agriculture and land- and water use management are all non-Union matters, and therefore usually addressed independently for mainland Tanzania and Zanzibar. The project's approach to include both sides of the Union has provided for increased relationships and cooperation between institutions on either side. This is seen as a key strength of the project and helped raise it to the level of the inter-Ministerial Council for Union matters.

SECTION 4: TECHNICAL APPENDICES

Kilombero

The Kilombero River (also known as Ulanga River) forms the boundary between the Ulanga District and Kilombero District of the Morogoro Region in the southwest of Tanzania. The Kilombero River supplies $\frac{2}{3}$ of the Rufiji waters and is formed by the convergence of major rivers coming from the mountain ranges of the Mbeya and Iringa regions on the eastern slope of the East African Rift and south from the Udzungwa Mountains and Mahenge Mountains. The Kilombero Valley is a natural wetland ecosystem comprising a myriad of rivers, which make up the largest seasonally freshwater lowland floodplain in East Africa. The floodplain occupies the flat floor of the Kilombero valley at 210 - 250 meters above sea level (m.a.s.l). The valley is oriented south-west north-east, between densely forested escarpments in the Udzungwa Mountains, which tower at 2,250 meters above the valley floor on the north-western side and the Mahenge Mountains on the southern side.

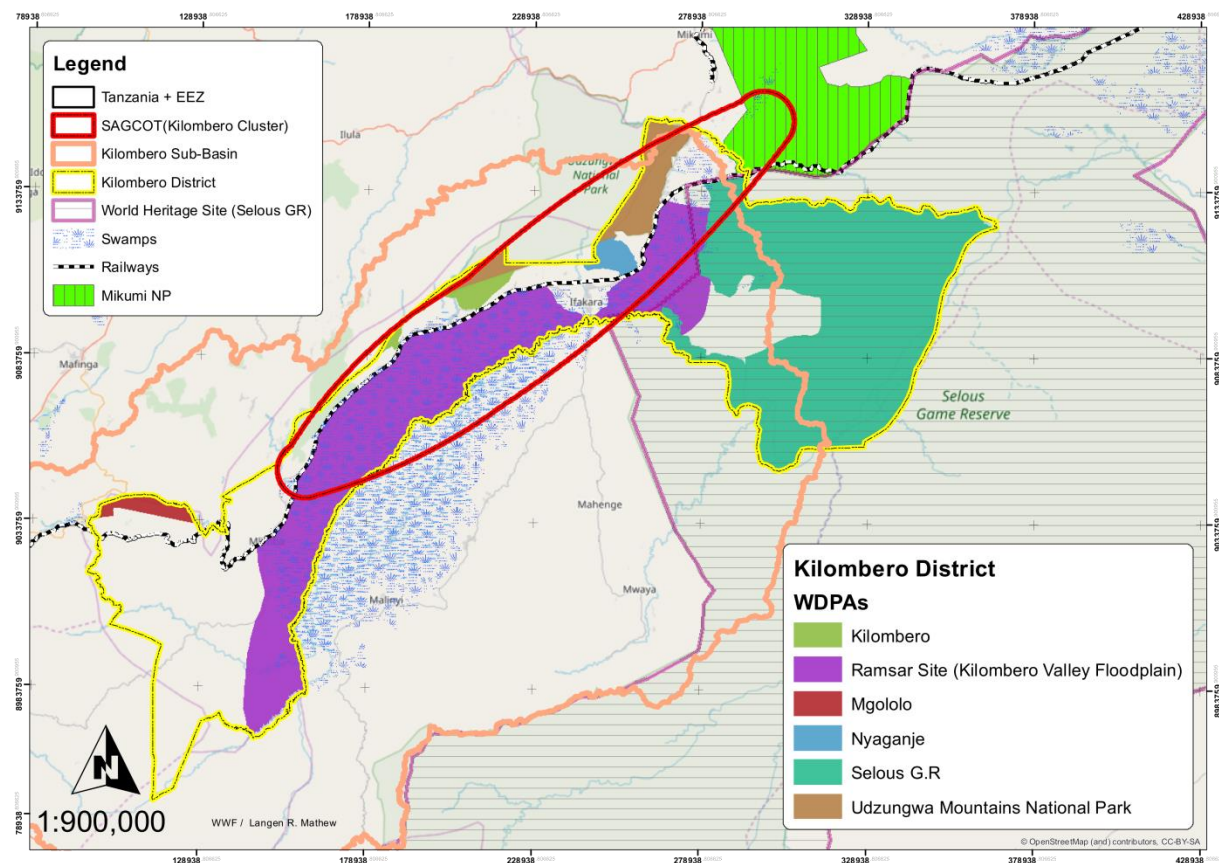


Figure 1 Map of the Kilombero Sub-basin showing major protected areas

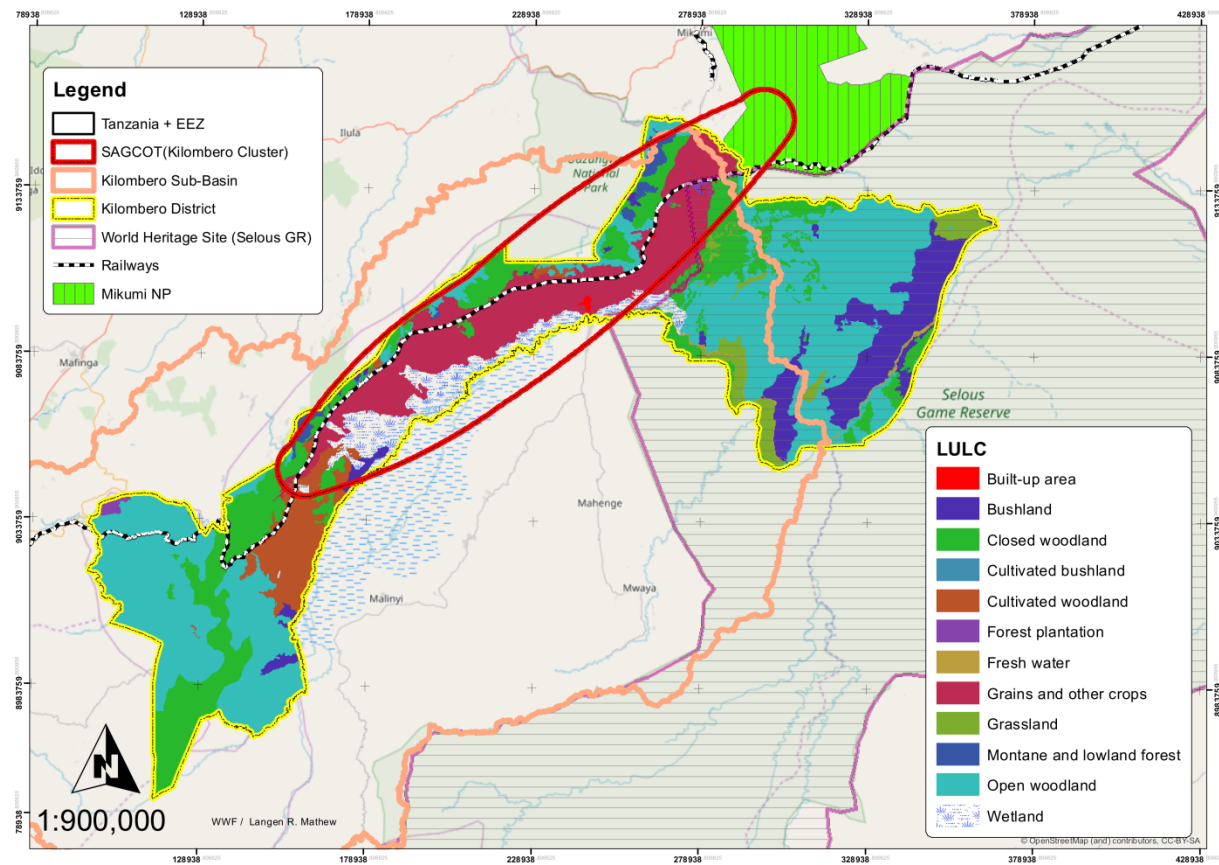


Figure 2 Map of the Kilombero Sub-basin showing current land use

The Kilombero Valley is characterized by its large populations of large mammals (e.g. buffalo, elephant, hippopotamus, lion, and puku), and hosts the world's largest Puku population. The Valley is also home to one of the largest populations of Nile crocodile in Africa, is known as an important breeding ground for bird species such as the African open-bill, white-headed lapwing, and the African skimmer, and is home to a range of endemic species including the Udzungwa red colobus monkey, the Ulanga weaver and two undescribed species of cist-colas. The Kilombero river is home to 23 species of fish including three species of fish not found downstream in the Rufiji: *Alestes stuhlmannii* and two species of *Citharinus congcicus*. Fish from the Rufiji River system migrate upstream to the Kilombero to spawn, usually at the beginning of the rains in November with peak spawning activity coming in December.

In recent years the increase of farming encroachment in the valley has put pressure on the only two remaining wildlife corridors: the Nyanganje Corridor and Ruipa Corridor. The valley constitutes one of the most fertile areas in Tanzania, and in the past decade the availability of unprotected land has attracted a large number of migrants into the floodplain and the miombo woodland. As a result, large areas of the miombo have been cleared for farming and cattle grazing. Although the majority of the villagers are subsistence farmers, mainly cultivating rice and maize, the extent of human encroachment is so significant that it threatens the survival of many species and the viability of the whole ecosystem. Similarly, mining activities (the proper mining and exploration licenses) have also been observed to be emerging as a threat to the valley. The degradation of the

miombo woodlands and the floodplain is of great concern as their importance as a wildlife refuge is likely to increase as the remaining corridors are getting more and more fragmented.

The majority of the (mainly rural) population in the Kilombero Valley are subsistence farmers of maize and rice, as well as fishing and livestock. In addition, there are large plantations of teak wood in the Kilombero valley. In the lower floodplain, rice cultivation constitutes the main crop system, in light of the favorable conditions in the seasonably flooding wetland systems. The production system is mainly rain fed, with one annual crop, resulting in very low yields (1.5 to 2 t/ha). However, the Kilombero Valley also hosts Tanzania's main irrigated rice production facility, Kilombero Plantations Limited (KPL). Although KPL has stopped production due to unfavorable economic conditions, the scheme is expected to go through a restart. Rice production is expected to further grow with planned investments for irrigation schemes in the Valley (see Figure 3). In the north-west of the district, Illovo Sugar Company's sugar-cane plantations occupy most of the low-lying area.

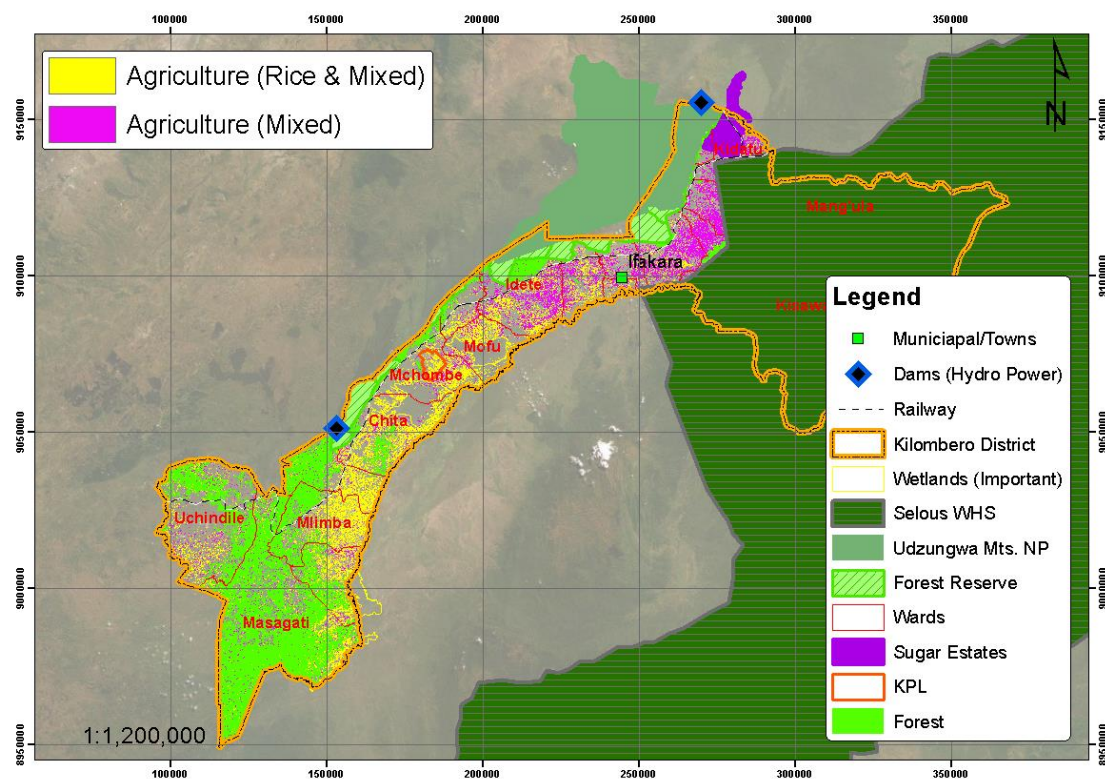


Figure 3 Map of the Kilombero Sub-basin showing areas of rice cultivation (source: landuse mapping and analysis undertaken as part of PPG phase)

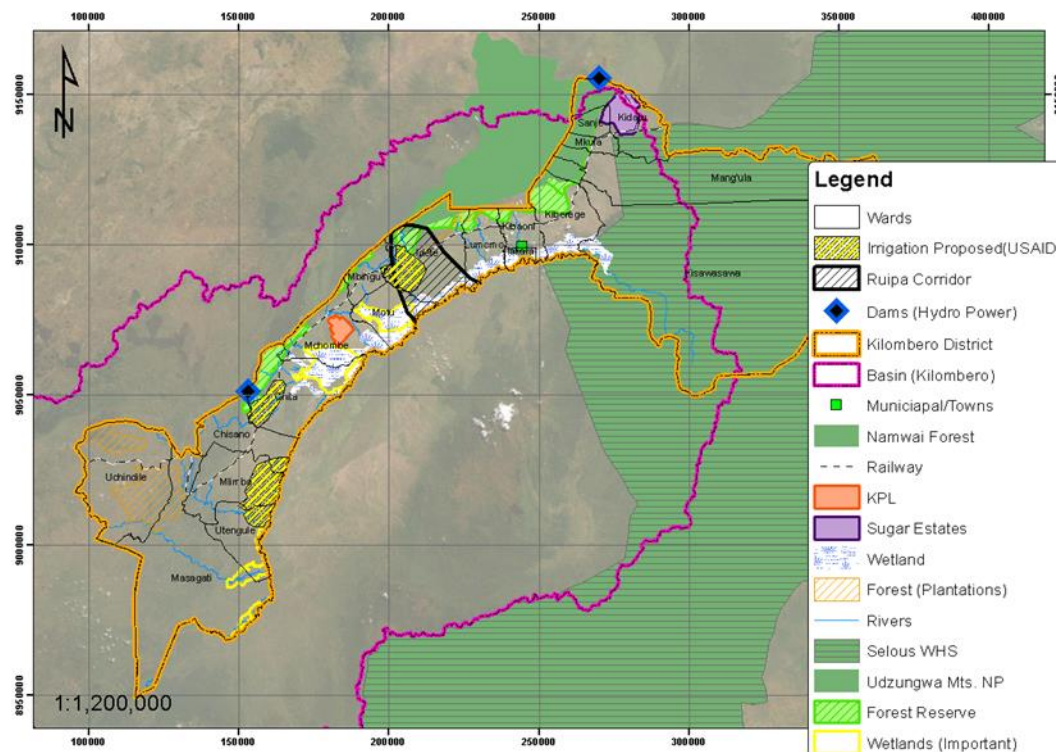


Figure 4 Map of the Kilombero Sub-basin showing existing (KPL) and planned irrigation schemes (source: landuse mapping and analysis undertaken as part of PPG phase)

The Kilombero holds great potential for expansion of agricultural irrigation and hydropower production. Large increases in agricultural irrigation in this sub-basin have been planned under SAGCOT, with the irrigated farm area in the dry season expected to increase from 6,512 ha, as measured in 2010, to 110,891 ha by 2035. However, the Rufiji basin Integrated Water Resources Development Plan (IWRDP) shows that the consumptive water use scenarios for 2025 and beyond will cause depletion of dry season flows below Environmental Flow Requirements (EFRs) in the Kilombero River. Strategies defined in the IWRDP include (a) transferring water from wet to dry seasons through suitable storage management (damming) and (b) using conjunctively surface and ground water sources.

The Kilombero sub-basin also has high hydropower development potential, with several major hydropower stations proposed over the planning horizon. The proposed hydropower stations (i.e., Ruhudji, Mpanga, Taveta-Mnyera, and Ikondo power stations) are all located in mountainous catchments with little existing and projected consumptive water use. For this reason, existing and proposed hydropower stations in the Kilombero sub-basin are expected to meet their power generation targets even under the 2035 water use scenarios, although there are question related to their long-term prospects.

North A and North B District – Unguja (Zanzibar)

North A represents the northern-most district on Unguja Island, covering an area of 211 km², sharing borders with North B in the South, and the Indian Ocean in the North, West and East. The estimated total population of North A district was 105,880 (51,566 male and 54,214 female) during the latest census in 2012 (DoURP, 2012) with an annual growth rate of 2.4% and a Human Development Index of 3.5 and the second lowest level of literacy (65%) in Zanzibar.

Agriculture is the predominant occupation of the workforce and contributes 87 percent of the average incomes of farming households in the district, with fishing and tourism accounting for the remaining. About 59 percent of North A district population do practice subsistence farming, with major food crops being paddy, banana, yams, cassava, tomatoes, maize and millet, and the major cash crops being cloves and seaweeds. Agricultural practices are generally low intensity, characterized by a high dependence on rain-fed agriculture, poor agricultural practices, high post-harvest losses, inadequate access to agricultural inputs and appropriate irrigation technologies, and the use of primitive farm tools.

North B district lies in North part of Unguja Island covering an area of 220 km². It is bordered by Central district and Western B to the South, North A district to the North and the Indian Ocean to both, West and East. The District headquarter is situated at Mahonda (DoURP, 2012).

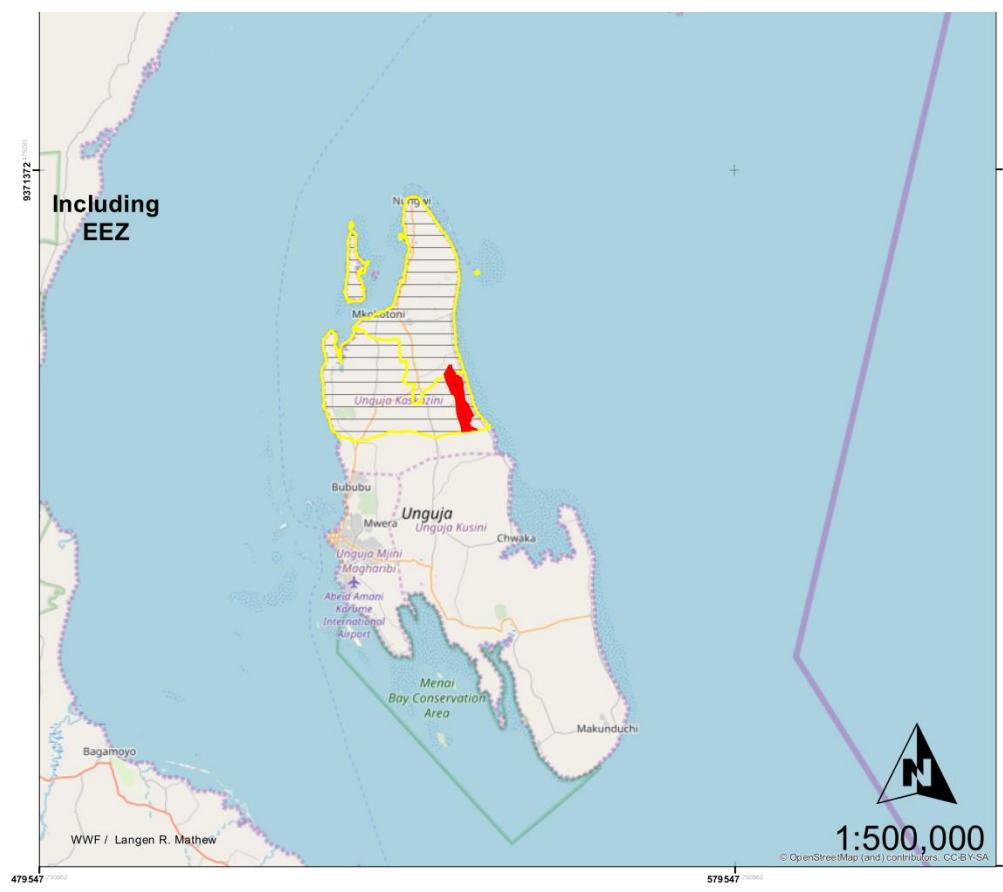


Figure 5 Map of the project areas on Zanzibar

According to the 2012 National Population and House Census, North B District has a population of 81,675 inhabitants, of which 40,548 are male and 41,127 are female with an average household size of 4.7. The population density has increased dramatically over the past decades, increasing the pressure on land for the production of crops (HBS, 2009/10).

The main food crops grown in the district include banana, sorghum, maize, coco yams, vegetables and cassava. Performance of the agriculture sector in the district is good due to availability of rains, fertile lands, extension

services, availability of inputs and a favorable land tenure system. Production of food crops such as rice, banana, maize and legumes have been increasing in recent years.

Up to 30-40 years ago, North A and North B districts were known to be very fertile and composed of various tree species such as Mitomondo, Misufi, Miembe, and Mitondoo. However, much of the area's rich forests were heavily cut to make space for agriculture, with only remnants of the original forest cover remaining. This causes the disappearance of valuable tree species, including their protection of the rivers and ponds in the district.

An important feature of the North A and B region is its aquifer systems, the largest and most important source of freshwater on Unguja Island, which provides the basis for both domestic water supply and irrigated agriculture, rice being a particularly important crop in this regard, in particular in light of the Government's plans for the expansion of irrigated rice production and the related construction of two reservoirs and multiple boreholes. Being the 'water tower' of Unguja, this important livelihoods source is important to preserve, which is main reason for the selection of these two focal districts for this project.

A snapshot of the existing and proposed rice cultivation areas in the landscape is presented in Figure 6.

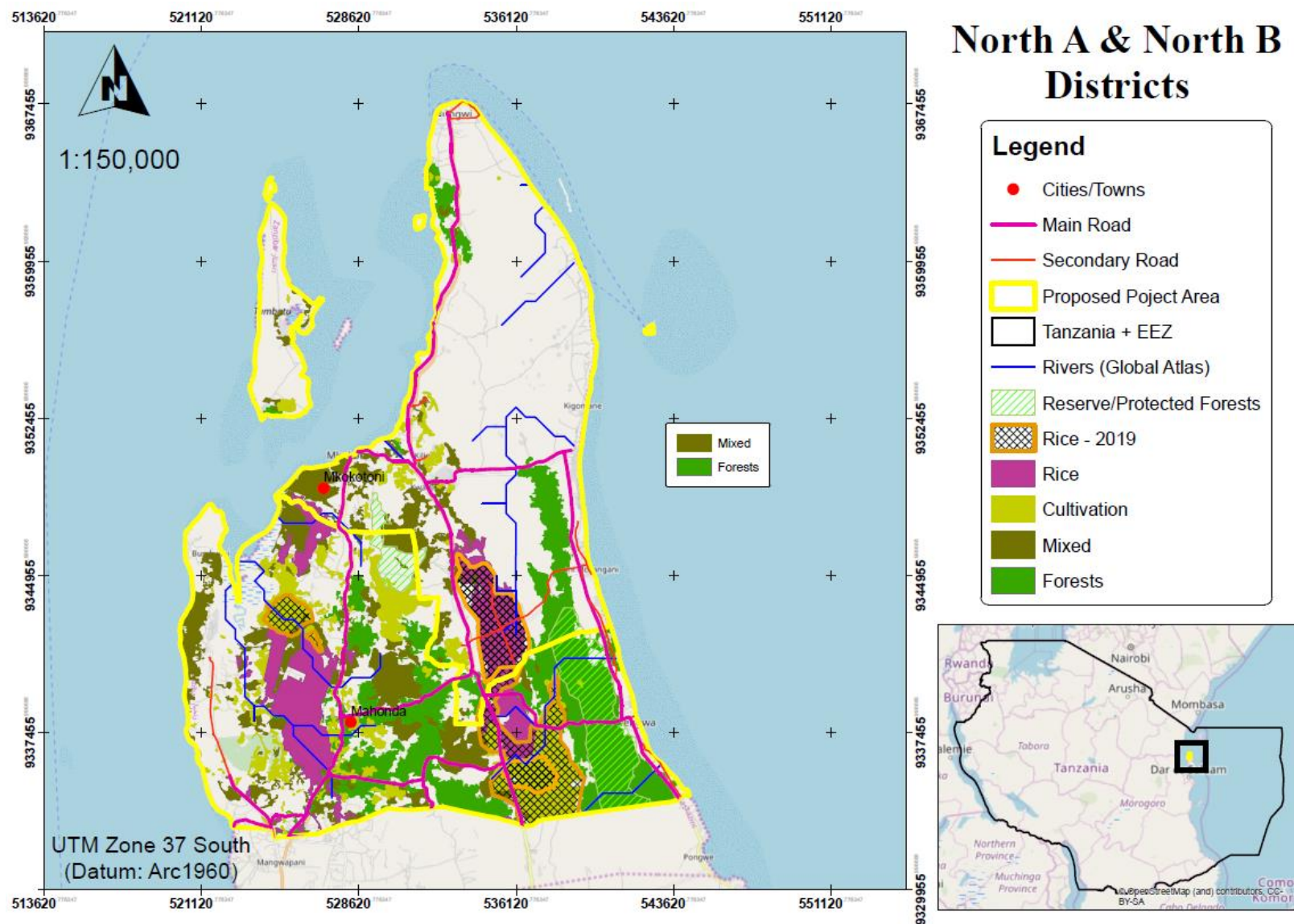


Figure 6 Map of the project area on Zanzibar with indication of the main (existing and proposed) rice production areas

TABLE 1 WORKPLAN

Project Outcomes	Project Outputs	Project activities Kilombero	Project activities Unguja	Y1	Y2	Y3	Y4	Y5
1. Development of integrated landscape management (ILM) systems								
1.1. Strengthened ILM planning and management of Kilombero and Unguja landscapes based on an enhanced understanding of land and water use in the targeted landscapes	1.1.1. Assessment of HCV areas and priority ecosystems, and threat analysis, including identification of priority areas for restoration	<ul style="list-style-type: none"> Identify and map HCV areas and priority ecosystems Undertake HCV threats analysis (desktop study, remote sensing, participatory field assessment and verification) as input into Land Use Dialogue process, with a particular focus on integrated land and water resources management Stakeholder consultation and validation through the Kilombero Multi-Stakeholder LAC 	<ul style="list-style-type: none"> Identify and map HCV areas and priority ecosystems Undertake HCV threats analysis (desktop study, remote sensing, participatory field assessment and verification) as input into the development of the Kiashange-Mokotoni and Kinyasini-Kisongoni Landscape Management Plans, with a particular focus on integrated land and water resources management Stakeholder consultation and validation through the Unguja Multi-Stakeholder LAC 					
	1.1.2. Implementation framework for Integrated Landscape Management for Kilombero Valley	<ul style="list-style-type: none"> Institutional analysis for the management of the Kilombero catchment area, including establishing an interactive database of key stakeholders Consolidation of existing sectoral management plans for the Kilombero catchment into a ILM framework Strengthening and supporting the functioning of the Kilombero landscape MSP Consultations between key stakeholders involved: e.g. District Authorities, RBWB, NLUPC 	<ul style="list-style-type: none"> Development of a Landscape Management Plan for the Kiashange-Mokotoni and Kinyasini-Kisongoni catchment areas Institutional analysis for the management of the Kiashange-Mokotoni and Kinyasini-Kisongoni catchment areas, including establishing an interactive database of key stakeholders Establishing and supporting the functioning of the Unguja landscape MSP 					

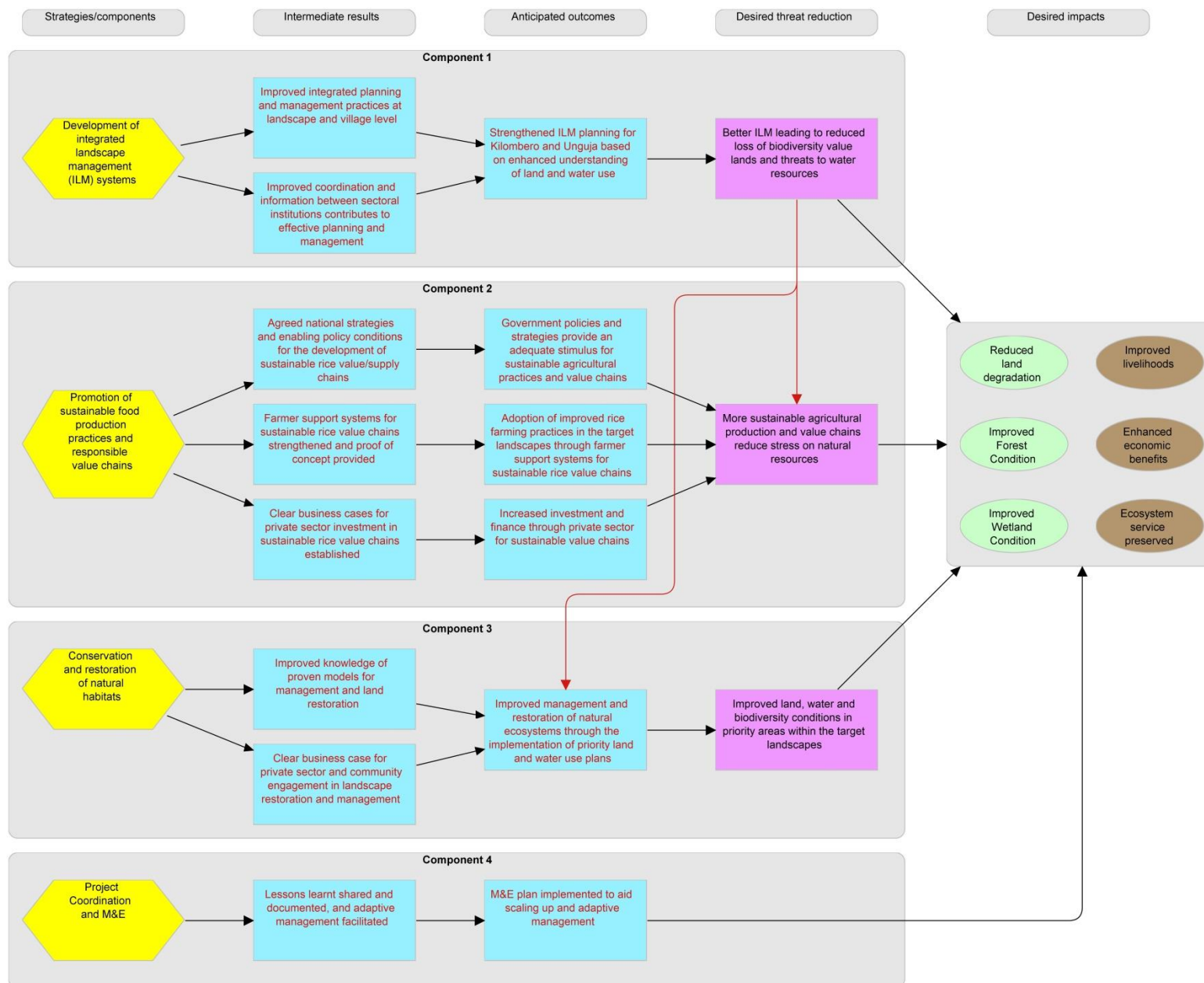
			<ul style="list-style-type: none"> • Consultations between key stakeholders involved: e.g. District Authorities, Commission for Lands, ZAWA and DFNR 					
	1.1.3. Local area (village) land use plans prepared, based on priority areas identified in the Landscape Management Plans	<ul style="list-style-type: none"> • Implement stage 5 and 6 land use planning for selected villages in Kilombero District, in priority areas as defined through output 1.1.1 through a facilitated community-based planning exercise involving village meetings and consultations 	<ul style="list-style-type: none"> • Support the development of local area management plans for Shehia's located in priority areas as defined through output 1.1.1 through a facilitated community-based planning exercise involving village meetings and consultations 					
	1.1.4. Policy paper for improved land tenure and water governance systems to support implementation of the land and water use plans	<ul style="list-style-type: none"> • Assessment (study) of challenges and opportunities for improved land tenure and water governance systems • Stakeholder consultation and through the Kilombero Multi-Stakeholder LAC and consultations with key stakeholders • Support, as appropriate, viable/appropriate measures towards the options defined in the policy paper 	<ul style="list-style-type: none"> • Assessment (study) of challenges and opportunities for improved land tenure and water governance systems • Stakeholder consultation and through the Unguja Multi-Stakeholder LAC and consultations with key stakeholders • Support, as appropriate, viable/appropriate measures towards the options defined in the policy paper 					
	1.1.5. Training and awareness raising program on ILM	<ul style="list-style-type: none"> • Develop and operationalize a stakeholder database for ILM (ref. the stakeholder engagement strategy presented in Annex 4) • Assessment of training needs and design of training programme • Training workshops and awareness raising campaign 	<ul style="list-style-type: none"> • Develop and operationalize a stakeholder database for ILM (ref. the stakeholder engagement strategy presented in Annex 4) • Assessment of training needs and design of training programme • Training workshops and awareness raising campaign 					

2. Promotion of sustainable food production practices and responsible value chains							
2.1. Agreed national strategies and enabling conditions for the development of sustainable rice value/supply chains	2.1.1. Sustainable value chain development plan for the rice production sector, including identifying linkages to regional rice value and supply chains	<ul style="list-style-type: none"> • Desktop and field assessment of the existing rice value chain with the purpose of highlighting potential areas of improved sustainability • Market analysis for the rice value chain identifying key opportunities for sustainably produced rice • Review of existing agricultural policies and strategies for proposed improvements with regard to sustainability aspects • Workshops and other forms of consultations with farmers and other stakeholders to validate the results of the analysis • Develop a clear sustainable value chain development plan for the rice production sector 					
	2.1.2. Sustainable value chain guidelines, standards, and training packages for public and private sector value chain actors in the rice sector, with recognition of international best-practice	<ul style="list-style-type: none"> • Desktop study/analysis of existing best practice guidelines and standards • Consultation workshops with stakeholders to validate the guidelines • Write-up of localized guidelines • Mainstreaming of best practice guidelines into the Quality Assurance Standards of MoA and MAINRL 					
2.2. Adoption of improved rice farming practices in the target landscapes through farmer support systems for sustainable rice value chains	2.2.1. Training and capacity building on sustainable (climate-smart, agro-ecological, conversion free) rice production approaches through capacity building of extension services and rice production cooperatives / resource centers	<ul style="list-style-type: none"> • Train-the-trainers program • Capacity building of extension services through training and provision of materials • Workshops for farmers and farmer-to-farmer learning exchanges • Support to strengthening and establishment of farmer cooperatives/associations and resource centers 					
	2.2.2. Priority sustainable value chain initiatives in the rice production sector supported and operationalized (e.g. through TA, extension services, establishment of a rotating fund for on-farm investments, building on 2.2.1)	<ul style="list-style-type: none"> • Based on the analysis undertaken under 2.2.1, hold workshops and consultation with farmers and other stakeholders to identify priority initiatives to be promoted and supported under the project • Design of targeted initiatives, including establishment of related TA and capacity building packages • Operationalize agreed priority initiatives: examples could be introducing improved seed varieties; testing specific farming methods that are less wasteful and lead to higher yield and more efficient land and water use, rainwater harvesting systems; reducing 					

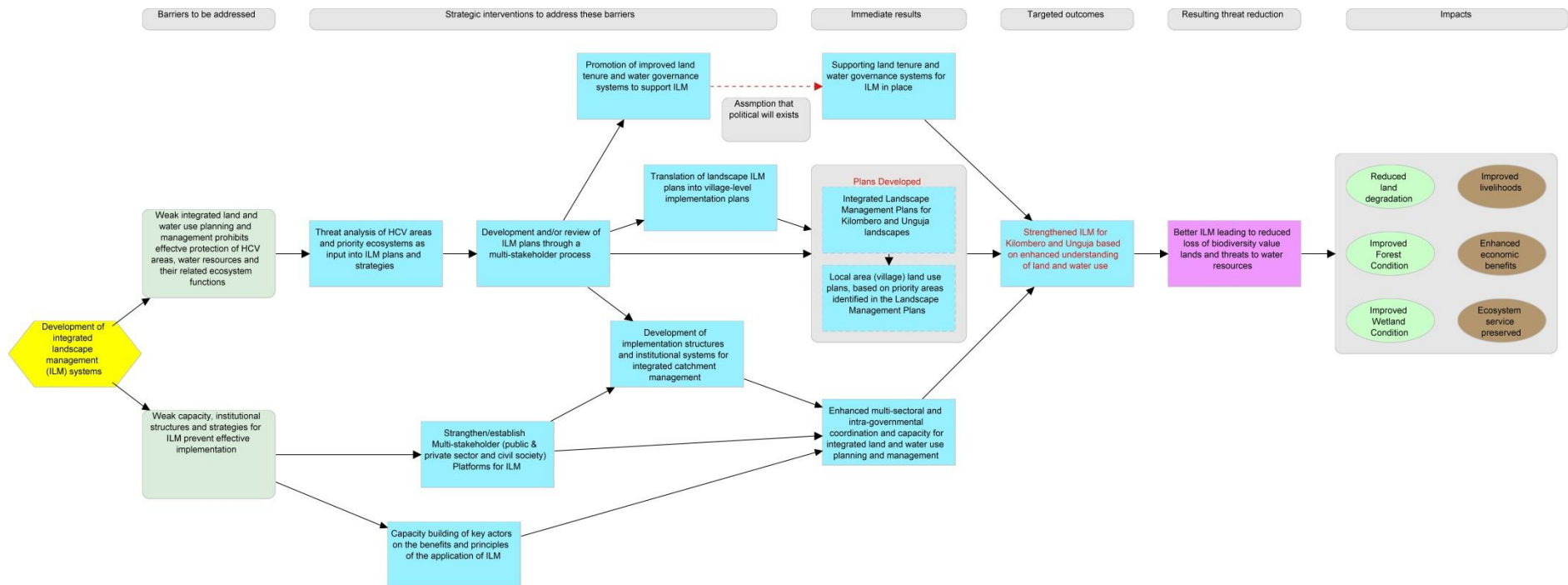
		<p>the use of harmful pesticides and fertilizers; improved processing methods, improving storage facilities; re-use of waste materials (e.g. rice husks for energy production, animal feed and building materials); creating efficiencies in transport and marketing systems, etc.</p> <ul style="list-style-type: none"> Facilitate peer-peer learning exchanges between sustainable value chain initiatives 					
2.3. Investment and finance through private sector for sustainable value chains	2.3.1. Opportunities analysis for private sector investments in sustainable rice production value chains in the target landscapes with clear business cases and proposed fiscal/financial incentive schemes	<ul style="list-style-type: none"> Undertake opportunity analysis for private sector investments in sustainable rice production value chains in the target landscapes Consultations with relevant private and public sector stakeholders on the roll out of these opportunities Based on this opportunity analysis, support the development of clear business cases and other initiatives through partner organizations 					
	2.3.2. A collaborative agreement and platform for engagement between public, private and civil society actors on sustainable rice value chain development	<ul style="list-style-type: none"> Consultations between public, private sector and civil society stakeholders regarding investments in the development of sustainable rice value chain initiatives Development and signing of a Compact between public, private sector and civil society stakeholders 					
3. Conservation and restoration of natural habitats							
3.1. Improved management and restoration of natural ecosystems through the implementation of priority land and water use plans, with the active involvement of communities and private sector	3.1.1. Restoration of degraded lands in target locations based on the ILM plans (output 1.1.3)	<ul style="list-style-type: none"> Identify priority areas for restoration through ROAM assessment (based on 1.1.1) Work with community and private sector groups to define specific restoration plans Support selected communities in priority conservation areas to implement specific restoration activities Monitoring of the success of these restoration efforts and measure their impact on carbon sequestration and other ecological functions 					
	3.1.2. Management of priority HCV areas within the target landscapes through proven models (e.g. certification, Village Forest Land Reserves and PPP)	<ul style="list-style-type: none"> Identify priority areas for improved management (based on 1.1.1) Work with community and private sector groups to define specific management approaches and plans Support selected communities (and potentially also private sector partners) in priority conservation areas to implement specific management plans, e.g. support FSC group certification processes, 					

		<p>establishment of village forest land reserves and PPP arrangements, develop alternative livelihood activities.</p> <ul style="list-style-type: none"> Monitoring of the success of these management efforts and measure their impact on carbon sequestration and other ecological functions 					
	3.1.3. Fiscal/financial schemes to incentivize investment for restoration in degraded lands, targeting small-scale farmers and larger private sector	<ul style="list-style-type: none"> Options and opportunity analysis for sustainable landscape management and restoration financing Consultations with relevant private and public sector stakeholders on the roll out of these opportunities Development of concrete business cases for private and public investment in landscape management and restoration Development of fiscal/financial schemes supporting sustainable landscape management and restoration Roll-out of the most promising initiatives through TA to partner organizations 					
4. Project Coordination and M&E							
4.1. M&E plan implemented and learning exchanges with other FOLUR countries facilitated to aid scaling up and adaptive management	4.1.1. Project progress continuously monitored and mid-term and final evaluation conducted	<ul style="list-style-type: none"> Preparation of quarterly, biannual and annual progress reports Measuring and monitoring of key indicators (according to M&E plan) Mid-term and final evaluation 					
	4.1.2. Project achievements and results documented and KM products developed for replication and scaling up	<ul style="list-style-type: none"> Preparation of lessons learnt reports and briefs 					
	4.1.3. Active participation in FOLUR learning network facilitated	<ul style="list-style-type: none"> Participation in meetings and virtual sessions organized by the FOLUR Global Platform project Contribute materials to FOLUR knowledge platform 					

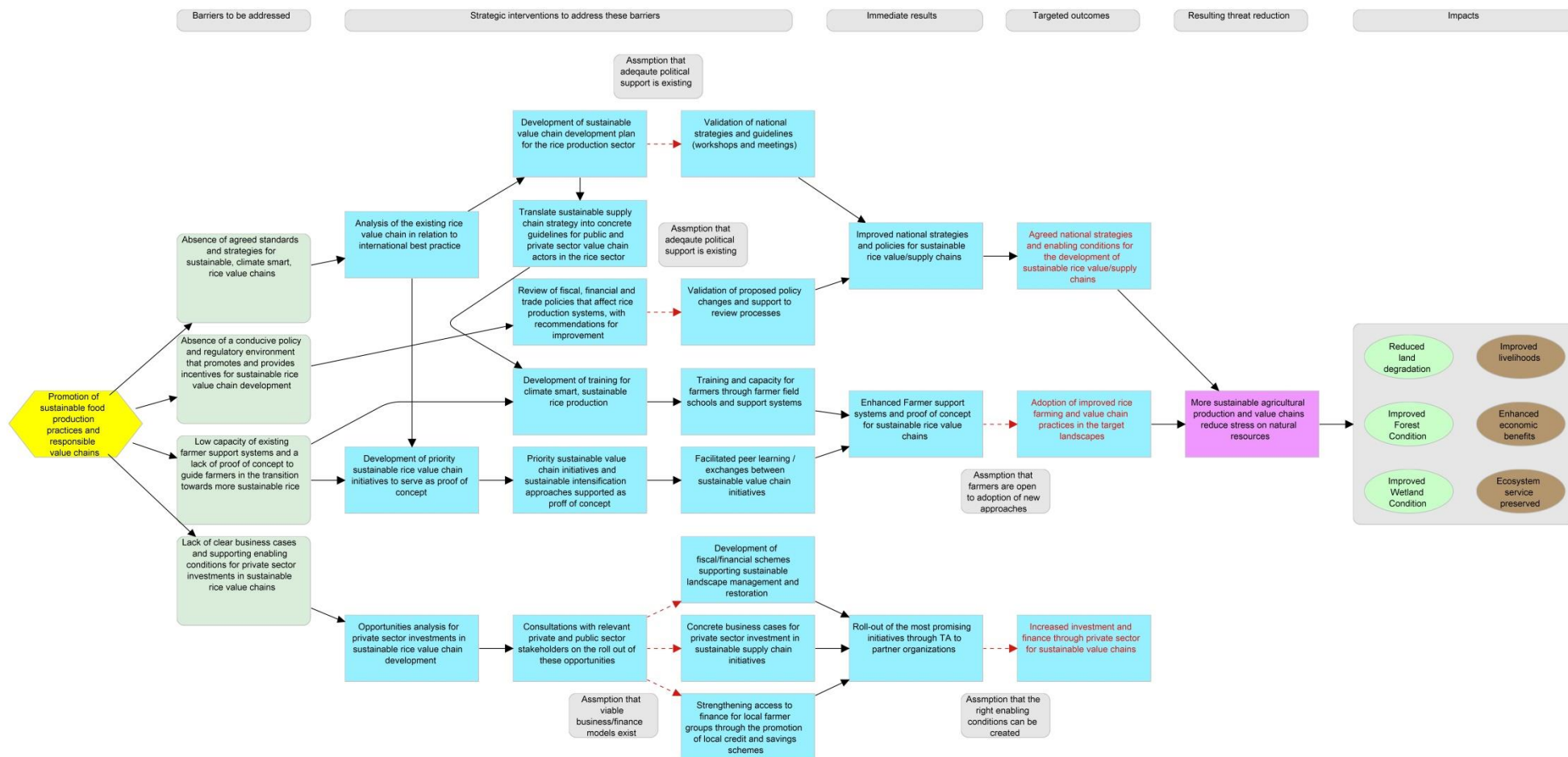
Annex 3 Theory of Change



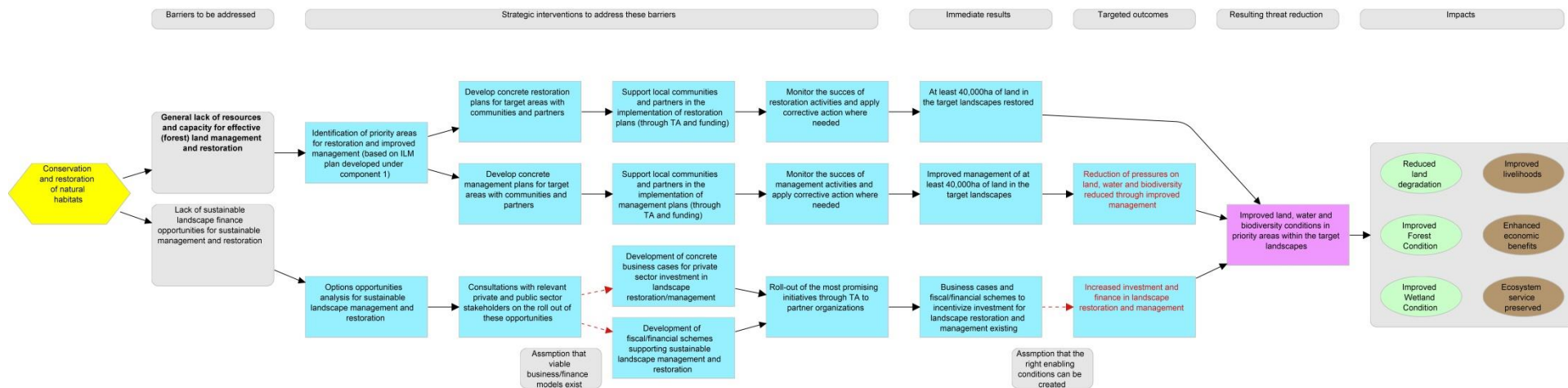
Master results chain



Results chain Component 1



Results chain Component 2



Results chain Component 3

STAKEHOLDER ENGAGEMENT PLAN

Food Systems, Land Use and Restoration in Tanzania's Forest Landscapes

1. Introduction

1.1 Background to the Project

The Government of the United Republic of Tanzania (URT) through the Forest and Beekeeping Division (FBD) of the Ministry of Natural Resources and Tourism (MNRT) has secured a funding allocation from the GEF under Food Systems, Land Use and Restoration (FOLUR) Impact Program. The funding for the project is received by the Government through the Ministry of Finance and Planning. The project covers both Zanzibar and mainland Tanzania, focusing on a two priority landscapes, Kilombero landscape on mainland Tanzania and North/A Districts in Zanzibar, combined with national-level interventions to address trade and value chain aspects in support of the long-term economic viability of these landscapes, and Tanzania's agricultural development at large.

More specifically, the project seeks to address the degradation of Tanzania's rich forest lands, freshwater and wetland systems and the related loss in forest health and biodiversity, which has detrimental effects on the delivery of ecosystem services (including carbon sequestration) and related livelihood and economic opportunities. The proposed project represents an integrated approach that combines aspects of sustainable food systems and deforestation free supply chains, with broader landscape level planning, management and restoration for the preservation of ecosystem services in some of Tanzania's key rice cultivation areas.

The Forest and Beekeeping Division (FBD) of the Ministry of Natural Resources and Tourism (MNRT) will be the National Executing Agency implementing the Project on behalf of the URT. The FBD will be responsible for coordinating and oversight of all primary national executing partners, regulatory authorities, regional and district authorities, private sector, NGOs, CSOs, local communities. Other primary executing partners to this project include Rufiji Basin Water Board (RWBB), Vice President's Office (VPO) – Division of Environment (DoE), President's Office - Regional Administration and Local Government (PMO-RALG), National Land Use Planning Commission (NLUPC), Tanzania Forest Services (TFS) Agency,

TAWA (Ifakara), National Carbon Monitoring Centre, Sokoine University of Agriculture (NCMC/SUA), Southern Agricultural Growth Corridor for Tanzania (SAGCOT) Secretariat, Tanzania Agricultural Research Council, Tanzania Forest Research Institute (TAFORI), North A and North B Town Councils, Ministry of Agriculture, Irrigation, Natural Resources and Livestock (MAINRL), Second Vice President's Office (VPO) – Department of Environment (DoE), Zanzibar water Authority (ZAWA), Ministry of Lands, Housing, Water and Energy - Department of Urban and Rural Planning, Zanzibar Utility Regulatory Authority (ZURA) and Zanzibar Commission for Tourism (ZCT).

1.2 The Project Objective and Components

The overarching objective of the project is to promote integrated land and water management, restoration, and sustainable rice value chains to prevent deforestation in priority landscapes in Tanzania. The project has 4 components, which are:

- **Component 1 - Development of integrated landscape management (ILM) systems:** involves the application of an ILM approach, including developing land-use plans and related water protection plans, and operationalize their implementation by creating an enabling environment. Here, the project will seek to strengthen the development of an ILM approach for the target landscapes, through a multi-stakeholder process, in order to provide for a landscape management framework that gives space for rice production.
- **Component 2 - Promotion of sustainable food production practices and responsible value chains:** The component will seek to support the development of sustainable and socially inclusive value/supply chains for the rice production sector, including the development of supporting governance, finance and market approaches that will drive sustainable value chains.
- **Component 3 - Conservation and restoration of natural habitats:** will involve the development and implementation of concrete landscape restoration activities in the target landscapes, including the creation of enabling conditions for upscaling.
- **Component 4 - Project Coordination and M&E:** focuses on coordination, cooperation, and M&E, including knowledge sharing, learning, and synthesis and communication of experiences nationally and regionally (see following section).

2. Regulations and Requirements.

The content presented here for the stakeholder engagement plan have been prepared for the Tanzania FOLUR Child Project for the sake of guiding stakeholder engagement during development/design, planning, implementation and closure of the project. In this regard, the plan lays out standards, guidelines and concrete activities for the project to ensure transparency, inclusion, accountability, integrity, and effective participation of all affected parties by the project. The Tanzania FOLUR Child Project leading proponent is FBD/MNRT and is ultimately responsible for the implementation of this Stakeholder Engagement Plan. The development and implementation of this stakeholder engagement plan is guided

by GEF Policies and Guidelines, WWF-US policies (as GEF Project Agency) and the Government of United Republic of Tanzania requirements. The principle requirements in this regard are summarized below.

2.1 GEF requirements

The GEF has in place two instruments on stakeholder engagement: Policy on Stakeholder Engagement (2017),⁵⁰ and Guidelines on Implementation of the Policy on Stakeholder Engagement (2018),⁵¹ which further defines the policy and resources necessary for implementation. These instruments have in place mandatory requirements and procedures for GEF Partner Agencies and recipient government agencies to ensure transparency, inclusion, accountability, integrity, and effective participation of stakeholders and public for all projects financed by the GEF.

As spelled out in the policy, the intention of these instruments is two-fold: to strengthen the design and implementation of GEF-Financed activities through effective stakeholder engagement thereby reducing risks and addressing the social and economic needs of affected parties; and to ensure country ownership of the project and developing stronger partnerships with civil society, local communities, private sector through harnessing their knowledge, experience and capabilities of affected and interested individuals and groups throughout the project cycle.

The policy outlines 6 requirements for governments and other executing partners implementing GEF financed activities, which are:

- Stakeholders are identified early in project and engaged throughout the project cycle
- The engagement of stakeholders should include mechanisms that allow stakeholders to express their views and receive feedback on project plans, benefits, risks, impacts, and mitigation measures that may affect them.
- The engagement of stakeholders be gender responsive; free of manipulation, interference, coercion, discrimination and intimidation; and responsive to the needs and interests of disadvantaged and vulnerable groups.
- Throughout the project cycle, a public register of stakeholder engagement is developed, maintained and disclosed. In cases where confidentiality is necessary to protect stakeholders from harm, statistical information is recorded and made publicly available.
- Stakeholders to the project are given access to timely, relevant and understandable information about activities implemented, and there are clear procedures in place to request information.
- Where GEF-financing supports an activity implemented by the Agency, such support is clearly identified and related non-confidential information is made publicly available and easily accessible.

⁵⁰

https://www.thegef.org/sites/default/files/council-meeting-documents/EN_GEF.C.53.05.Rev_.01_Stakeholder_Policy_4.pdf

⁵¹ https://www.thegef.org/sites/default/files/documents/Stakeholder_Engagement_Guidelines.pdf

2.2 WWF-US requirements

The WWF Standard on Stakeholder Engagement ensures that WWF is committed to meaningful, effective and informed stakeholder engagement in the design and implementation of all GEF and GCF projects. WWF's commitment to stakeholder engagement arises from internal standards such as WWF's Project and Program Standards (PPMS), as well as WWF's commitment to international instruments such as United Nations Declaration on Indigenous People (UNDRIP). Stakeholder engagement, in this regard, is recognized as a range of activities and interactions with stakeholders throughout the project cycle and is an essential aspect of good project management.

In addition to WWF's Standard on Stakeholder Engagement, WWF has developed and adopted a comprehensive Environmental and Social Safeguards Framework (ESSF) to ensure consistent, comprehensive application of safeguards across all projects supported and implemented by the entire WWF Network. To comply with the WWF ESSF, the project will follow the policies, standards, guidance and procedures as detailed in the Environmental and Social Safeguards Integrated Policies and Procedures (SIPP). Specifically relevant for the Stakeholder Engagement Plan is the [Standard on Stakeholder Engagement](#) and the associated [Procedures for Implementation of the Standard on Stakeholder Engagement](#).

The ESSF framework requires all WWF supported projects to commit to consult and engage potentially affected stakeholders (or parties) and to disclose information related to the project in a transparent manner. This commitment extends the requirement for the project to have grievance mechanisms in place for stakeholders to lodge concerns and receive feedback.

The ESSF framework requires projects to initiate stakeholder consultation at a very early stage of project design and put mechanisms in place that allow communication with affected stakeholders in a form and language that are understandable and accessible to diverse groups.

Other WWF instruments that emphasize stakeholder engagement are: WWF Policy on Poverty and Conservation (2009) which reaffirms WWF's commitment to ensure that communities affected by the project take part in defining problems and solutions in the development and conservation; and WWF Gender Policy (2011) which require projects to taken into account gender perspective in stakeholder engagement.

2.3 Tanzania Government requirements:

Being a 'non-union matter', the agriculture and majority of environmental issues (forestry, wildlife, fisheries, water and land) are governed separately between mainland Tanzania and Zanzibar. For this case, the requirements for stakeholder engagement plans are guided by separate legislation.

- In Tanzania mainland, section 178 (part XIV) of the Environmental Management Act (EMA) of 2004 has set a number of requirements that provides legal rights to the public to be informed timely of development of any project; to participate in decisions of project design; and to present oral and written comments on proposed projects. Similarly, the Agriculture policy (2013) under section emphasizes the need for farmers to be involved through their organizations (cooperatives,

associations or groups) to participate in project development and implementation given their recognized role to empower farmers.

- In Zanzibar, Section 37 of the Environmental Management Act of 2015 explicitly states that every person has the right to access environmental information of environmental related projects. Similarly, the Agricultural Sector Policy (2003) reaffirms government commitment to have a consultative and participatory approach to stakeholders in the agriculture sector at all levels. The policy emphasizes the need to involve and build partnership with stakeholders in particular the local communities, local NGOs, farmers' associations and the private sector due to build ownership and benefit from existing extension services.

3. Summary of previous stakeholder engagement activities

The project has already gone through a number of stakeholder engagement activities during the development phase. An overview of the key events and engagements is presented in Appendix 1. Activities included workshops and stakeholder meetings, field-level consultations, individual consultations with key project stakeholders and partners, presentations and interactions with other existing forums. The field-level consultations included meetings with a range of local stakeholders, community groups, site visits, field inspections, and focus group discussions. The consultation of stakeholders for this project began in early stages and went through in-depth discussions for almost two years.

As such, the project design process involved in-depth engagement with key stakeholders in the project. The earlier foundations of the project were laid during a stakeholder workshop organized in November 2017, when key Government stakeholders from both Zanzibar and mainland Tanzania came together to discuss the idea for the project and engage in an in-depth co-design process. Since then, the project has involved a number of stakeholder engagement processes, including:

1. Key workshops and stakeholder meetings:
 - a. Nine project design and preparation workshops for national level stakeholders and partners where held over the course of the 2½ year project development period (November 2017, Zanzibar; May 2018, Dodoma; June 2018, Dar es Salaam; September 2018, Morogoro; March 2019, Zanzibar; October 2019, Zanzibar and Ifakara; January 2020, Zanzibar and Dodoma).
 - b. A project preparation Kick-off Workshop for the Project Preparation Team and other key stakeholders was held in July 2019 to provide an orientation on the GEF Project Preparation process and requirements (July 2019, Zanzibar).
 - c. Biweekly virtual meetings of the Project Preparation Team (PPG period).
 - d. A project validation workshop (October 2020, Dodoma).
 - e. Meetings of the Project Design Steering Committee (January 2020, Dodoma; June 2020, Dodoma).
2. Field-level consultations (including meetings with a range of local stakeholders, community groups, site visits, field inspections, and focus group discussions), including:

- a. Field visits by the Project Preparation Team– to assess the situation in the target landscapes, identify key threats and barriers, gather initial baseline information on selected areas, inform site selection as well as to collect community and other local stakeholders views and concerns on issues and proposed activities (October 2019).
 - b. Various field visits by gender and safeguards specialists in the context of the gender and safeguards assessment work (March – June 2020).
3. Individual consultations with key project stakeholders and partners to discuss specific issues, obtain baseline data, review indicator targets, comments on activities, etc. Over 100 individual meetings were held over the period of the project design, involving meetings with:
 - a. Central Government Authorities
 - b. Local Government Authorities
 - c. Technical research and knowledge institutions/centers
 - d. Bilateral and multilateral donors
 - e. Non-Government Organizations active in the sectors addressed by the project
 - f. Private sector partners and their representative business associations
 - g. Financial institutions and service providers
 - h. Representatives of local communities
4. Presentations and interactions with other existing forums, including among others:
 - a. Presentation of the project concept to the Union Meeting on Cooperation and Implementation of International Agreements (February 2018, Dar es Salaam).
 - b. Presentation and discussion of the concept at the GEF National Constituency Workshop (January 2019, Dodoma).
 - c. Presentation and discussion of the project concept at the Kilombero Multi-Stakeholder Platform meeting (October 2019, Ifakara).

To facilitate close engagement of stakeholders in the design process, a number of key mechanisms were established:

4. A high level Project Steering Committee, constituted by the Directors of MNRT/FBD (chair), MoA, VPO, VPO-2, MAINRL/DFNR and MFP. The key functions of this Committee were to
 - oversee the appropriate design of the project in line with Government priorities
 - guide the Project Design Team in their assignment; and
 - endorse the final project documents
5. An Ad Hoc Project Design Working Group, constituted by the designated technical focal points from all project partners. The responsibilities of this group were to:
 - advise the Project Design Team in its assignment
 - provide input into the project design from the perspectives of the project partners
 - participate in the project design and validation workshops; and
 - ensure wider outreach to the respective constituencies of the project partners
6. A Project Preparation team, constituted by WWF, the Lead Consultant and associate project design consultants, as well as selected technical experts from the key technical partners, in

particular MNRT/FBD, MoA, NLUPC, SAGCOT Secretariat, MAINRL/DFNR, VPO-2, the Zanzibar Commission of Land (CoL) and NCMC.

Based on these mechanisms, the project was designed through a co-design process, which meant that objectives, outcomes, strategies and approaches were all jointly designed and decided upon between the key stakeholders. A number of key points should be mentioned in this regard:

- A key outcome of consultations at political level included the opportunity provided by the project to strengthen the linkages and coordination between the Zanzibar and mainland Tanzania with regard to both rice sector development and related conservation aspects. The Tanzania FOLUR Child Project is seen as a key vehicle to drive for more coherent Government policies and strategies in this regard. A key decision resulting from this was the choice for selecting one target landscape each for Zanzibar and mainland Tanzania.
- The choice of landscapes was a crucial aspect of the project, and the subject of multiple debates with stakeholders on both the Zanzibar and mainland Tanzania side. The eventual choice for Kilombero and Unguja was guided primarily by Government plans for rice sector development in these two landscapes.
- Similarly, the choice for rice as a target crop was driven by current Government policies for doubling rice production in the country, both for domestic supply and its export potential.
- At community level, furthermore, consultations rendered important feedback with regard to previous experiences with regard to the promotion of SRI as an approach towards more efficient rice production. Based on feedback from the community groups, as well as discussions with partner organizations in the agricultural sector, an extensive analysis of experiences with the promotion of SRI technology was commissioned (see Annex 9 to the project document), which provides the basis for strategies laid out in Component 2 of the project.
- Similarly, experiences expressed by communities with regard to earlier attempts at ILM, helped design Component 1 of the project in a way that the technical process of land use planning should be combined with an adequate level of community engagement, capacity building and awareness raising, to ensure that the plans coming out of these processes are adequately 'owned' by communities.

The close engagement of stakeholders in the project preparation process as presented above ensured a high level of ownership across the various project partners and beneficiaries, and therefore an important basis for the multi-sectoral and multi-stakeholder approach foreseen for the project.

4. Project Stakeholders.

The stakeholders identified for this project, as detailed in Appendix 2, are clustered into the following groups:

- **Government:** This includes Ministries, Regulatory Authorities and Agencies, Local Government Authorities at Regional and District level and Research Institutes with either mandate or interest in delivering the interventions related to the project. These include the principle project partners, responsible for the implementation of activities and working directly with local communities in the project sites.
- **Local Communities:** This is where the engagement plan will mostly focus given that the project will affect either directly or indirectly all members of the communities. The local communities cited here are the populations currently residing and with permanent residence in the project sites (villages and shehias) in the two landscapes of Kilombero and Unguja North.
- **Civil Society Organizations (CSOs):** This constitutes non-state actors both locally and internationally working in project areas or on interventions related to the project objectives. Similar to the government in terms of potential role, the majority of CSOs will be partners to the project for implementation and thus directly engaging with the local communities in the project sites.
- **Private Sector and Financial Investors:** This includes companies and firms with interest in engaging in businesses and financial investments aspects related to the project objectives.
- **Politicians:** This include members of parliament, regional commissioners, district commissioners, councilors, village/Shehia chairpersons in the project area and within the districts who are representatives of local communities living in the project area.

These stakeholders will be informed about and engaged in the project as per the plan described further in this document. The process to identify and reflect on roles and responsibilities of stakeholders is a continuous process. The list provided here will be treated as a living document for the purpose of selecting changing social, economic and political environments throughout the project cycle.

5. Stakeholder Engagement Plan

A detailed systematic stakeholder engagement plan is presented in Appendix 2, providing details of the different groups of stakeholders, the proposed methods and topics of engagement, as well as the timing and frequency of such engagement. The more strategic-level aspects of this stakeholder plan are further outlined in the following sections.

5.1 Objectives of the stakeholder engagement plan

The Executing Agency, MNRT/FBD, intends to implement the project in a transparent, inclusive manner and in a way that reflects realities on the ground. In this regard, this Stakeholder Engagement Plan provides guidance to ensure inclusion, transparency and continuous engagement with the beneficiaries and other stakeholders during development and implementation of the project. The specific objectives of the Stakeholder Engagement Plan are to:

- establish mechanisms that ensure high level of ownership across project partners, affected and interested parties throughout the project life cycle to align with the multi-sectoral and multi-stakeholder project approach;

- facilitate close engagement and grievances mechanisms of stakeholders in the further development and throughout implementation and closure of the project;
- establish time frame and methods that ensure stakeholder consultation and disclosure of project information through the project life cycle; and
- establish and manage communication and engagement mechanisms across partners, affected and interested parties in a transparent, timely and clear manner.

5.2 Proposed Strategy to incorporate views of women and other relevant groups (minorities, elderly, young other marginalized groups)

The project will use the following methods to ensure that the views of women and vulnerable groups are incorporated in the project design, planning and implementation of activities at community level:

- A combination of methods will be used when consulting and engaging local communities, whilst respecting all participants' views and knowledge, including: focus group discussions using various criteria depending on situation (per economic activity, age group, gender, geographical locations etc.); key informants discussions with emphasis on women and nomadic groups on specific topics (e.g. to understand historical perspective of certain activities, perspectives of vulnerable groups such as the nomadic groups of Maasai and Barabaig who might not be present in communities at any given time, gender perception and realities etc.); and Village/Shehias assembly meetings. In pursuing these methods, the project will ensure that there is enough time, flexibility (e.g. due to disability, some may come from far) to ensure there is participation of all intended members of communities. This will avoid the risks of women and other relevant groups being excluded to take part due to being excluded from public gatherings due to their disability, gender orientation, economic activity, religion or tribalism.
- In consulting and engaging women, nomadic communities and other vulnerable groups, communication will be adapted to ensure that it fits the local context and helps build confidence. In all meetings, Swahili will be used and where necessary, translation will be used to Swahili and tribal languages using members of the communities. The discussions at community level will be led by community members and officials from the district government.
- A register will be kept, updated regularly and feedback systems developed to ensure that women and other relevant groups (minorities, elderly, young other marginalized groups) are fully included in consultations, benefit from the project and informed on the progress on the project.

5.3 Proposed methods to receive feedback and to ensure ongoing communications with stakeholders

- All stakeholders that have been consulted and identified will be kept in the register and updated regularly. These stakeholders will be kept abreast with information on project implementation reports and encouraged to provide feedback by individuals taking part in implementation of the project through various means including phone calls, emails, informal meetings among others. The fact that almost all stakeholders identified by the project have interest in the project areas will facilitate easy engagement and outreach throughout the project cycle.

- National ministries and agencies that are primary partners to the project will provide feedback on the project through meetings (or workshops), including the various technical and steering committees set up under the project, in designing and implementing activities throughout the project cycle. The primary partners will also provide feedback through direct engagement with the PMU and two LCUs during development and execution of activities throughout the project cycle.
- The project institutional arrangement has allocated responsibilities for all parties to monitor and collect feedback from communities and other stakeholders throughout the project cycle. This set-up will allow for collection, analysis, follow-up, accountability and integration of feedback provided.
- The PMU, LCU, executing partners and partners will take notes during village/shehias meetings, interviews, focus group discussions when exercising their responsibilities with communities. These field notes will be used to write and analyse field reports and monitoring reviews to provide feedback to the project implementation.
- The politicians including leaders of regional and local government authorities will be involved to provide feedback through speeches during officiating workshops, launch of reports and forums. The politicians will also be engaged and consulted to provide their feedback through visits to the district and regional offices during executing of various activities of the project. The hosting of LCU at district level will provide a day-to-day engagement with politicians.
- As it has been done during the design process of the project, all other stakeholders (e.g. CSOs, private sector) that have already been identified will be invited to workshops and meetings as per thematic topics and their interests to provide inputs and feedback during designing activities, implementation, monitoring and evaluation of the project. These stakeholders will be involved through individual consultation (phone calls, emails), sharing of reports (workshops, monitoring) where feedback can be provided to PMU.
- The national level government ministries, agencies and members of PMU and LCU will also represent the project in various local and international multi-stakeholder meetings, forums and workshops (e.g. Kilombero Multi-Stakeholder Platform) where feedback can be provided. This engagement will allow for feedback from various invited stakeholders, forge new partnerships and identification of new stakeholders beyond that have been identified.

5.4 Other engagement activities for the plan

Other engagement activities for the plan will include the following:

- Training and capacity building across project partners, affected and interested stakeholders. The project will also build capacity on existing multi-stakeholder processes and established forums to provide room for partnerships and consultation with stakeholders beyond those directly affected by the project.
- Implementation of engagement approaches indicated in the engagement plan as presented in Appendix 2 to ensure that all stakeholders and relevant groups can understand project technical information irrespective of their education level and background. In addition, the project will

develop, manage and ensure quality assurance of communication and associated materials to be disclosed to stakeholders throughout the project cycle.

- In all meetings (individual, site visits, workshops, focus group discussions, key informants), records will be kept and documented for analysis and various reports will be prepared. The documentation will also be used to keep stakeholders informed at different levels on progress, challenges, risks, and emerging opportunities.
- The district and communities will take part in designing, making decision and providing feedback throughout the project cycle. The identified district and community level state and non-state actors are not only beneficiaries (or effected parties) but also partners to the project.
- The engagement of the project at community level will include village/shehia assembly meetings (open meetings), meetings with village/shehia committees (e.g. agriculture, natural resources), focus group discussions and key informants. The communities will be notified and engaged through both traditional (local) and modern methods in light of the quality of phone networks, weather and road accessibility to ensure adequate outreach to all groups (including people with disability and who can't read). The traditional methods to be used in notification to villagers to attend meetings will include mbiu (as commonly used in Tanzania mainland) or upatu (as commonly used in Zanzibar) which involve the use drum-beat, metal-beat, trumpet or walking to sub-villages, and through mosques and churches. The modern methods will include publication of information of various developments and on planned meetings on village/shehias notice boards, notification of meetings through phone, letters, public address using speakers and microphones, and dispatch of leaflets/letters using motorcycles. The information for meetings will be provided in advance to the district, ward and village/shehias level.
- At community level, village/shehias level leaders will assume many responsibilities in execution of activities and therefore act as a useful bridge to ensure constant and continuous engagement with members of the community. The village/shehias leaders will include government officials, and elected leaders including various committees that formulate part of the village/shehias governance. The engagement at community level will also include responsibilities for officials at ward level, extension officers and community development officers.

6. Timetable.

The schedule and locations where various stakeholder engagement activities including consultation, disclosure, and partnerships will take place is included in Appendix 2. The dates by which such activities will be undertaken is provided but not in specific terms as the engagement will be updated.

As outlined before, the implementation of this stakeholders engagement began at very early stages of project document development to ensure ownership, confidence, and reflection of priorities over time.

The stakeholders engagement will continue throughout the project cycle including during identification of beneficiaries (including women and other relevant groups) and during periodic monitoring to allow for reflection of the progress, adjustment and corrections.

7. Resources and Responsibilities

The Executing Agency, MNRT/FBD, has the overall responsibility and oversight to carry out stakeholder engagement activities which include consultation and disclosure. Their role, apart from overall responsibility and an oversight, will include supporting the PMU at national level in:

- disclosing and providing project implementation reports and other key documents on agreed timeline and in transparent way;
- managing and authorizing disclosure of information related to the project on all communication methods; and
- leading national consultation level processes for national activities with project partners.

The role of engaging stakeholders devolves to all project partners in implementing their activities, with MNRT/FBD providing an oversight role at national level, and the Project Coordinator / Sustainable Food Systems Specialist being personally responsible for managing the relationship with project stakeholders, and more broadly the effective implementation of the Stakeholder Engagement Plan. The Project Coordinator / Sustainable Food Systems Specialist will be supported, among others, by a Gender and Safeguards Specialist (on consultancy basis).

The LCUs, which is part of the PMU at landscape level, will be at the front line of the project and engaging with affected parties (direct and indirect) on a daily basis. The roles LCUs will include the implementation, monitoring and supervision of the stakeholder engagement plan at the level of the target landscapes, in coordination with the central PMU based at MNRT/FBD. The key responsibility, in this regard, lies with the respective Landscape Programme Coordinators, working in collaboration with other technical staff.

Other resources to enable implementation of this plan will include the following:

- In this engagement plan, the role of WWF-US as GEF Agency will be to make sure the project comply with policies and requirements of those of GEF and WWF; to monitor the project in accordance with the proposed stakeholder engagement plan and provide recommendations for improvement; and facilitate disclosure and publication of information and reports from the project as authorised by MNRT/FBD.
- Monitoring of this plan, as defined further below, will be the responsibility of MNRT/FBD and the PSC.
- Along the project cycle, some activities may be commissioned out to independent agencies (and/or consultants) to avoid bias, ensure transparency and credibility, and enable feedback to improve grievance mechanisms. The role of independent agencies (and/or consultants) will include providing an independent view of the progress of the engagement plan; collecting, documentation and ensuring that concerns by affected parties are incorporated throughout the project cycle; facilitate and support FBD and LCU in implementing this plan in an independent way but adhering to GEF policies on safeguards and stakeholder engagement.

8. Grievances Mechanism.

MNRT/FBD will inform and engage the communities to provide guidance and assurance in which those affected by the project implementation can submit/express their grievances (claims or concerns) and seek resolution. The grievances mechanism will be simple, understandable and seek to protect the complainant for sensitive issues. Along all steps of reporting and resolving claims and concerns, MNRT/FBD will ensure that there is proper and timely documentation of all steps and decisions taken. This will ensure that confidence, fairness, transparency and lessons to avoid future in project implementation.

Details of the grievance mechanisms to be established by the project are presented in the Environmental and Social Impact Framework in Annex 12 to the project document.

In addition to the project-level grievance mechanism, stakeholders may submit a grievance to the WWF GEF Agency. Instructions are provided on WWF website (as below) with contact details and procedures.

All grievances will be reviewed and responded to in writing within 10 working days of receipt. Both complaints and responses will be recorded into the project monitoring. If the claimant is not satisfied with the response, the grievance may be submitted directly to the WWF US - GEF project agency.

A grievance can be filed with the Project Complaints Officer (PCO), a WWF staff member fully independent from the Project Team, who is responsible for the WWF Accountability and Grievance Mechanism and who can be reached at:

Email: SafeguardsComplaint@wwfus.org

Mailing address:

Project Complaints Officer

Safeguards Complaints,

World Wildlife Fund

1250 24th Street NW

Washington, DC 20037

The PCO will respond within 10 business days of receipt, and claims will be filed and included in project monitoring.

Stakeholders may also submit a complaint online or over the phone through EthicsPoint, an independent third-party platform at <https://secure.ethicspoint.com/domain/media/en/gui/59041/index.html>.

9. Monitoring and Reporting.

The target beneficiaries and project affected groups will not only be the source of information but also provide situational analysis for monitoring and reporting purposes. Given this, the process to monitor and report on progress of the stakeholder engagement will include and involve target beneficiaries and affected groups throughout the project cycle.

Throughout the project, the following will be involved in monitoring:

- Activities related to stakeholder engagement will be documented and reported by the PMU and LCUs on a half-yearly basis (as part of regular reporting). The monitoring visits and meetings

conducted will be documented and feedback reported back to the local communities (through means already identified) and stakeholders with concerns or interest in the site or activity.

- Independent third parties may be invited to confirm the implementation of this stakeholder engagement plan and other project targets. This will enable transparency, build confidence and encourage open opinions.
- WWF GEF Agency will also take part in monitoring for the purpose of supporting the project and support on issues affecting timely and quality project implementation. WWF US GEF Agency will review the quality of outputs and progress against the stakeholder engagement plan.
- The PSC will also take part in monitoring the project's compliance to the plan at least twice a year and advises (or take decisions) appropriately and as per the standards set forward for the stakeholders engagement plan.

Appendix 1: Overview of pre-project stakeholder engagement events

Date and location and of consultation	Group and type of stakeholders involved	Type and form of Information disclosed	Key issues discussed and raised concerns	Response to issues raised
14-15 November 2017: Stone Town, Zanzibar	FBD, TFS, DFNR, DoE (Zanzibar)	Minutes of the meeting; priorities from each departments/agencies/ministries; presentations; group and plenary discussions	Development of initial concept note based on deliberations from a 5 th Timber Trade Stakeholders Forum in Zanzibar held in June 2017 in Zanzibar Key decision of the meeting was a go ahead on the development of a GEF concept, facilitated by WWF	WWF initiated the development of concept note based on agreed priorities WWF's role as implementing agency was formalized through an exchange of letters between MNRT/FBD and WWF Tanzania
13 Dec 2017: Dodoma	FBD, DFNR, TFS, DoE	Draft concept note; presentations; group discussions; plenary	Draft concept note; Review of the draft concept note and developing next steps Key issue raised was the need to escalate the project concept to Ministerial level.	To revise the concept note FBD to present concept note to the Union Meeting on Cooperation and Implementation of International Agreements (February 2018)
24 May 2018: Dodoma	FBD, DFNR, TFS, DoE	Draft concept note; presentations; group discussions; plenary	Revised concept note, discussions and decisions on partnerships beyond forest (basis for June 2018 meeting)	Further development of concept note; communication of the concept note within MNRT (TFS, FBD), DoE and DFNR (and home ministry)

Date and location and of consultation	Group and type of stakeholders involved	Type and form of Information disclosed	Key issues discussed and raised concerns	Response to issues raised
12 June 2018: Dar-es-Salaam	National ministries and departments from mainland and Zanzibar: agriculture, water, land, fisheries, forest, wildlife; President's Office (Regional administration and local government; Vice President's Office (Environment) and Second Vice President (Environment)	Draft project concept note; Presentations; presentations; group discussions; plenary	The first national level multi-stakeholder meeting beyond forest; revising project concept note and putting this into PIF format(objectives, components); collating views and inputs from other ministries; To identify other important stakeholders	To revise the project concept note to incorporate inputs from agriculture, water, land and other key sectors; To conduct meetings with other identified stakeholders; To share the revised concept note ahead of Sept 2019 meeting
27-28 September 2018, Morogoro	National Ministries; Regulatory Authorities; Research institutes; Private Sector; and CSOs (IUCN, WWF-CARE alliance)	Draft project concept note with multi-sectoral and new partners; presentations; group discussions; plenary	Project concept note; initial discussion on project sites including criteria to be used for selection; discussions and decision to go for FOLUR Impact Program application; concern was raised on limited availability of baseline information	Each ministry and partner institutions to provide write ups for each component; identify their potential role and responsibility; and to share baseline information of other ongoing and planned projects/initiatives

Date and location and of consultation	Group and type of stakeholders involved	Type and form of Information disclosed	Key issues discussed and raised concerns	Response to issues raised
March 2019, Stone Town, Zanzibar	National Ministries; Regulatory Authorities; Research institutes; Private Sector; and CSOs (IUCN, TRAFFIC, WWF-CARE alliance); District and regional governments (North A and North B)	Draft project document in PIF format with multi-sectoral and new partners; presentations; group discussions; plenary; phone outreach to community representatives and other absentees to the meeting	Deep dive on development of full project document; fact checking and collecting inputs from the district level authorities; discussions on budget based on allocation	
July 2019, Zanzibar and Dodoma	National Ministries; Regulatory Authorities; Research institutes; Private Sector; CSOs (IUCN and WWF-CARE alliance, (Farmers associations); District governments	Project document; GEF policies and guidelines; initial list of stakeholders; presentations; plenary; group discussions	Kick-off workshop for the project development: Introduction and familiarisation of GEF-OFP for Tanzania; review and updating list of stakeholders; feedback and inputs gathering	Share the kick-off workshop

Date and location and of consultation	Group and type of stakeholders involved	Type and form of Information disclosed	Key issues discussed and raised concerns	Response to issues raised
October 2019, Zanzibar and Ifakara	National Ministries; Regulatory Authorities; Research institutes; Private Sector; CSOs (IUCN, TFCG, ReForest Africa, AWF, WWF-CARE alliance, Farmers associations); District and regional governments (North A and North B; Kilombero, Ifakara and Morogoro) and community representatives; Private Sector	Draft project document in PIF format with updated information; baseline information; roles and responsibilities; presentations; group discussions; plenary; phone outreach to community/district representatives and other absentees to the meeting	Sharing the draft project document and confirmed opportunity for FOLUR impact program; presentation of criteria of project sites and discussions on potential specific villages; deep dive on reviewing the project document and components; fact checking and collecting inputs from the district level authorities, local communities, farmers and rice traders associations	Incorporate inputs provided during this consultative meeting to update the project components, activities, roles and responsibilities; Further consult with all primary project partners and others to gather inputs on identified gaps
January 2020, Zanzibar and Dodoma	Project Development focal points from National Ministries, Regulatory Authorities, Research institutes and District governments	Hard copy review of project components; review of project sites, baseline information, and roles and responsibilities; review of stakeholders list; presentations; group discussions; plenary	Review and consolidation of further inputs of the project components; detailed discussion, description and consolidation of views of project sites	Incorporate inputs provided during this consultative meeting of focal points (and invited government officials)

Appendix 2 Overview of stakeholders and strategies for engagement

Stakeholder identification			Engagement strategy		
Name of stakeholder	Stakeholder Group	Interests (stake) in the project	Form of engagement	Focus of engagement	Timing and frequency
Ministry of Agriculture, Irrigation, Natural Resources and Livestock (MAINRL) and relevant sub-departments, Zanzibar	Government - Ministries, Regulatory Authorities and Agencies	Leading executing agency in Unguja Interest in project contribution to Govt. priorities, policies and strategies under its mandate	Workshops, in person, email, phone calls Representation in PSC Representation in Unguja LAC	Project implementation (strategic direction, workplans, budgets, progress monitoring, issue resolution) Grievance redress mechanism Alignment with Govt priorities, policies and strategies	Continuous engagement Bi-annual PSC meetings Bi-annual meetings of the Unguja LAC
Second Vice President's Office (VPO) – Department of Environment (DoE) - Zanzibar	Government - Ministries, Regulatory Authorities and Agencies	National GEF Focal point for Zanzibar Interest in project contribution to Govt. priorities, policies and strategies under its mandate	Workshops, in person, email, phone calls Representation in PSC Representation in Unguja LAC	Project implementation (strategic direction, workplans, budgets, progress monitoring, issue resolution) Grievance redress mechanism Alignment with Govt priorities, policies and strategies	Continuous engagement Bi-annual PSC meetings Bi-annual meetings of the Kilombero LAC
Ministry of Lands, Housing, Water and Energy (MLHWE), Zanzibar	Government - Ministries, Regulatory Authorities and Agencies	Co-executing Agency for catchment management planning in Unguja landscape	Workshops, in person, email, phone calls Representation in PSC	Project implementation (strategic direction, workplans, budgets, progress monitoring, issue resolution)	Continuous engagement Bi-annual PSC meetings Bi-annual meetings of the Unguja LAC

Stakeholder identification			Engagement strategy		
Name of stakeholder	Stakeholder Group	Interests (stake) in the project	Form of engagement	Focus of engagement	Timing and frequency
		Interest in project contribution to Govt. priorities, policies and strategies under its mandate	Representation in Unguja LAC	Grievance redress mechanism Alignment with Govt priorities, policies and strategies	
Ministry of Natural Resources and Tourism (MNRT)	Government - Ministries, Regulatory Authorities and Agencies	Lead Executing Agency through its Forest and Beekeeping Division (FBD) Interest in project contribution to Govt. priorities, policies and strategies under its mandate	Workshops, in person, email, phone calls Representation in PSC Representation in Kilombero LAC	Project implementation (strategic direction, workplans, budgets, progress monitoring, issue resolution) Grievance redress mechanism Alignment with Govt priorities, policies and strategies	Continuous engagement Bi-annual PSC meetings Bi-annual meetings of the Kilombero LAC
Ministry of Agriculture	Government - Ministries, Regulatory Authorities and Agencies	Co-executing Agency for agricultural value chain component in Kilombero landscape Interest in project contribution to Govt. priorities, policies and strategies under its mandate	Workshops, in person, email, phone calls Representation in PSC Representation in Kilombero LAC	Project implementation (strategic direction, workplans, budgets, progress monitoring, issue resolution) Grievance redress mechanism Alignment with Govt priorities, policies and strategies	Continuous engagement Bi-annual PSC meetings Bi-annual meetings of the Kilombero LAC

Stakeholder identification			Engagement strategy		
Name of stakeholder	Stakeholder Group	Interests (stake) in the project	Form of engagement	Focus of engagement	Timing and frequency
Ministry of Finance and Planning	Government - Ministries, Regulatory Authorities and Agencies	National supporting for the project - contracting, funding disbursement	Workshops, in person, email, phone calls Representation in PSC	Project accountability in alignment with Govt finance and procurement policies Project budget and disbursements to executing partners	Bi-annual PSC meetings Ad hoc engagement as needed
Ministry of Lands, Housing and Human Settlement Development – through NLUPC	Government - Ministries, Regulatory Authorities and Agencies	Co-executing Agency for ILM component in Kilombero landscape Interest in project contribution to Govt. priorities, policies and strategies under its mandate	Workshops, in person, email, phone calls Representation in PSC Representation in Kilombero LAC	Project implementation (strategic direction, workplans, budgets, progress monitoring, issue resolution) Grievance redress mechanism Alignment with Govt priorities, policies and strategies	Continuous engagement Bi-annual PSC meetings Bi-annual meetings of the Kilombero LAC
Ministry of Water and Irrigation – through RBWB	Government - Ministries, Regulatory Authorities and Agencies	Co-executing Agency for ILM component in Kilombero landscape Interest in project contribution to Govt. priorities, policies and strategies under its mandate	Workshops, in person, email, phone calls Representation in PSC Representation in Kilombero LAC	Project implementation (strategic direction, workplans, budgets, progress monitoring, issue resolution) Grievance redress mechanism	Continuous engagement Bi-annual PSC meetings Bi-annual meetings of the Kilombero LAC

Stakeholder identification			Engagement strategy		
Name of stakeholder	Stakeholder Group	Interests (stake) in the project	Form of engagement	Focus of engagement	Timing and frequency
				Alignment with Govt priorities, policies and strategies	
Ministry of Industry and Trade	Government - Ministries, Regulatory Authorities and Agencies	Interest in project contribution to Govt. priorities, policies and strategies under its mandate	Workshops, in person, email, phone calls Representation in Kilombero LAC	Alignment with Govt priorities, policies and strategies	Ad hoc engagement as needed Bi-annual meetings of the Kilombero LAC
TFS; TAWA	Government - Ministries, Regulatory Authorities and Agencies	Interest in project contribution to Govt. priorities, policies and strategies under its mandate	Workshops, in person, email, phone calls Representation in Kilombero LAC	Alignment with Govt agency priorities, policies and strategies	Ad hoc engagement as needed Bi-annual meetings of the Kilombero LAC
Zanzibar Commission for Tourism (ZCT); ZAWA; ZURA; National Irrigation Commission	Government - Ministries, Regulatory Authorities and Agencies	Interest in project contribution to Govt. priorities, policies and strategies under its mandate	Workshops, in person, email, phone calls Representation in Unguja LAC	Alignment with Govt agency priorities, policies and strategies	Ad hoc engagement as needed Bi-annual meetings of the Unguja LAC
President's Office - Regional Administration, Local Governments and Special Departments;	Government - Regional administration	Interest in project contribution to Govt. priorities, policies and	Workshops, in person, email, phone calls	Alignment with Govt agency priorities, policies and strategies	Ad hoc engagement as needed

Stakeholder identification			Engagement strategy		
Name of stakeholder	Stakeholder Group	Interests (stake) in the project	Form of engagement	Focus of engagement	Timing and frequency
Regional Commissioner NorthA&B		strategies under its mandate	Representation in Unguja LAC		Bi-annual meetings of the Unguja LAC
North A, North B District Authorities	Local Government Authorities	Executing partner in activities within the landscapes Interest in implementation of concrete work at district level	Workshops, in person, email, phone calls Representation in Unguja LAC	Implementation of project activities at landscape level Alignment with local Govt priorities, policies and strategies	Continuous engagement Bi-annual meetings of the Unguja LAC
Kilombero District Authorities	Local Government Authorities	Executing partner in activities within the landscapes Interest in implementation of concrete work at district level	Workshops, in person, email, phone calls Representation in Kilombero LAC	Implementation of project activities at landscape level Alignment with local Govt priorities, policies and strategies	Continuous engagement Bi-annual meetings of the Kilombero LAC
Tanzania Agricultural Research Institute (TARI); NCMC (SUA); TAFORI; Institute of Resource Assessment (IRA); Dakawa Rice irrigation scheme; International Rice Research Institute (IRRI)	Government - Research Institutes	Interest in technical findings and results of the project as a basis for science-based policy making Interest in sharing experiences and lessons from and to the project	Workshops, in person, email, phone calls Representation in Kilombero and Unguja LAC respectively	Implementation of project activities at landscape level Lessons learnt from project activities	Ad hoc engagement as needed Bi-annual meetings of the Kilombero and Unguja LACs

Stakeholder identification			Engagement strategy		
Name of stakeholder	Stakeholder Group	Interests (stake) in the project	Form of engagement	Focus of engagement	Timing and frequency
Members of parliament, Councillors, Village/Shehia chairpersons, regional commissioners, district commissioners,	Politicians	Interest in project contribution to Govt. priorities, policies and strategies	Workshops, in person, email, phone calls Representation in Kilombero and Unguja LAC respectively	Alignment with Govt agency priorities, policies and strategies	Ad hoc engagement as needed Bi-annual meetings of the Kilombero and Unguja LACs
Shehia's in North A, North B; Villages and Ward in Kilombero districts (including nomadic groups in the area who may not be residents of villages)	Communities	Interest in the direct benefits derived from the project	Target-group discussions, village meetings, training and awareness raising events	Project activities and potential benefits from engagement in the project	Ad hoc engagement as needed Regular consultation meetings (at least quarterly)
Southern Agricultural Growth Corridor for Tanzania (SAGCOT) Secretariat/Rice Council of Tanzania (RCT)	Private Sector partners and business organizations	Interest in possibilities for private sector engagement in the project, as well as benefits for the rice sector in general	Workshops, in person, email, phone calls Representation in Kilombero LAC	Components of work geared at private sector engagement in the rice sector Alignment with SAGCOT Green Print	Ad hoc engagement as needed Bi-annual meetings of the Kilombero LAC
Zanzibar Association for Tourism Investors (ZATI); Tanzania Agriculture Development Bank (TADB); Local Financial Institutions (CRDB, NMB, TPB etc); Kilombero	Private Sector partners and business organizations	Interest in possibilities for private sector engagement in the project, as well as benefits for private sector in general	Workshops, in person, email, phone calls Representation in Kilombero and Unguja LACs respectively	Components of work geared at private sector engagement in the rice sector as well as landscape restoration and management	Ad hoc engagement as needed Bi-annual meetings of the Kilombero and Unguja LACs

Stakeholder identification			Engagement strategy		
Name of stakeholder	Stakeholder Group	Interests (stake) in the project	Form of engagement	Focus of engagement	Timing and frequency
Plantations Ltd (KPL); Dick Lukaka Company					
Care Tanzania	Civil Society Organizations	Interest in the project's contribution to long-term sustainable landscape management Interest in lessons learnt from the project for upscaling elsewhere	Workshops, in person, email, phone calls Representation in Kilombero and Unguja LACs	Technical assistance on village land use planning, capacity building for farmers groups micro-credit and collective investment schemes for farmers	Continuous engagement Meetings of the Kilombero and Unguja LACs as appropriate
International Union for the Conservation of Nature (IUCN)	Civil Society Organizations	Interest in the project's contribution to long-term sustainable landscape management Interest in lessons learnt from the project for upscaling elsewhere	Workshops, in person, email, phone calls Representation in Kilombero and Unguja LACs	Technical assistance on ROAM assessment and land. soil and water management and restoration. Support to training and capacity building on ILM	Continuous engagement Representation in Kilombero and Unguja LACs
ANGOZA, MECA, MTANDAO WA VIKUNDI VYA WAKULIMA TANZANIA (MVIWATA); Reforest Africa; Tanzania Forest Conservation Group; Zanzibar Climate Change Alliance (ZACCA); Agricultural Marketing Cooperative Societies	Civil Society Organizations	Interest in contributing to project activities on the ground, including linkages with other work programs	Workshops, in person, email, phone calls Representation in Kilombero and Unguja LACs as appropriate	On-the-ground work under component 2 and 3 in particular; interests may vary	Ad hoc engagement as needed Bi-annual meetings of the Kilombero and Unguja LACs

Stakeholder identification			Engagement strategy		
Name of stakeholder	Stakeholder Group	Interests (stake) in the project	Form of engagement	Focus of engagement	Timing and frequency
(AMCOS); Africa Wildlife Foundation; TNC; AGRA					
World Bank, FAO, IFAD, TASAF, Korean International Cooperation Agency (KOICA); International Rice Research Institute (IRRI); UN Environment, Embassies and donor agencies (USAID, EU, Sida)	Others stakeholders	General interests in linkages with projects and programs under their mandate	Workshops, in person, email, phone calls	General project implementation and linkages with other initiatives	Ad hoc engagement as needed

Table 1 - Kilombero landscape

Barrier	Sub-barrier	Baseline	Project strategy	Reference
Inadequate institutional coordination and integrated planning systems for land and water use management	Inadequate integrated land and water use planning and management	Existing draft Kilombero District Land use Framework Plan and IWRM Plan for Rufiji basin	Map HCV areas and undertake a threats analysis of the Ruipa-Mngeta clusters as input into Land Use Dialogue process, with a particular focus on integrated land and water resources management	Output 1.1.1
		Various ongoing initiatives to support ILM at landscape level, including mapping and process-level facilitation, in particular through the IUCN-SUSTAIN, the Development Corridors Partnership and the Care-WWF Alliance support to SAGCOT.	Support further integration of sectoral plans (i.e. land use plans, IWRM plan, agricultural development plans etc.) including the development of implementation structures, a stakeholder database and institutional systems for integrated landscape management	Output 1.1.2
		Ongoing support to Land Use Dialogue and the Kilombero multi-Stakeholder Platform by the IUCN-SUSTAIN project and other initiatives.	Building on efforts under existing initiatives, including SAGCOT and SUSTAIN, further strengthen the existing Multi-Stakeholder Platform for integrated landscape planning and management for Kilombero landscape	
	Inadequate capacity and implementation strategies for ILM	Majority of villages in Kilombero District have in place village land use plans up to stage 4 (zoning) Village land use planning processes supported through different initiatives including SUSTAIN project Scoping study and assessment of policy inconsistencies and priority	Implement stage 5 and 6 land use planning for selected villages in Kilombero District, in priority areas as defined through output 1.1.1 Building on the work undertaken by SUSTAIN and other projects, undertake a scoping study for improved land tenure and water governance (tariff system, PES) systems to support	Output 1.1.3 Output 1.1.4

		<p>policy interventions related to selected sectors on land and water management scheduled under SUSTAIN project</p> <p>Capacity building for local public and private institutions focused environmental and social legislation (e.g. land tenure, environmental and social impact assessments, etc.), rights and participation of local communities, etc., including engagement with knowledge institutions to develop programmes which build capacity in public and private decision-makers, planned under SUSTAIN project</p>	<p>implementation of the land and water use plans in the landscape</p> <p>Support, as appropriate, initiatives that could establish and operationalize viable options in this regard</p>	
			<p>Conduct awareness raising, training and other forms of capacity building related to ILM in cooperation with key partners</p>	Output 1.1.5
Policy and market conditions do not provide adequate stimulus for sustainable agricultural practices and value chains	Absence of agreed standards, policies and strategies for sustainable, climate smart, rice value chains	<p>The current National Rice Development Strategy for mainland Tanzania falls short in defining an approach towards the long-term environmental sustainability of the sector</p> <p>Various approaches have been tested through a range of donor-funded initiatives, which has resulted in important lessons learnt that could form the basis for the development of a sustainable rice sector development strategy, as well as related standards</p> <p>Green Print for SAGCOT provides some level of guidance related to sustainable agricultural development</p>	<p>Capitalizing on past and present experiences and lessons learnt from projects in Tanzania, and considering international best practice, develop a clear sustainable value chain development strategy for the rice production sector</p> <p>Prepare related guidelines, standards, and training packages for public and private sector value chain actors in the rice sector</p>	<p>Output 2.1.1</p> <p>Output 2.1.2</p>
Inadequate farmer support	Inadequate farmer support systems and a lack of proof of concept to guide	In the rice sector, a number of donor-funded initiatives have components geared towards strengthening	Building the capacity of extension and other support services, including cooperative structures and resource	Output 2.2.1

systems and enabling conditions for private sector investment in sustainable value chains	farmers in the transition towards more sustainable rice production	<p>extension services, the establishment of farmers field schools, etc.</p> <p>Various projects and programs have been tested and demonstrated approaches related to sustainable rice intensification, providing a rich baseline of experiences</p> <p>Several ongoing initiatives that the project may build on, including USAID 'Feed the Future', with proposed investments in rice irrigation infrastructure, and the EU support to SAGCOT, with support of the smallholder rice sector and focus on post-harvest management</p> <p>A range of supporting institutions (TARI, ASA, SAGCOT Center, RCT) with dedicated support activities in the landscape</p>	<p>centers, for farmers and other value-chain actors (e.g. service providers, input suppliers) in the application of sustainable (climate smart, agro-ecological, conversion free) rice production through training and technical assistance</p>	
	Lack of clear business cases and public-private sector engagement for the development of sustainable rice value chains	Some work undertaken by the SAGCOT Secretariat and RCT to identify opportunities for private sector investment in sustainable rice intensification	<p>Support the operationalization of priority sustainable value chain initiatives as a demonstration of proof of concept</p> <p>Undertake opportunity analysis for private sector investments in sustainable rice production value chains in the target landscapes</p> <p>Strengthening access to finance for local farmer groups through the promotion of local credit and savings schemes</p> <p>Based on this opportunity analysis, support the development of clear business cases</p> <p>Establish mechanisms for public-private partnerships in sustainable rice sector development</p>	<p>Output 2.2.2</p> <p>Output 2.3.1</p> <p>Output 2.3.2</p>

Resource constraints, capacity limitations and lack of proven models of improved management and land restoration	<p>General lack of resources and capacity for effective (forest) land management and restoration</p>	<p>Extensive experience in forest landscape restoration and management projects in Tanzania</p> <p>Strong policy and regulatory framework for community-based approaches towards forest landscape management and restoration</p> <p>Existence of a considerable number of projects that work on forest landscape restoration, in particular in Kilombero; most notably, the project will be able to capitalize on the ongoing work on forest landscape restoration under the RESUPPLY, REFOREST and REGROW projects in the Kilombero region, which have strong overlapping scope and objectives</p>	<p>Building on the experiences of past and ongoing initiatives, support a number of target landscape restoration and management initiatives at strategic locations as identified through the integrated landscape planning exercises facilitated under component 1 of the project</p>	<p>Output 3.1.1</p> <p>Output 3.1.2</p>
	<p>Lack of sustainable landscape finance opportunities</p>	<p>Existing experiences with payment-for-ecosystem services (PES) schemes in Tanzania in a number of catchment areas</p> <p>Ongoing attempts to establish a PES scheme for the upper catchment area of the Kilombero Valley through USAID WARIDI project (closing in 2020); scheme currently on hold as private sector partner gone bankrupt</p> <p>Platform for investments in forest landscape restoration to be established through the IUCN Bonn Challenge Initiative</p>	<p>Identify opportunities for, and support the development of proposals for fiscal/financial schemes to incentivize investment for restoration in degraded lands, targeting small-scale farmers and larger private sector</p>	<p>3.1.3</p>

Table 2 - Unguja landscape

Barrier	Sub-barrier	Baseline	Project strategy	Reference
Inadequate institutional coordination and integrated planning systems for land and water use management	Inadequate integrated land and water use planning and management	National Land use Plan existing and early attempt to develop an integrated land use management plan for part of North A District, through Finnish funding	Map HCV areas and undertake a threats analysis as input into the development of the Kiashange-Mokotoni and Kinyasini-Kisongoni Landscape Management Plans, with a particular focus on integrated land and water resources management	Output 1.1.1
			Support development of an ILM Plan for the Kiashange-Mokotoni and Kinyasini-Kisongoni catchment areas, related to the Kisongoni irrigation scheme	Output 1.1.2
			Facilitate further integration of sectoral plans, including the development of implementation structures and institutional systems for integrated landscape management	
			Establishment and functioning of multistakeholder platform for the development of the Kiashange-Mokotoni and Kinyasini-Kisongoni landscape area management plans	
	Inadequate capacity and implementation strategies for ILM	Complete lack of local area ILM plans prevents effective trade-offs and decision-making at local (village) level	Development of local area management plans for Shehia's located in priority areas as defined through output 1.1.1	Output 1.1.3
			Undertake a scoping study for improved land tenure and water governance (tariff system, PES) systems to support implementation of	Output 1.1.4

			<p>the land and water use plans in the landscape</p> <p>Support, as appropriate, initiatives that could establish and operationalize viable options in this regard</p>	
			Carry out awareness raising, training and other forms of capacity building related to ILM	Output 1.1.5
Policy and market conditions do not provide adequate stimulus for sustainable agricultural practices and value chains	Absence of agreed standards, policies and strategies for sustainable, climate smart, rice value chains	<p>Zanzibar does currently not have a targeted rice sector strategy but elements are captured in the Agricultural Transformation Initiative.</p> <p>Various approaches have been tested through a range of donor-funded initiatives, which has resulted in important lessons learnt that could form the basis for the development of a sustainable rice sector development strategy, as well as related standards</p>	Capitalizing on past and present experiences and lessons learnt from projects in Tanzania, and considering international best practice, develop a clear sustainable value chain development strategy for the rice production sector	Output 2.1.1
			Prepare related guidelines, standards, and training packages for public and private sector value chain actors in the rice sector	Output 2.1.2
Inadequate farmer support systems and enabling conditions for private sector investment in sustainable value chains	Inadequate farmer support systems and a lack of proof of concept to guide farmers in the transition towards more sustainable rice production	<p>Efforts towards building the capacity of developing farmer support services, including strengthening extension services are being undertaken as part of the Agricultural Transformation Initiative, but not specifically geared towards the rice sector</p> <p>Various projects and programs have been tested and demonstrated approaches related to sustainable rice intensification, providing a rich baseline of experiences</p>	Building the capacity of extension and other support services, including cooperative structures and resource centers, for farmers and other value-chain actors (e.g. service providers, input suppliers) in the application of sustainable (climate smart, agro-ecological, conversion free) rice production through training and technical assistance	Output 2.2.1
			Support the operationalization of priority sustainable value chain initiatives as a demonstration of proof of concept	Output 2.2.2

	Lack of clear business cases and supporting enabling conditions for private sector investments in sustainable rice value chains	No specific work going on in this regard	<p>Undertake opportunity analysis for private sector investments in sustainable rice production value chains in the target landscapes</p> <p>Strengthening access to finance for local farmer groups through the promotion of local credit and savings schemes</p> <p>Based on this opportunity analysis, support the development of clear business cases</p> <p>Establish mechanisms for public-private partnerships in sustainable rice sector development</p>	<p>Output 2.3.1</p> <p>Output 2.3.2</p>
Resource constraints, capacity limitations and lack of proven models of improved management and land restoration	General lack of resources and capacity for effective (forest) land management and restoration	<p>Experience in forest landscape restoration and management projects in Zanzibar</p> <p>Strong policy and regulatory framework for community-based approaches towards forest landscape management and restoration</p> <p>Existence of other forest landscape restoration projects; most notably, the project will be able to capitalize on the ongoing work on forest landscape restoration under the Care Evergreen Project and the , which has strong overlapping scope and the WWF 'Restoration of Mangrove Forests on Zanzibar' project</p>	Building on the experiences of past and ongoing initiatives, support a number of target landscape restoration and management initiatives at strategic locations as identified through the integrated landscape planning exercises facilitated under component 1 of the project	<p>Output 3.1.1</p> <p>Output 3.1.2</p>
	Lack of sustainable landscape finance opportunities	Existing experiences with payment-for-ecosystem services (PES) schemes in Tanzania in a number of catchment areas	Identify opportunities for, and support the development of proposals for fiscal/financial schemes to incentivize investment for restoration in degraded	3.1.3

Platform for investments in forest lands, targeting small-scale farmers
landscape restoration to be and larger private sector
established through the IUCN Bonn
Challenge Initiative

Annex 6 Site selection process and criteria

During the PPG phase, several activities were developed in order to select a short-list of potentially eligible sites for GEF funding under the various project components, in particular:

- Output 1.1.3: Local area (village) land use plans, based on priority areas identified in the Landscape Management Plans
- Output 2.2.2: Priority sustainable value chain initiatives in the rice production sector supported and operationalized
- Output 3.1.1: Restoration of degraded lands in target locations based on the ILM plans (output 1.1.3)
- Output 3.1.2: Management of priority HCV areas within the target landscapes through proven models (e.g. certification, Village Forest Land Reserves and PPP)

The selection process for the short listed sites considered a number of criteria considered essential for the project, as follows:

4. **Presence of competing environmental (biodiversity) and agricultural (rice) development interests:** The project would focus on sites where the expansion of the rice sector in particular conflicts with interests from an environmental conservation perspective, e.g. where encroachment into forests, wetlands or other biodiversity areas is either already happening or bound to happen, or vice-versa where there are existing conflicts and/or concerns related to natural resources use, including water and land, that are impacting on these rice expansion plans.
5. **Potential for successful implementation of project activities:** This involves assessing:
 - a. The interest and willingness of communities and other partners to engage in project activities;
 - b. The presence of past or existing projects and initiatives on which this project might build; and
 - c. Technical and financial viability, e.g. local factors that may influence the technical and financial feasibility of the improved farming practices or the potential for successful restoration or improved management of the ecological values of the sites.
6. **Convergence of interests between Government sectors:** The project will build on areas or issues already identified by Government as priorities. This may include\ e.g. existing reserved areas and community forest areas, water protection areas, agricultural strategies, irrigation plans/project areas, among others.

Based on the above criteria, the process to select project sites followed five major steps:

Step 1: Scoping: Consultation with district and national stakeholders

- An initial shortlist of potential project sites was identified during project stakeholder meetings held in July 2019 in Dodoma and Zanzibar. These meetings were attended largely by national government stakeholders and representatives from the district governments. This initial list was representative of the views from Government perspective in particular, and reflected on all three criteria, including specifically criteria number 3. Further confirmation of this initial list was sought through an analysis of existing documentation, at both technical and policy level.

Step 2: Locally based consultations and fact finding: consultation with local communities, national and district stakeholders

- The initially proposed sites were subsequently visited during a field visit in October 2019, when also meetings with the concerned communities were organized to test the eligibility of the sites, as well as the interests of the communities themselves.
- During the workshops (held separately for Kilombero and Zanzibar), district government focal points and partners working on the district were provided with the opportunity to make presentations on situational analysis and potential sites based on the criteria. In this case, a discussion was held within the meeting room, at district offices and individuals (district staff, partner officials) to further understand the sites and make decisions on where to visit and meet the local communities.
- The discussions at the workshops were complimented by meetings with district government officials to get their perspective and gather more information on past, current and planned initiatives across the districts. In these discussions, criteria for the sites were revisited several times to ensure consistency.
- During the drive to communities in Kilombero, cars were split and organised to allow for further discussions on the sites with partners working on the ground and district officials. In Zanzibar, all participants were put in one bus given the short distance and reasonable good conditions which allowed good discussions to the sites.
- At community level and visit to various sites, focus group discussions and individual discussions were held where time was set-up to gather inputs, feedback and suggestions on the potential sites.
- After the meetings and field visits, more analysis on the sites was done in development and writing of project components 1 to 3, particularly on matching between activities and specific sites. This process used information collected during the October workshops, field visit notes, literature review that exists from the landscapes and continued individual follow up with district government focal points. It is important to note here that the district governments would, in many occasions, take time to provide feedback because they needed to consult and gather more information from the local communities.

Step 3: Profiling and Selection of potential project sites with local governments and project development focal points

- In January 2020, two workshops were held to further profile the potential project sites based on the analysis that was done for each component. The analysis also included data to be collected for a thorough understanding of baseline conditions (as per the criteria) of the sites and gauging potential contribution by the project.
- For Kilombero, the landscape was firstly divided into two broad geographical areas, taking into account existing VLUPs, level of rice production, level of degradation and costs of operation of the project given the distances and roads conditions. The landscape was then divided into four major clusters (see below) where each cluster was further analysed on the flip chart using the existing criteria i.e. rice production level, willingness of communities as per the visits conducted in October 2019, level of threats, presence of conservation sites that are connected to rice, river systems and the Kibasila swamp.
- A similar process took place in Zanzibar where using the flip-chart, officials from both ministries and local district authorities took part in walking through the criteria and selecting the sites. For Zanzibar, the main criteria used was the overlay of various features including potential water catchments, the groundwater aquifer system, the constructed water rice irrigation dam and its catchment, the sharing of water sources between rice farming and hotel industry, and the high conservation value areas (i.e coral rags areas, wetlands).

Step 4: Data gap filling and ground-truthing: field visit, remote sensing and GIS data analysis

- A further analysis was done to validate the potential sites using remote sensing, mapping and field visits by the project development team. This analysis and field visit involved collection of actual GPS points on sites visited in October 2020, mapping using high-resolution data (10m - 2.5m) resolution for emphasis on rice fields, and detailed land use change maps to provide time series indication of habitat and land characteristics changes.
- The mapping exercise and land-use change maps covered a total of 63 wards (20 in Ungwa and 43 in Kilombero). A separate report for this analysis was produced and descriptions of competing environmental and agricultural characteristics were produced (Map 1 and Map 2) with associated maps.
- Table 1 shows an analysis of the potential project sites according to the agreed selection criteria. These potential sites are then ranked using criteria in Table 2. The details on each of the shortlisted sites are presented in Table 3, including an initial indication of proposed site-specific interventions.

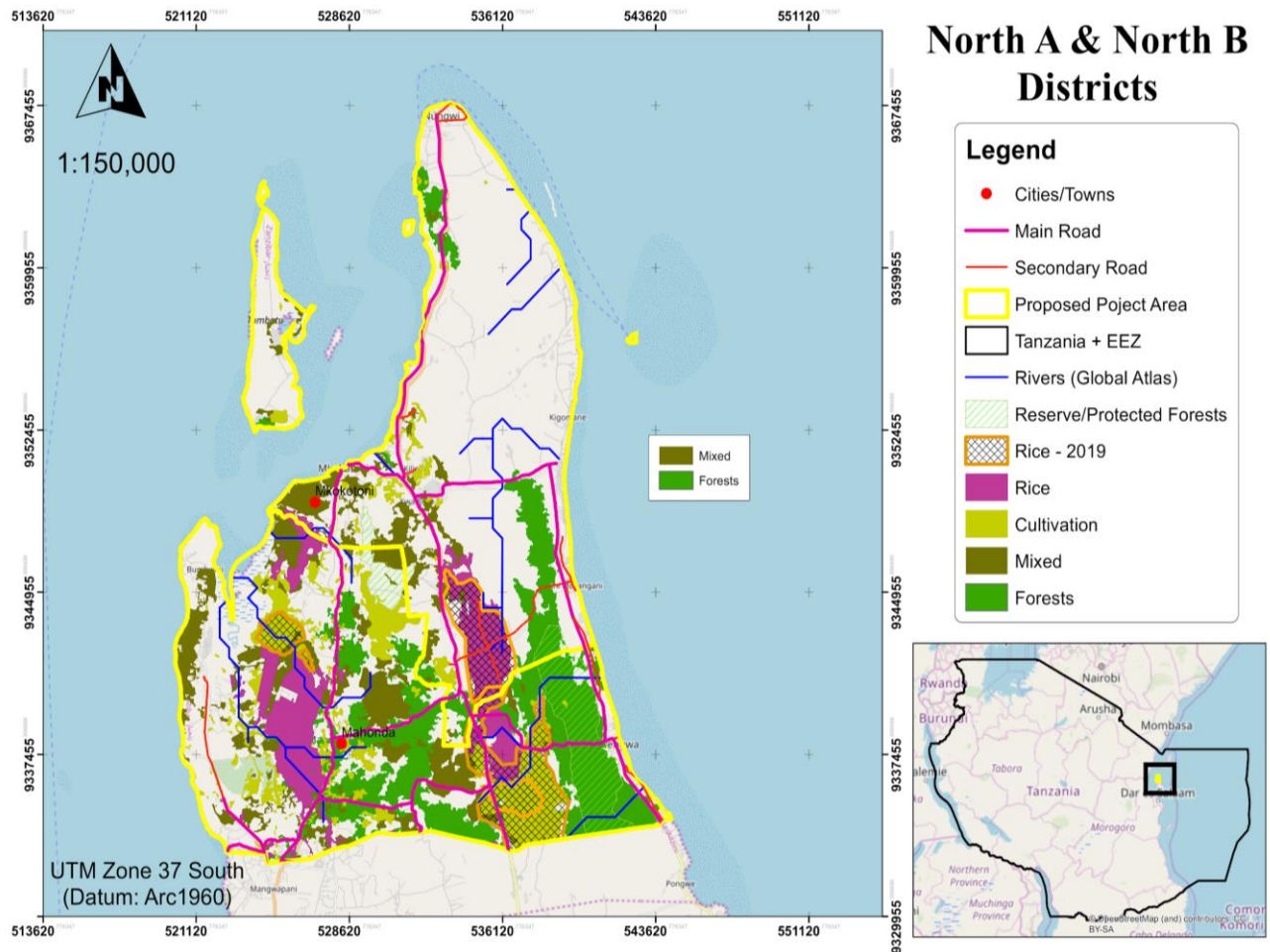


Figure 1: Environmental and Agricultural Characteristics of potential sites for Northern Unguja

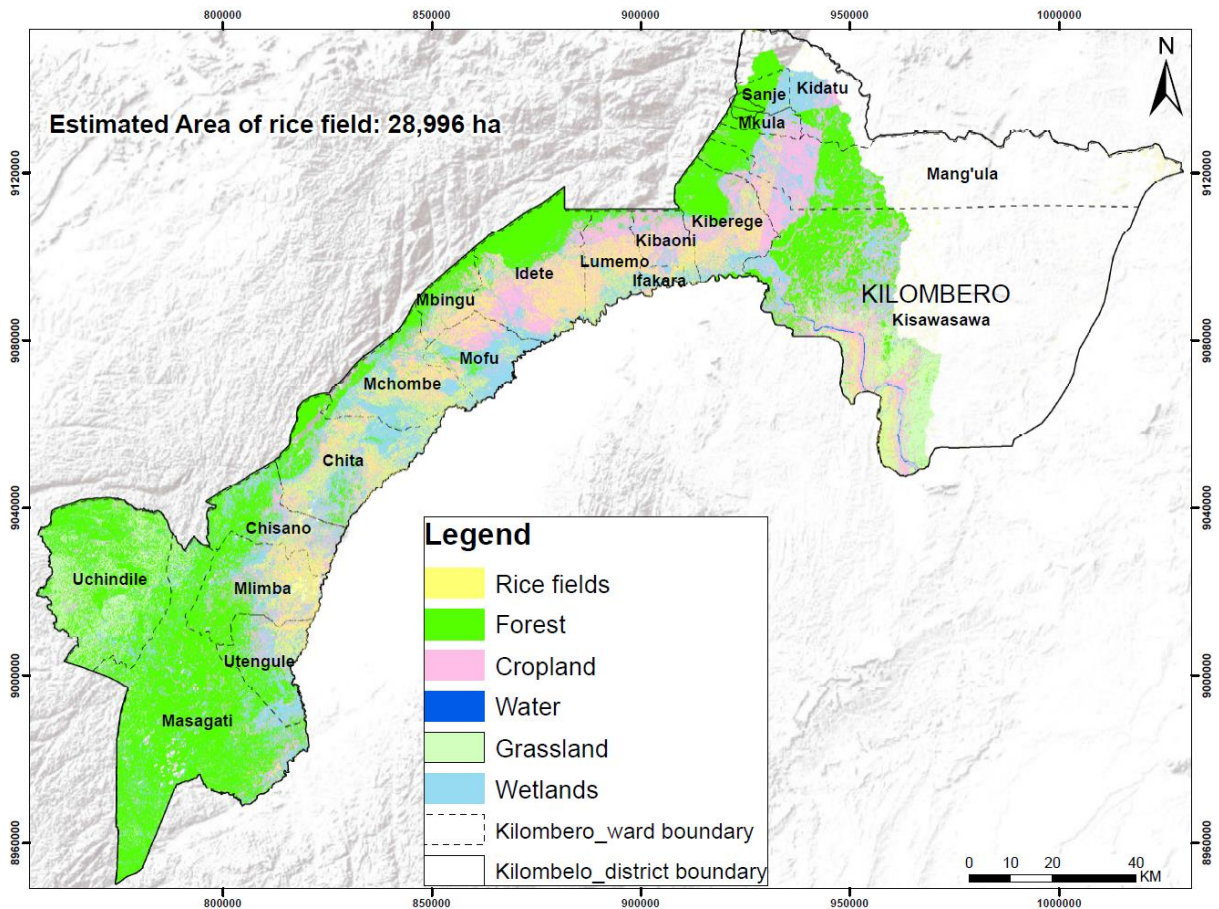


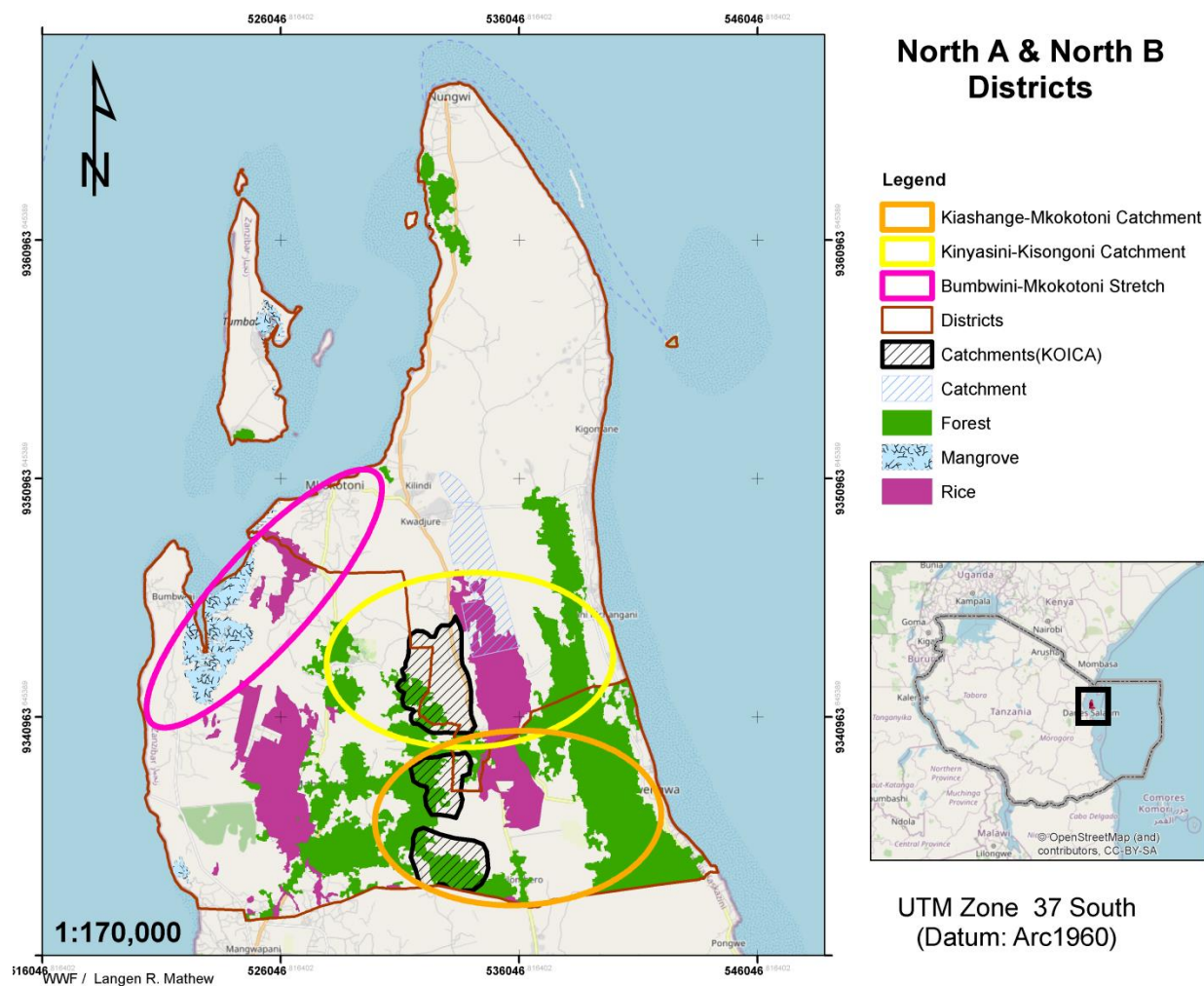
Figure 2: Environmental and Agricultural Characteristics of potential sites for Kilombero

Step 5: Ranking of potential sites against criteria and next steps

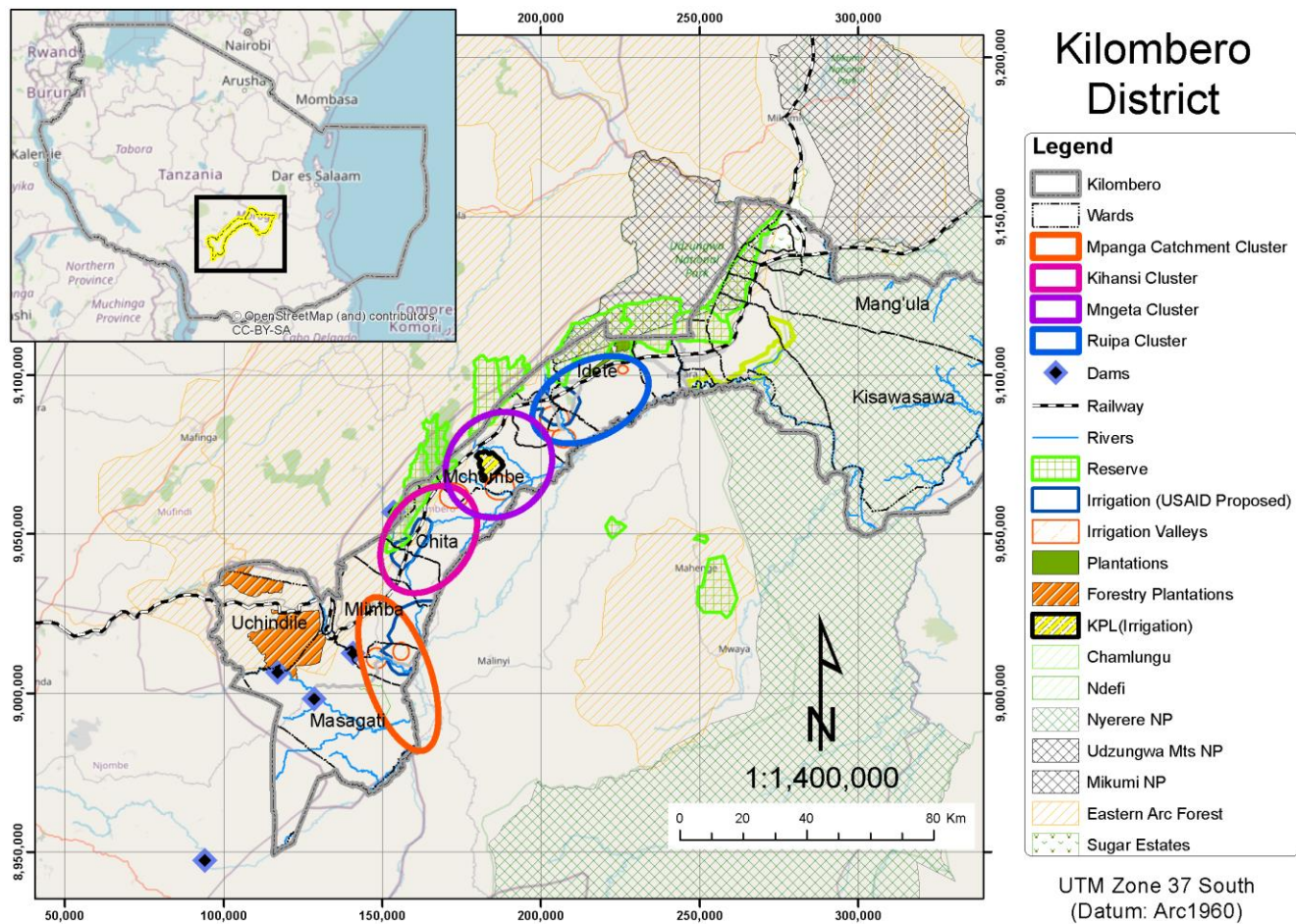
- The potential sites were then objectively ranked (Table 2) using the agreed criteria but with specific emphasis on the extent to which rice act as a major threat (i.e. related to water abstraction for irrigation, degradation and encroachment into forest, wetland and other HCV areas) to environmental and biodiversity values in the site; and the potential for the project to have incremental value due to an existing baseline or planned initiatives that the project can build on, thus maximizing the technical and financial viability of interventions. In regard to the latter, the criteria considered the existence of land use and local area plans, and existing or planned expansion in rice production, in particular through irrigation schemes. The analysis is based primarily on information presented in Table 1, and validated through individual follow-up (by phone calls) to district government officials in Kilombero and ministry officials (agriculture) in Zanzibar.
- As per the current analysis and based on ranking in Table 2, the recommendation is that Ruipa and Mngeta clusters are selected as potential sites for Kilombero landscape, and Kinyasini-Kisongoni-Chaani and Kiashange-Mkokotoni Catchments are selected as potential sites for

Northern Unguja landscape. In regard to the latter, noted should be that the Kiashange-Mkokotoni and Kisongoni-Chaani will make up to more than 60% of rice fields in Northern Unguja once the irrigation project is completed. Moreover, as these will in part be new rice fields to be developed, this provides an important opportunity for the project to influence these future developments and ensure that this does not adversely impact the key environmental assets in the area.

- A final selection of project intervention sites will be made during the actual project implementation phase. Various levels of analysis, in this regard, are foreseen as part of the project intervention framework, including in particular Output 1.1.1 - HCV areas and priority ecosystems including priority areas for restoration identified, mapped, and threat analysis undertaken – which will provide a stronger basis for site selection.
- For these short-listed sites, the recommendation is that willingness and interest by the local communities in the listed site be re-assessed in light of any political, economic or social change that may occur. The process of selection of final project sites will be based on the pre-agreed selection criteria as defined in this annex and, with a final decision on sites to be validated by the Project Steering Committee, upon proposal by the Project Management Unit.



Map 3: potential project intervention areas for Northern Unguja.



Map 4: Potential project intervention areas for Kilombero

Table 1 Shortlisting of potential project sites according to selection criteria

(✓ Meets criteria, o somewhat meets criteria, ✗ Does not meet criteria)

Name of the community/site	Competing conservation and agricultural interests	Potential for successful implementation			Converging interest between sectors
		Interest/willingness of communities	Past/current project	Technical/financial viability	
Kilombero					
Ruipa Cluster (Wards: Idete, Lumelo, Mbingu, Mchombe, Mofu)	<ul style="list-style-type: none">- Number 3 in rice production in the landscape- Low degradation in upper land (KNR) compared to low land (Kibasila swamp)- Hosts a major wildlife corridor	<ul style="list-style-type: none">- Mbingu, Mofu, Igima and Namawala wards are interested	<ul style="list-style-type: none">- Many existing VLUPs- Government has a plan to construct Ruipa irrigation scheme- There is plan to build tarmac road for Ifakara-Mbingu-Mlimba- Past involvement in	<ul style="list-style-type: none">- Limited cost of project operation due to distance from district capital and road conditions (although higher than Ruipa)- Financial viability ranking (2)	Agriculture (irrigation and rice), forest and wildlife (GCA)
Mngeta Cluster (Wards: Mngeta, Mchombe)	<ul style="list-style-type: none">- Number 1 in rice production in the landscape- Both sides (low and upper land) of the cluster are degraded- Hosts King’uling’uli forest reserve (Njagi village) and shares two important conservation areas with Kihansi i.e. Udzungwa escarpment and Kihansi	<ul style="list-style-type: none">- Mngeta and Mchombe wards are interested	<ul style="list-style-type: none">- Many existing VLUPs- Ongoing construction of irrigation scheme in Njagi village (Njagi river) connected to Njagi forest reserve- Ongoing KPL irrigation scheme, demonstration farms and rice plantation	<ul style="list-style-type: none">- Low cost of project operation as close to district capital and road conditions- Financial viability ranking (1)	Agriculture (irrigation and rice), forest and wildlife (GCA)

Name of the community/site	Competing conservation and agricultural interests	Potential for successful implementation			Converging interest between sectors
		Interest/willingness of communities	Past/current project	Technical/financial viability	
Kihansi Cluster (Wards: Chisano, Ching'anda and Chita)	<ul style="list-style-type: none"> - Number 2 in rice production - Both sides (low and upper land) of the cluster are degraded - Hosts a forest reserve (Udagaji) and shares two important conservation areas with Mngeta i.e. Udzungwa escarpment and Kihansi 	- Chisano, Ching'anda and Chita wards are interested	-Many existing VLUPs	<ul style="list-style-type: none"> - Limited cost of project operation due to distance from district capital and road conditions (although higher than Ruipa and Mngeta) - Financial viability ranking (3) 	Agriculture (irrigation and rice), forest, wildlife (GCA), electricity generation
Mpanga catchment cluster (Wards: Utengule and Msagati)	<ul style="list-style-type: none"> - Number 4 in rice production - There is sesame agriculture production in upland areas - Last remaining refuge of Puku population - Hosting hunting block connected to the Game Control Area, as well as Ngapemba dam (natural) for fishing - Highly degraded low lands 	- Utengule and Masagati wards are interested	-Many existing VLUPs	<ul style="list-style-type: none"> - Higher cost of project operation due to distance from the district capital (higher than Ruipa, Kihansi and Mngeta) - Financial viability ranking (4) 	Agriculture (irrigation and rice), forest and wildlife (GCA)
Mang'ula cluster (Wards: Kibaoni, Kiberege,	<ul style="list-style-type: none"> - Less rice production 	- No interest was ranked here as this cluster was	- Not many existing VLUPs	- High cost of project operation due to	

Name of the community/site	Competing conservation and agricultural interests	Potential for successful implementation			Converging interest between sectors
		Interest/willingness of communities	Past/current project	Technical/financial viability	
Kisawasawa, Mang'ula, Mkula)	<ul style="list-style-type: none"> compared to the four clusters Limited level of degradation and livestock encroachment 	not visited and it was proposed only in January 2020		<ul style="list-style-type: none"> distance and road conditions (higher than all other clusters) Financial viability ranking (4) 	
Zanzibar					
Kiashange-Mkokotoni Catchment (Shehias: Kinyasini, Bandamaji, Donge Karage, Donge Vijibweni, Chaani Kubw, Kibokweni, Mcheza Shauri, Kandwi and Pwani Mchangani)	<ul style="list-style-type: none"> The area include coral rag forest and is a water catchment area (wetland) for North A Presence of forests regenerating forest area patches; streams; irrigated rice and sugarcane Threatened by settlement and agriculture (rice) ZAWA does not have title deed for the water source, which creates inherent conflicts over resources This catchment is connected to the Zanzibar aquifer and 	<ul style="list-style-type: none"> There is willingness from farmers based on the field visit conducted in October 2019 The area is surrounded by five Shehias - Mkwajuniu, Matemwe, Kijini Chutama, Kibeni and Kivungwe 	<ul style="list-style-type: none"> ZAWA constructed boreholes and water supply systems to hotels and domestic houses 	<ul style="list-style-type: none"> Potential for private sector (hotels) to be involved in the PES scheme 	<ul style="list-style-type: none"> The catchment is a water source for farmland, domestic uses and for hotel industry in North A Forest, water, land and tourism

Name of the community/site	Competing conservation and agricultural interests	Potential for successful implementation			Converging interest between sectors
		Interest/willingness of communities	Past/current project	Technical/financial viability	
	recharging system - Rice farming largely dependent on irrigation (through boreholes).				
Kinyasini-Kisongoni-Chaani catchment (Shehias: Kilombero, Mgambo, Kisongoni, Upeja, Kiwengwa, Mbaleni, and Njia ya Mtoni)	<ul style="list-style-type: none"> - There is ongoing construction of a water dam for rice farming at Kinyasini with no conservation/restoration plan. The irrigation project is expected to add an additional 1,524 Ha (estimated) of rice fields. - Characterised by streams, irrigated rice and sugarcane - There is also plan to build a second dam at Chaani using boreholes to supply water for rice farming - This is a wetland and water catchment area - This catchment is connected to 	<ul style="list-style-type: none"> - There is willingness and interest from farmers and communities based on the field visit conducted in October 2019 	<ul style="list-style-type: none"> - Ongoing Korea Exim project on irrigation infrastructure for rice farming 	<ul style="list-style-type: none"> - Potential for private sector (hotels) to be involved in the PES scheme 	<ul style="list-style-type: none"> - The catchment is a water source for farmland, domestic uses and for hotel industry in North A and B - Forest, water, land and tourism

Name of the community/site	Competing conservation and agricultural interests	Potential for successful implementation			Converging interest between sectors
		Interest/willingness of communities	Past/current project	Technical/financial viability	
	<p>the Zanzibar aquifer and recharging system</p> <ul style="list-style-type: none"> - Threatened by siltation due to present and increased settlements - The area is connected to the the largest rice farming area in Zanzibar and Kiwengwa forest - Rice farming largely depend on irrigation 				
<p>Bumbwini (Mkokotoni to Bumbwini stretch) (Shehias: Donge Mohangani, Mafufuni, Makoba, Donge Mbiji, Mnyimbi)</p>	<ul style="list-style-type: none"> - The area is characterized by mangrove strands along the coastline which are also connected to the rice fields - Rice farming is rain-fed - The area is also faced with sea water intrusion into rice fields which led to most farms being abandoned 	<ul style="list-style-type: none"> - There is willingness from farmers and communities based on the field visit conducted in October 2019 		-	<ul style="list-style-type: none"> - Forests (mangroves) and rice farming, fisheries

Table 2: Ranking of potential sites

Potential project sites	Ranking (Low/Medium/High) if the proposed site meets criteria		Rank based on all criteria
	Potential of rice farming as a major threat to environmental and biodiversity values	Potential for Incremental value	
Kilombero			
Ruipa Cluster	High	High	1
Mngeta Cluster	High	High	2
Kihansi Cluster	High	Medium	3
Mpanga catchment cluster	Low	Medium	4
Mang’ula cluster	Medium	Low	5
Unguja North			
Kiashange-Mkokotoni Catchment	High	High	2
Kinyasini-Kisongoni-Chaani catchment	High	High	1
Bumbwini (Mkokotoni to Bumbwini stretch)	Medium	Low	3

Table 3 Short list of proposed protect intervention per selected project site

Name of the community/site	Description of site specific issues as relevant to the project	Proposed project interventions		
		Integrated landscape management	Sustainable value chains	Landscape management & restoration
Kilombero				
Ruipa Cluster (Wards: Idete, Lumelo, Mbingu, Mchombe, Mofu)	<ul style="list-style-type: none"> - Ranked number 3 in rice production in Kilombero district characterised by low-intensity agricultural development. - The rice farming in this cluster is characterised by unsustainable practices including farming on river banks, use of improper pesticides, poor post-production handling - Lack of controls and efficient mechanisms of water use and extraction from the river systems - High land degradation towards Kibasila swamp - Many existing VLUPs in villages which could form good basis for scaling-up - There is wildlife corridor which is faced by unsustainable extraction and use of wood and other natural resources - The central government has a plan to construct Ruipa irrigation scheme (according to the district) which could impact rice production/expansion in the area 	<ul style="list-style-type: none"> - Study to identify, map HCV and rice growing areas and opportunities for restoration - Identification and mapping of surface water areas, wetland and natural ponds - Implementation of IWRMP plan and establishing integrated institutional systems between communities, district council and RBWB - Finalization and implementation of VLUPs in identified villages - Capacity building and outreach of communities, village government and committees (e.g. WUAs) 	<ul style="list-style-type: none"> - Field assessment and analysis of rice value/market chain - Capacity building of farmers on sustainable rice farming practices - Support to priority initiatives on sustainable rice farming - Development of opportunities for smallholder farmers to access finance 	<ul style="list-style-type: none"> - Support communities to examine existing efforts, and define priority areas and sites for restoration in identified villages - Support communities in identified villages to implement specific land, water, forest restoration activities (e.g. management approaches and plans) - Support communities to monitor progress of restoration
Mngeta Cluster (Wards: Mngeta, Mchombe)	<ul style="list-style-type: none"> - Ranked number 1 in rice production in Kilombero district, characterised by low-intensity agricultural development. 	<ul style="list-style-type: none"> - Study to identify, map HCV and rice growing areas and opportunities for restoration 	<ul style="list-style-type: none"> - Field assessment and analysis of rice 	<ul style="list-style-type: none"> - Support communities to examine existing efforts, and

Name of the community/site	Description of site specific issues as relevant to the project	Proposed project interventions		
		Integrated landscape management	Sustainable value chains	Landscape management & restoration
	<ul style="list-style-type: none"> - The rice farming in this cluster is characterised by farming on river banks, use of improper pesticides, poor post-production handling - There is high land degradation from rice (mostly) and other crops cultivation - Lack of controls and efficient mechanisms of water use and extraction from the river systems - The area is faced with competing pressures on biodiversity on Mngeta river for irrigation, King'uling'uli forest reserve (Njagi village), and lowland for rice field expansion - The cluster shares two important conservation areas with Kihansi i.e. Udzungwa escarpment and Kihansi - There is ongoing construction of irrigation scheme in Njagi village (Njagi river) connected to Njagi forest reserve which is under pressure from unsustainable extraction and use of wood resources - There is ongoing KPL irrigation scheme and rice plantation which offer basis for scaling up and engagement with private sector 	<ul style="list-style-type: none"> - Identification and mapping of surface water areas, wetland and natural ponds - Formalizing IWRMP plan and establishing integrated institutional systems between communities, district council and RBWB - Finalization and implementation of VLUPs in identified villages - Capacity building and outreach of communities, village government and committees (e.g. WUAs) 	<ul style="list-style-type: none"> value/market chain - Capacity building of farmers on sustainable rice farming practices - Support to priority initiatives for sustainable rice production - Development of opportunities for smallholder farmers to access finance 	<ul style="list-style-type: none"> define priority areas and sites for restoration in identified villages - Support communities in identified villages to implement specific land, water, forest restoration activities (e.g. management approaches and plans) - Support communities to monitor progress of restoration

Name of the community/site	Description of site specific issues as relevant to the project	Proposed project interventions		
		Integrated landscape management	Sustainable value chains	Landscape management & restoration
Zanzibar				
Kiashange-Mkokotoni Catchment (Sehias: Kinyasini, Bandamaji, Donge Karage, Donge Vijibweni, Chaani Kubw, Kibokweni, Mcheza Shauri, Kandwi and Pwani Mchangani)	<ul style="list-style-type: none"> - The catchment which is not legally recognized does has inadequate institutional coordination lack integrated planning systems for land and water use management - The rice agricultural sector lacks adequate support systems to enable private sector role and investment in sustainable value chains - The area is a water catchment area (wetland) for North A and supplies water to rice fields in surrounding Shehias - The coral rag forests are under pressure from dependence on domestic needs including charcoal, fuel wood and construction materials - The rice in this catchment is largely low-intensity irrigated agricultural production - Lack of controls and efficient mechanisms of water use and extraction from underground and surface water sources - Poor post-production handling and encroachment into water sources and wetlands - The area is threatened by pressure from agriculture (rice) and water 	<ul style="list-style-type: none"> - Study to identify, map HCV and rice growing areas and opportunities for restoration - Identification and mapping of surface water areas, wetland and natural ponds - Development of catchment management plan - Development, finalisation and implementation of Local Area Land use plans in identified Shehias - Assessments: effectiveness of water and land governance systems; and cost related to managing, restoring and conserving water catchment - Capacity building and outreach to Shehia committees on water governance and land tenure systems 	<ul style="list-style-type: none"> - Field assessment and analysis of rice value/market chain - Capacity building of farmers on sustainable rice farming practices - Support to priority initiatives for sustainable rice production - Development of opportunities for smallholder farmers to access finance 	<ul style="list-style-type: none"> - Support communities to examine existing efforts, and define priority areas and sites for restoration in identified villages - Support communities in identified villages to implement specific land, water, forest restoration activities (e.g. management approaches and plans) - Support communities to monitor progress of restoration

Name of the community/site	Description of site specific issues as relevant to the project	Proposed project interventions		
		Integrated landscape management	Sustainable value chains	Landscape management & restoration
	<p>abstraction (surface and underground)</p> <ul style="list-style-type: none"> - ZAWA does not have title deed for most water sources and which means the catchment do not have legal protection - This catchment is connected to the Zanzibar aquifer and national recharging system which poses risks to the water supply - ZAWA has constructed boreholes and water supply systems for hotels and domestic houses despite the limited information on water availability and recharging rate. 			
Kinyasini-Kisongoni-Chaani catchment (Shehias: Kilombero, Mgambo, Kisongoni, Upeja, Kiwengwa, Mbaleni, and Njia ya Mtoni)	<ul style="list-style-type: none"> - The catchment which is not legally recognized has inadequate institutional coordination and lack integrated planning systems for land and water use management - The rice agricultural sector lacks adequate support systems to enable private sector role and investment in sustainable value chains - There is ongoing construction of water dam for rice farming at Kinyasini with no catchment management, conservation/restoration plan 	<ul style="list-style-type: none"> - Study to identify, map HCV and rice growing areas and opportunities for restoration - Identification and mapping of surface water areas, wetland and natural ponds - Development of catchment management plan - Development, finalisation and implementation of Local Area Land use plans in identified Shehias - Assessments: effectiveness of water and land governance 	<ul style="list-style-type: none"> - Field assessment and analysis of rice value/market chain - Capacity building of farmers on sustainable rice farming practices - Support to priority initiatives for sustainable rice production - Development of opportunities for smallholder 	<ul style="list-style-type: none"> - Support communities to examine existing efforts, and define priority areas and sites for restoration in identified Shehias - Support communities in identified Shehias to implement specific land, water, forest restoration activities (e.g. management approaches and plans)

Name of the community/site	Description of site specific issues as relevant to the project	Proposed project interventions		
		Integrated landscape management	Sustainable value chains	Landscape management & restoration
	<ul style="list-style-type: none"> - The area is characterised by streams which supply water for irrigation to rice and sugarcane farms - Poor post-production handling and encroachment into water sources and wetlands - Lack of controls and efficient mechanisms of water use and extraction from underground and surface water sources - There is also plan to build a second dam which may add pressure to ground water recharging system if there is no catchment management plan and associated sustainability plan - There is use of boreholes to supply water for rice irrigation which continue to put pressure on the underground water systems - This catchment is connected to the Zanzibar aquifer and recharging system - The area is connected to the largest rice farming area in Zanzibar and Kiwengwa forest - The connection of the catchment to Kiwengwa forest and the extraction/use of water by tourists hotel from the catchment provide room 	<p>systems; and cost related to managing, restoring and conserving water catchment</p> <ul style="list-style-type: none"> - Capacity building and outreach to Shehia committees on water governance and land tenure systems 	farmers to access finance	<ul style="list-style-type: none"> - Support communities to monitor progress of restoration

Name of the community/site	Description of site specific issues as relevant to the project	Proposed project interventions		
		Integrated landscape management	Sustainable value chains	Landscape management & restoration
	for sustainable financial systems to water catchment management			

Annex 7 Overview of roles and responsibilities of the main project partners

TABLE A ROLES AND RESPONSIBILITIES OF PROJECT PARTNERS

Stakeholder Group	Partners(s)	Roles and responsibilities
Government - Ministries, Regulatory Authorities and Agencies	Ministry of Agriculture, Irrigation, Natural Resources and Livestock (MAINRL) and relevant sub-departments, Zanzibar	<ul style="list-style-type: none"> ● Overall coordinator of the project among relevant partner organizations in Zanzibar, through DFNR ● Hosting of the Landscape Project Management Unit at DFNR ● Coordination of component 2 and 3 of the project ● Ensuring alignment and integration of the project activities with national agricultural and natural resources strategies and plans and ensure policy-implementation in Zanzibar ● Ensuring coherence with other natural resources and agriculture related projects in Zanzibar and in communicating the results of the project to the broader community ● Representation of Zanzibar in the Project Steering Committee and relevant Technical Committees to be established in order to ensure the effective implementation of the project
Government - Ministries, Regulatory Authorities and Agencies	Second Vice President's Office (VPO) – Department of Environment (DoE) - Zanzibar	<ul style="list-style-type: none"> ● Supporting MAINRL in the coordination of the project among relevant partner organizations in Zanzibar ● Ensuring alignment and integration of the project activities with national environmental strategies and plans and ensure policy-implementation in Zanzibar ● Ensuring coherence with other GEF projects in Zanzibar and in communicating the results of the project to the broader community ● Provide other technical inputs as needed (e.g. the legal support for creation of relevant stakeholder committees and in supporting landscape planning and other project activities in the targeted landscapes) ● Representation of Zanzibar in the Project Steering Committee and relevant Technical Committees to be established in order to ensure the effective implementation of the project
Government - Ministries,	Ministry of Lands, Housing, Water and Energy (MLHWE), Zanzibar	<ul style="list-style-type: none"> ● Coordination of the implementation of Component 1 of the project in Zanzibar

Regulatory Authorities and Agencies		<ul style="list-style-type: none"> • Coordination of the role of relevant technical authorities under its jurisdiction, including Zanzibar Water Authority (ZAWA), Zanzibar CoL and Zanzibar Regulatory Authority (ZURA) • Ensuring alignment and integration of the project activities with national water and land use related strategies, regulations and policies in Zanzibar • Ensuring coherence with other water- and landuse sector related projects in Zanzibar • Designing and implementing regulatory approach towards water use in the Unguja landscape - revising of water use tariffs related to industrial/tourism/commercial use – through ZURA • Lead on the development of a landscape management plan for the Kiashange and Kinyasini catchments areas through ZAWA and the CoL • Provide other relevant technical inputs as needed • Representation of Zanzibar in the Project Steering Committee and relevant Technical Committees to be established in order to ensure the effective implementation of the project
Government - Ministries, Regulatory Authorities and Agencies	Ministry of Natural Resources and Tourism (MNRT)	<ul style="list-style-type: none"> • Will assume the role of lead Executing Agency through its Forest and Beekeeping Division (FBD). • Whereas the Direct of Forest (FBD) will be in charge of overall administration and supervision of the project, the Permanent Secretary of MNRT will take overall fiduciary responsibility of the project • MNRT will host the Project Management Unit (PMU) which will be responsible for day-to-day implementation of the project • Responsible for the review of relevant enabling policy, strategies and regulations under its mandate in support of the project objectives and will work to improve policy-practice interactions. • Responsible for providing technical inputs, as needed.
Government - Ministries, Regulatory	Ministry of Agriculture	<ul style="list-style-type: none"> • Key co-executing Agency. • Will play an important supporting role, in ensuring the uptake of integrated land- and water use planning, the promotion of sustainable value chains and the adoption of appropriate agricultural technologies that conserve natural resources and sustain livelihoods.

Authorities and Agencies		<ul style="list-style-type: none"> • Will play a role in capacity building in the targeted districts, in providing related extension services and in brokering public-private partnerships related to sustainable agricultural development.
Government - Ministries, Regulatory Authorities and Agencies	Ministry of Finance and Planning	<ul style="list-style-type: none"> • Providing financial oversight on project disbursement, spending and procurement.
Government - Ministries, Regulatory Authorities and Agencies	National Land Use Planning Commission (NLUPC) / Ministry of Lands, Housing and Human Settlement Development	<ul style="list-style-type: none"> • Providing planning expertise required for the project and coordinating and guiding activities related to land-use planning. It will be directly responsible for implementation of some project activities related to Land Use planning, coordination, management and administration. • Coordinating MSP for Integrated Kilombero Landscape Management
Government - Ministries, Regulatory Authorities and Agencies	Rufiji River Water Board (RBWB) / Ministry of Water and Irrigation	<ul style="list-style-type: none"> • Lead activities related to water-resources planning and management in the project target areas • Support capacity building in the targeted districts • Brokering public-private partnerships related to water resources management.
Government - Ministries, Regulatory Authorities and Agencies	Tanzania Forest Services (TFS) Agency; TAWA	<ul style="list-style-type: none"> • Providing identification of areas to be prioritized for protection, identifying degraded areas for rehabilitation and strengthening enforcement of laws regarding management of resources, as well as in the development and implementation of concrete restoration and management plans.
Government - Ministries, Regulatory	Zanzibar Commission for Tourism (ZCT); ZAWA; ZURA; National Irrigation Commission, TMA	<ul style="list-style-type: none"> • Responsible for supporting and implementing activities related to regulating specific sectoral improvements and services as per their mandate

Authorities and Agencies		
Government - Regional administration	President's Office - Regional Administration, Local Governments and Special Departments, Zanzibar; Regional Commissioner NorthA&B	<ul style="list-style-type: none"> • Coordinating the engagement of District administrations in the target areas, including in the development of capacity building and awareness activities at District level. • Coordinating and guiding landscape planning and other project activities in the landscapes, and provide technical support for implementation.
Local Government Authorities District and Town Councils	North A, North B, Kilombero	<ul style="list-style-type: none"> • Coordinating, guiding and implementing activities in the landscape, and provide technical support for implementation of the project • Will play a role in capacity building to farmers through providing related extension services • Representation of the Project Steering Committee and relevant Technical Committees to be established
Government - Research Institutes	Tanzania Agricultural Research Institute (TARI); Zanzibar Agricultural Research Institute (ZARI) under MAINRL; NCMC (SUA); TAFORI; Institute of Resource Assessment (IRA); Dakawa Rice irrigation scheme; International Rice Research Institute (IRRI)	<ul style="list-style-type: none"> • Providing technical and scientific support to project activities related to research, data gathering and monitoring; engage in capacity building, documenting and sharing experiences • Provide specific technical support services in relation to the project within their mandate
Politicians	Members of parliament, Councillors, Village/Shehia chairpersons, regional commissioners, district commissioners,	<ul style="list-style-type: none"> • Facilitate and support political processes in delivering the project • Support and take part in development, management and implementation of the stakeholder engagement plan
Communities	Shehia's in North A, North B; Villages and Ward Councils in Kilombero districts	<ul style="list-style-type: none"> • Providing democratic, institutional vehicle for the project to secure the support, involvement and beneficiation of local communities from project-related activities.
Private Sector partners and	Southern Agricultural Growth Corridor for Tanzania (SAGCOT) Secretariat/Rice Council of Tanzania (RCT)	<ul style="list-style-type: none"> • Development of sustainable agricultural value and supply chains in the Kilombero landscape, including in facilitating the engagement of private sector partners in this regard.

business organizations		
Private Sector partners and business organizations	Zanzibar Association for Tourism Investors (ZATI); Tanzania Agriculture Development Bank (TADB); Local Financial Institutions (CRDB, NMB, TPB etc); Kilombero Plantations Ltd (KPL); Dick Lukaka Company	<ul style="list-style-type: none"> Facilitating and advising regarding the interests and involvement of the tourism sector in the project.
Civil Society Organizations	Care Tanzania	<ul style="list-style-type: none"> Technical assistance and mobile phone technology on joint village land-use planning process Building capacity of farmer groups through the provision of specific tools and technology (such as Chomoka for access to market information) and financial solutions (collective investment and micro-credit schemes)
Civil Society Organizations	International Union for the Conservation of Nature (IUCN)	<ul style="list-style-type: none"> Support ROAM assessment for both landscapes Supporting training on ILM (in exchange with TRI project) Technical assistance on land and water management and restoration
Civil Society Organizations	ANGOZA, MECA, MTANDAO WA VIKUNDI VYA WAKULIMA TANZANIA (MVIWATA); Reforest Africa; Tanzania Forest Conservation Group; Zanzibar Climate Change Alliance (ZACCA); Agricultural Marketing Cooperative Societies (AMCOS); East Africa Grain Council (EAGC); Africa Wildlife Foundation; TNC; AGRA	<ul style="list-style-type: none"> Implementation of awareness raising and on-the-ground work with communities Implementing and scaling-up initiatives on the ground Mobilisation of stakeholders and farmers Facilitate policy advocacy and dialogue Playing part as technical partners to the project with regard to planned and/or ongoing projects on the ground
Others stakeholders	World Bank, FAO, IFAD, TASAF, Korean International Cooperation Agency (KOICA); International Rice Research Institute (IRRI); UN Environment, Embassies and donor agencies (USAID, EU, Sida)	<ul style="list-style-type: none"> Building new partnership as project proceed, sharing lessons learnt from past and present initiatives Scaling-up initiatives and mobilisation of other stakeholders

TABLE B PROJECT IMPLEMENTATION ARRANGEMENTS

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
Component 1: Development of integrated landscape management (ILM) systems					
Outcome 1.1. Strengthened ILM planning and management of Kilombero and Unguja landscapes based on an enhanced understanding of land and water use in the targeted landscapes					
1.1.1. HCV areas and priority ecosystems including priority areas for restoration identified, mapped, and threat analysis undertaken	<ul style="list-style-type: none"> Desktop study combined with ground truthing (field visits) and possibly remote sensing Meeting of MSP (1) Meetings of landscape coordination team (2) 	<ul style="list-style-type: none"> Sub-contract to NCMC/SUA to undertake desktop study and field assessment for both landscapes Sub-contract to IUCN to support ROAM assessment for both landscapes Stakeholder meetings to be organized by LCUs 	<ul style="list-style-type: none"> Manage sub-contracts Oversight and supervision of landscape level work 	<ul style="list-style-type: none"> LCU staff to organize stakeholder meetings LCU Staff to identify specific areas of focus, e.g. surface water areas, wetlands and natural ponds for protection and conservation LCU to feed results of assessments into 1.1.2, 1.13, C2, C3 	<ul style="list-style-type: none"> LCU staff to organize stakeholder meetings LCU staff to coordinate with Resupply, Reforest and SUSTAIN initiatives LCU to feed results of assessments into 1.1.2, 1.13, C2, C3
1.1.2. Implementation framework for Integrated Landscape Management for Kilombero Valley and Integrated Landscape Management Plan for Kiashange-Mokotoni and Kinyasini-Kisongoni catchment areas	<ul style="list-style-type: none"> Institutional analysis of implementation framework for ICM Consultations between key stakeholders involved 	<ul style="list-style-type: none"> Kilombero: Consultancy to undertake institutional review Unguja: Consultancy to advise development of landscape management plan 	<ul style="list-style-type: none"> Manage sub-contracts Oversight and supervision of landscape level work 	<ul style="list-style-type: none"> Procurement and management of consultancy to provide support to development of landscape management plan and undertake institutional review 	<ul style="list-style-type: none"> Procurement and management of consultancy to undertake institutional review LCU Staff to provide technical support and advise to development of landscape

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
	<ul style="list-style-type: none"> Meetings of MSP (1) Meetings of landscape coordination team (2) 	<p>and undertake institutional review</p> <ul style="list-style-type: none"> Unguja: Sub-contracts to consortium of CoL/ZAWA/VPO-2 to development landscape management plan Sub-contract(s) to partner institution(s) to support implementation of recommendations 		<ul style="list-style-type: none"> LCU staff to provide technical support and advise with regard to the development of landscape management plan and institutional framework LCU staff to organize stakeholder meetings 	<p>management plan and institutional framework</p> <ul style="list-style-type: none"> LCU staff to organize stakeholder meetings
1.1.3. Local area (village) land use plans, based on priority areas identified in the Landscape Management Plans	<ul style="list-style-type: none"> Facilitated community-based planning exercise involving village meetings and consultations 	<ul style="list-style-type: none"> Kilombero: Sub-contract(s) to NLUPC to undertake local land-use planning Unguja: Sub-contract to CoL to undertake local land use planning in priority areas Subcontract to Care Tanzania for technical assistance and mobile phone technology for 	<ul style="list-style-type: none"> Manage sub-contracts Oversight and supervision of landscape level work 	<ul style="list-style-type: none"> LCU staff to facilitate village meetings and consultations 	<ul style="list-style-type: none"> LCU staff to facilitate village meetings and consultations

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
		joint village land-use planning			
1.1.4. Recommendations for improved land tenure and water governance (tariff) systems to support implementation of the land and water use plans	<ul style="list-style-type: none"> Assessment (study) of opportunities for improved land tenure and water governance systems Consultations with key stakeholders 	<ul style="list-style-type: none"> Consultancy to undertake assessment of opportunities for improved land tenure and water governance systems Meetings of MSP (1) Meetings of landscape coordination team (2) 	<ul style="list-style-type: none"> Oversight and supervision of landscape level work 	<ul style="list-style-type: none"> Procurement and management of consultancy to undertake assessment of opportunities for improved land tenure and water governance systems LCU staff to organize stakeholder meetings 	<ul style="list-style-type: none"> Procurement and management of consultancy to undertake assessment of opportunities for improved land tenure and water governance systems LCU staff to organize stakeholder meetings
1.1.5. Training and awareness raising on Integrated Landscape Management	<ul style="list-style-type: none"> Assessment of training needs Design of training packages Training workshops 	<ul style="list-style-type: none"> Sub-contracts to NLUPC and IUCN for provision of training on ILM Sub-contract(s) to local knowledge institutions to support curriculum development on ILM Training workshops Outreach and awareness raising events and meetings to 	<ul style="list-style-type: none"> Management of sub-contract(s) Oversight and supervision of landscape level work 	<ul style="list-style-type: none"> Organize and facilitate training workshops Organize and facilitate awareness raising activities 	<ul style="list-style-type: none"> Organize and facilitate training workshops Organize and facilitate awareness raising activities

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
		sensitize local communities			
Component 2: Promotion of sustainable food production practices and responsible value chains					
Outcome 2.1. Agreed national strategies and enabling conditions for the development of sustainable rice value/supply chains					
2.1.1. Sustainable value chain development plan for the rice production sector, including identifying linkages to regional rice value and supply chains	<ul style="list-style-type: none"> • Desktop and field assessment of the existing rice value chain with the purpose of highlighting potential areas of improved sustainability • Market analysis for the rice value chain identifying key opportunities for sustainably produced rice • Workshops and other forms of consultations with farmers and other stakeholders to validate the results of the analysis 	<ul style="list-style-type: none"> • Sub-contracts to TARI, ZARI and RCT to undertake value chain, policy and market analysis, and develop a sustainable rice value chain development plan • Sub-contracts to MAINRL and MoA to undertake mainstreaming of sustainable rice value chain development plan in existing policies and strategies as appropriate • Stakeholders workshops (2) • Field-level stakeholder workshops 	<ul style="list-style-type: none"> • Management of sub-contracts to TARI, ZARI and RCT, MoA and MANLF • Oversight of landscape level stakeholder consultations 	<ul style="list-style-type: none"> • Provide inputs into value chain development plan process from field perspective • Facilitate field-level stakeholder consultations 	<ul style="list-style-type: none"> • Provide inputs into value chain development plan process from field perspective • Facilitate field-level stakeholder consultations
2.1.3 Sustainable value chain guidelines, standards, and training packages for public and	<ul style="list-style-type: none"> • Desktop study/analysis of existing best 	<ul style="list-style-type: none"> • Consultancy on development of best practice 	<ul style="list-style-type: none"> • Procurement and management of consultancy on development of 	<ul style="list-style-type: none"> • Provide inputs into best practice guidelines and 	<ul style="list-style-type: none"> • Provide inputs into best practice guidelines and

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
private sector value chain actors in the rice sector, with recognition of international best-practice	<p>practice guidelines and standards</p> <ul style="list-style-type: none"> • Consultation workshops with stakeholders to validate the guidelines • Write-up of localized guidelines 	<p>standards and guidelines</p> <ul style="list-style-type: none"> • Stakeholder workshops (2) 	<p>best practice standards and guidelines</p> <ul style="list-style-type: none"> • Organize stakeholder workshops on best practice standards and guidelines 	<p>standards from field perspective</p> <ul style="list-style-type: none"> • Facilitate field-level stakeholder consultations as appropriate 	<p>standards from field perspective</p> <ul style="list-style-type: none"> • Facilitate field-level stakeholder consultations as appropriate
Outcome 2.2. Adoption of improved rice farming practices in the target landscapes through farmer support systems for sustainable rice value chains					
2.2.1 Training and capacity building on sustainable (climate-smart, agro-ecological, conversion free) rice production approaches through capacity building of extension services and rice production cooperatives / resource centers	<ul style="list-style-type: none"> • Facilitate TARI/ZARI to provide training on GAP in the rice sector • Capacity building of extension services through training and provision of materials • Training workshops for farmers and farmer-to-farmer learning exchanges on sustainable value chain approaches (e.g. water and soil management) • Support to strengthening and 	<ul style="list-style-type: none"> • Sub-contract to TARI/ZARI to build capacity of extension services in the landscape • Sub-contract to Kilombero District Office and MAINRL for strengthening extension services on improved rice practices • Training workshops for farmers • Farmer-to-farmer learning exchanges • Financial and technical support for capacity building farmers cooperatives/assoc 	<ul style="list-style-type: none"> • Oversee training on GAP in the rice sector • Manage sub-contract to TARI/ZARI, Kilombero District Office and MAINRL as well as other potential service providers (as appropriate) 	<ul style="list-style-type: none"> • Oversee and provide financial and technical support to farmers cooperatives/associations and resource centers • Facilitate trainings and farmer-to-farmer learning exchanges at landscape level 	<ul style="list-style-type: none"> • Oversee and provide financial and technical support to farmers cooperatives/associations and resource centers • Facilitate trainings and farmer-to-farmer learning exchanges at landscape level

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
	establishment of farmer cooperatives/associations and resource centers (e.g. managing input supply for sustainable rice production, mobile technologies for market information, grading and branding of sustainably produced rice)	<p>iations and resource centers</p> <ul style="list-style-type: none"> Sub-contracts to other potential service providers (e.g. market information technologies) as appropriate 			
2.2.2. Priority sustainable value chain initiatives in the rice production sector supported and operationalized (e.g. through TA, extension services, establishment of a rotating fund for on-farm investments, building on 2.2.1)	<ul style="list-style-type: none"> Based on the analysis undertaken under 2.2.1, hold workshops and consultation with farmers and other stakeholders to identify priority initiatives to be promoted and supported under the project Design of targeted initiatives, including establishment of related TA and 	<ul style="list-style-type: none"> Meetings of landscape coordination team (4) Meetings with farmers groups (through District Extension Services) Consultancies to support the development of targeted initiatives Sub-contracts to farmers groups to support the implementation of targeted initiatives 	<ul style="list-style-type: none"> Lead the identification and selection of targeted initiatives across the two landscapes. Manage sub-contract(s) to partner institution(s) to support the development and implementation of targeted initiatives Oversight and supervision of 	<ul style="list-style-type: none"> Oversee and monitor the development and implementation of the targeted initiatives at landscape level Organize meetings with farmers groups (with Extension Services) Procurement and management of consultancy to support the development of targeted initiatives 	<ul style="list-style-type: none"> Oversee and monitor the development and implementation of the targeted initiatives at landscape level Organize meetings with farmers groups (with Extension Services) Procurement and management of consultancy to support the development of targeted initiatives

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
	<p>capacity building packages</p> <ul style="list-style-type: none"> Operationalize agreed priority initiatives: examples could be introducing improved seed varieties; testing specific farming methods that are less wasteful and lead to higher yield and more efficient land and water use, rainwater harvesting systems; reducing the use of harmful pesticides and fertilizers; improved processing methods, improving storage facilities; re-use of waste materials (e.g. rice husks for energy production, animal feed and building materials); creating efficiencies in transport and 	<ul style="list-style-type: none"> Sub-contract(s) to partner institution(s) to support the development and implementation of targeted initiatives Sub-contract to Care Tanzania for building capacity of farmer groups through the provision of specific tools and technology (such as Chomoka for access to market information) and financial solutions (collective investment and micro-credit schemes) Purchase and provision of materials (e.g. seeds, farming hardware, building and construction materials) 	<p>landscape level work</p> <ul style="list-style-type: none"> Provide technical advice and support to targeted initiatives at landscape level 	<ul style="list-style-type: none"> Manage sub-contracts to farmers groups to support the implementation of targeted initiatives Manage procurement and distribution of materials (e.g. seeds, farming hardware, building and construction materials) Provide technical support to targeted initiatives as appropriate 	<ul style="list-style-type: none"> Manage sub-contracts to farmers groups to support the implementation of targeted initiatives Manage procurement and distribution of materials (e.g. seeds, farming hardware, building and construction materials) Provide technical support to targeted initiatives as appropriate

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
	<p>marketing systems, etc.</p> <ul style="list-style-type: none"> Establish mechanisms for scaling up, e.g. rotating fund for farm investments, TA / extension services support systems, etc. Development of concrete proposals and business plans for scaling up the pilot initiatives 				
Outcome 2.3 Investment and finance through private sector for sustainable value chains					
2.3.1 Opportunities analysis for private sector investments in sustainable rice production value chains in the target landscapes with clear business cases	<ul style="list-style-type: none"> Undertake opportunity and feasibility analysis for sustainable private sector investments Consult with relevant private sector stakeholders to define concrete opportunities and establish enabling conditions to be created 	<ul style="list-style-type: none"> Sub-contract to SAGCOT and RCT to manage opportunity analysis and business case development 	<ul style="list-style-type: none"> Manage sub-contract to SAGCOT and RCT to manage opportunity analysis and business case development 	<ul style="list-style-type: none"> Facilitate opportunity analysis and business case development at landscape level (e.g. meetings with key stakeholders) Provide technical inputs to opportunity analysis as appropriate 	<ul style="list-style-type: none"> Facilitate opportunity analysis and business case development at landscape level (e.g. meetings with key stakeholders) Provide technical inputs to opportunity analysis as appropriate

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
	<ul style="list-style-type: none"> Development of concrete business cases 				
2.3.2. A collaborative agreement and platform for engagement between public, private and civil society actors on sustainable rice value chain development	<ul style="list-style-type: none"> Consultations between public, private sector and civil society stakeholders regarding investments in the development of sustainable rice value chain initiatives Development and signing of a Compact between public, private sector and civil society stakeholders 	<ul style="list-style-type: none"> Sub-contract to SAGCOT and RCT to facilitate public – private – civil society engagement process 	<ul style="list-style-type: none"> Manage sub-contract to SAGCOT and RCT Facilitate national-level public-private – civil society engagement 	<ul style="list-style-type: none"> Facilitate landscape level public- private – civil society engagement 	<ul style="list-style-type: none"> Facilitate landscape level public - private – civil society engagement
Component 3: Conservation and restoration of natural habitats					
Outcome 3.1. Improved management and restoration of natural ecosystems through the implementation of priority land and water use plans, with the active involvement of communities and private sector					
3.1.1 Restoration of degraded lands in target locations based on the ILM plans (output 1.1.3)	<ul style="list-style-type: none"> Identify priority areas for restoration through ROAM assessment (based on 1.1.1) Work with community and 	<ul style="list-style-type: none"> Sub-contracts to local partners (e.g. AWF, TFCG, Reforest Africa) for supporting selected communities in priority conservation areas 	<ul style="list-style-type: none"> Manage sub-contracts to TFS, DFNR and TAWA Manage sub-contracts to local partner organizations 	<ul style="list-style-type: none"> Manage sub-contracts to local community organizations Manage procurement and distribution of materials 	<ul style="list-style-type: none"> Manage sub-contracts to local community organizations Manage procurement and distribution of materials

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
	<p>private sector groups to define specific restoration plans</p> <ul style="list-style-type: none"> • Support selected communities in priority conservation areas to implement specific restoration activities, e.g. forest or wetland restoration • Monitoring of the success of these restoration efforts and measure their impact on carbon sequestration and other ecological functions 	<p>to implement specific management and restoration activities (forest, wetland and farmland)</p> <ul style="list-style-type: none"> • Sub-contracts to local community organizations for implementing specific management and restoration activities (forest, wetland and farmland) Sub-contract(s) to partner organizations (e.g. AWF, TFCG) • Sub-contract to IUCN for technical assistance on land and water management and restoration • Sub-contract to TFS and DFNR for targeted restoration and management improvements on 	<ul style="list-style-type: none"> • Provide oversight and supervision of landscape level work • Provide technical advice and support to targeted initiatives at landscape level 	<ul style="list-style-type: none"> • Provide technical advice and support to restoration activities as appropriate • Organize meetings of landscape coordination team 	<ul style="list-style-type: none"> • Provide technical advice and support to restoration activities as appropriate • Organize meetings of landscape coordination team

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
		state-owned forest lands <ul style="list-style-type: none"> • Sub-contract to TAWA for targeted restoration and management improvements to Kilombero wetland system • Meetings of landscape coordination team (4) • Purchase and provision of materials for restoration (e.g. plant materials, hardware) 			
3.1.2. Management of priority HCV areas within the target landscapes through proven models (e.g. certification, Village Forest Land Reserves and PPP)	<ul style="list-style-type: none"> • Identify priority areas for improved management (based on 1.1.1) • Work with community and private sector groups to define specific management approaches and plans 	<ul style="list-style-type: none"> • Sub-contracts to local partners (e.g. AWF, TFCG, Reforest Africa) for supporting selected communities in priority conservation areas to implement specific management and restoration activities (forest, 	<ul style="list-style-type: none"> • Manage sub-contracts to TFS, DFNR and TAWA • Provide oversight and supervision of landscape level work • Provide technical advice and support to targeted initiatives at landscape level 	<ul style="list-style-type: none"> • Manage sub-contracts to local partner organizations • Manage sub-contracts to local community organizations • Provide technical advice and support to restoration activities as appropriate 	<ul style="list-style-type: none"> • Manage sub-contracts to local partner organizations • Manage sub-contracts to local community organizations • Provide technical advice and support to restoration activities as appropriate

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
	<ul style="list-style-type: none"> Support selected communities (and potentially also private sector partners) in priority conservation areas to implement specific management plans, e.g. support FSC group certification processes, establishment of village forest land reserves and PPP arrangements, develop alternative livelihood activities (e.g. fisheries). Monitoring of the success of these management efforts and measure their impact on carbon sequestration and other ecological functions 	<p>wetland and farmland)</p> <ul style="list-style-type: none"> Sub-contracts to local community organizations for implementing specific management and restoration activities (forest, wetland and farmland) Sub-contract(s) to partner organizations (e.g. AWF, TFCG) Sub-contract to IUCN for technical assistance on land and water management and restoration Sub-contract to TFS and DFNR for targeted restoration and management improvements on state-owned forest lands Sub-contract to TAWA for targeted restoration and 		<ul style="list-style-type: none"> Organize meetings of landscape coordination team 	<ul style="list-style-type: none"> Organize meetings of landscape coordination team

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
		management improvements to Kilombero wetland system <ul style="list-style-type: none"> Meetings of landscape coordination team (4) 			
3.1.3 Fiscal/financial schemes to incentivize investment for restoration in degraded lands, targeting small-scale farmers and larger private sector	<ul style="list-style-type: none"> Options and opportunity analysis for sustainable landscape management and restoration financing Development of concrete business cases for private and public investment in landscape management and restoration 	<ul style="list-style-type: none"> Consultancy to undertake assessment of options and opportunities for sustainable landscape management and restoration, including the development of concrete business cases for private and public investment Meetings of landscape coordination teams (2) Consultations with stakeholders in the field 	<ul style="list-style-type: none"> Procurement and management of consultancy to undertake assessment of options and opportunities for sustainable landscape management and restoration, including the development of concrete business cases for private and public investment 	<ul style="list-style-type: none"> Organize and facilitate meetings of the landscape coordination teams as well as other stakeholders in the field Provide technical inputs into the options and opportunities assessment from a field perspective 	<ul style="list-style-type: none"> Organize and facilitate meetings of the landscape coordination teams as well as other stakeholders in the field Provide technical inputs into the options and opportunities assessment from a field perspective
Component 4: Project Coordination and M&E					
Outcome 4.1. M&E plan implemented and learning exchanges with other FOLUR countries facilitated to aid scaling up and adaptive management					

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
4.1.1. Project progress continuously monitored and mid-term and final evaluation conducted	<ul style="list-style-type: none"> Preparation of regular progress reports Measuring and monitoring of key indicators (according to M&E plan) Mid-term and final evaluation 	<ul style="list-style-type: none"> Internal (PMU) capacity Sub-contract to NCMC/SUA for measuring impacts on landuse changes, restoration and management effects and carbon sequestration Sub-contract to TAFORI for measuring forest health and biodiversity in the project areas Sub-contract to TARI for measuring uptake of sustainable rice production and value chain methods in the target landscapes 	<ul style="list-style-type: none"> Measuring and monitoring of key indicators (according to M&E plan) Organize annual planning and reflections workshops Management of sub-contracts to partner institutions (NCMC/SUA, TAFORI and TARI) Preparation of regular progress reports Prepare mid-term and final evaluation report 	<ul style="list-style-type: none"> Preparation of landscape level progress reports Facilitate mid-term and final evaluations Facilitate oversight missions by PMU Facilitate landscape-level collection of indicator data for reporting 	<ul style="list-style-type: none"> Preparation of landscape level progress reports Facilitate mid-term and final evaluations Facilitate oversight missions by PMU Facilitate landscape-level collection of indicator data for reporting
4.1.2 Project achievements and results documented and KM products developed for replication and scaling up	<ul style="list-style-type: none"> Preparation of lessons learnt reports and briefs 	<ul style="list-style-type: none"> Internal (PMU) capacity Consultancy 	<ul style="list-style-type: none"> Collection and documentation of lessons learnt Development of KM products as appropriate 	<ul style="list-style-type: none"> Provide case studies and support the development of KM products and lessons learnt 	<ul style="list-style-type: none"> Provide case studies and support the development of KM products and lessons learnt

Project Outputs	Project activities	Modalities for implementation	PMU	Unguja LCU	Kilombero LCU
			<ul style="list-style-type: none"> Procurement and management of consultancy to support the documentation of lessons learnt 		
4.1.3. Active participation in FOLUR learning network facilitated	<ul style="list-style-type: none"> Participation in meetings and virtual sessions organized by FOLUR parent project Contribute materials to FOLUR knowledge platform 	<ul style="list-style-type: none"> Internal (PMU) capacity 	<ul style="list-style-type: none"> Coordination of engagement in global FOLUR meetings and sessions Development of material for posting on the FOLUR platform 	<ul style="list-style-type: none"> Provide case studies and support the development of KM products for the FOLUR platform Coordinate and facilitate engagement of landscape stakeholders in FOLUR meetings and events 	<ul style="list-style-type: none"> Provide case studies and support the development of KM products for the FOLUR platform Coordinate and facilitate engagement of landscape stakeholders in FOLUR meetings and events

Annex 8 Results Framework

							Targets (annual, or mid-term and close)						
Indicator / unit	Definition (note if cumulative)	Method/ source	Frequency	Responsible	Disaggregation	Baseline	YR1	YR2	YR3	YR 4	YR 5	Notes/ Assumptions	Cost to monitor
Objective level indicators													
Project Objective: To promote integrated land and water management, restoration, and sustainable rice value chains to prevent deforestation and land degradation in priority landscapes in Tanzania													
Objective indicator 1: Area of land restored (GEF Core Indicator 3)	Characterized by areas of forest, wetland and productive land restored through active and passive regeneration Cumulative	Measuring forest health (survey) in areas targeted by the project	Mid-term and end	PMU MELK M Program Officer	By target landscape/catchment and type of land	0 ("new" improvements = those made within project period)			10k ha		40k ha	Assuming that external pressures to forests and wetlands will not further increase	\$25,000 (sub-contract to TAFORI)
Objective indicator 2: Area of landscapes under improved management to benefit biodiversity (GEF Core Indicator 4.1)	Characterized by the existence of ILM plans and effective institutional arrangements, with clear institutional arrangements and responsibilities and bylaws defined for cross-sectoral coordination and implementation, monitoring and evaluation of plans Cumulative	Analysis of land-use management plans and arrangements for institutional coordination at landscape and cluster level Zanzibar: catchment management plan in place (plan, governance structure, bylaws) Village Land Use Plans: LUP developed and formalized with village council. Kilombero - Implementation of Existing ILM Plan: characterized by (1)	Mid-term and end	PMU MELK M Program Officer	By target landscape/catchment	0 ("new" improvements = those made within project ⁵²)			100k ha		518,136 ha ⁵³	Linked to objective outcome indicator 2.1, but at landscape level aggregation	\$0 (M&E and project staff time covered by project funding)

⁵² The project will build on an existing ILM plan for Kilombero. However, the plan currently has no clear institutional roles, and is not translated into regulatory frameworks. This needs to be done to ensure the plan is operational, which will lead to improved management of the landscape.

⁵³ Out of which 100,000 ha targeted for development of detailed catchment and land use plans, and 418,136 ha targeted for improved management through strengthening of institutional coordination, capacity and regulatory frameworks for implementation of agreed landscape management plans under outcome 1.1.

		updated and formalized roles and responsibilities, (2) bylaws in place.											
Objective indicator 3: Area of landscapes under sustainable land management in production systems (GEF Core Indicator 4.3)	Characterized by area of land where farmers have (1) improved practices on the ground, or (2) access to improved services (e.g. extension services, access to finance, access to information, linkages with private sector) to support improved landscape management and improved practices Cumulative	Survey among farmers Measuring productivity of agricultural land (yield per hectare, soil health)	Mid-term and end	PMU MELK M Program Officer	By target landscape/catchment and cluster	0 (“new” improvements = those made within project period)			30k ha		644,554 ha ⁵⁴	Assuming that farmers will indeed make use of improved support services and facilities established by the project	\$25,000 (sub-contract to TARI)
Objective indicator 4: Area of High Conservation Forest loss avoided (GEF Core Indicator 4.4)	This indicator captures the amount of High Conservation Value Forest (HCVF) that would be lost without implementation of GEF projects that achieve the conservation of these HCVF areas Cumulative	Measuring the area of HCV forest brought under sustainable management through e.g. designation of forest reserves or management measures for existing forest reserves	Mid-term and end	PMU MELK M Program Officer	By target landscape	0 (“new” improvements = those made within project period)			15k ha		40k ha ⁵⁵		\$0 (M&E and project staff time covered by project funding)
Objective indicator 5: Carbon sequestered or emissions avoided in the AFOLU sector (GEF Core Indicator 6.1)	Calculates the carbon sequestration value resulting from project interventions Cumulative	Calculating the cumulative consequence of improved agricultural practices and land restoration on carbon sequestration value using EX-ACT tool, with inputs from remote sensing and ground truthing	Mid-term and end	PMU MELK M Program Officer	By target landscape Direct and indirect emissions	1M tCO ₂ eq loss per year			3M tCO ₂		11,686,815 tCO ₂	Assumption that the impacts of project activities can be distinguished from other influences	\$50,000 (sub-contract to NCMC/SUA)

⁵⁴ Out of which 80,000 ha targeted for piloting and upscaling improved production methods under Outcome 2.2 and 564,554 ha of productive land where farmers will benefit from improved strategies and guidelines (outcome 2.1), extension services and learning (outcome 2.2), and private sector engagement and access to finance (outcome 2.3).

⁵⁵ Estimated as 10% of forest area in the target landscapes, current forest cover being approximately 385,000 ha.

Objective indicator 6: Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment (GEF Core Indicator 11:)	Counts the total number of direct beneficiaries from project-related activities Cumulative	Reports on project activities; population count of priority villages targeted through project support	Mid-term and end	PMU MELK M Program Officer	By target landscape, gender, target group (e.g. community members, Govt officials, private sector and CSOs etc.) and types of benefits	0 ("new" improvements = those made within project period)			10k		23k ⁵⁶ 11,694 male 11,526 female		\$0 (M&E and project staff time covered by project funding)
Outcome indicators													
Component 1: Development of integrated landscape management (ILM) systems													
Outcome 1.1 indicator Number of village land areas in priority clusters under improved ILM	Characterized by the existence of local-level land-use plans and implementation arrangements Cumulative	Analysis of land-use management plans and arrangements for institutional coordination at village and cluster level	Annual	LCUs	By target landscape/catchment and individual priority cluster/villages	0 ("new" improvements = those made within project period)	0	0	2	5	10	Linked to objective indicator 1, but providing further area-based disaggregation details	\$0 (M&E and project staff time covered by project funding)
Component 2: Promotion of sustainable food production practices and responsible value chains													
Outcome 2.1 indicator Number of strategies for sustainable rice sector value chain development adopted by Government	Counts the number of strategies/policies for sustainable rice sector value chain development, as proposed by the project, that have been adopted by Government Cumulative	Review of strategy documents and records of Government approval (e.g. workshop reports)	Annual	MELK M Program Officer	Separate for mainland Tanzania and Zanzibar	0	0	0	1	1	1	The strategies are expected to be accompanied by recommendations for Government policy changes and clear guidelines	\$0 (M&E and project staff time covered by project funding)
Outcome 2.2 indicator	Compares farmer practices with sustainable rice production and	Monitoring uptake of sustainable rice production and value chain practices (based	Mid-term and end	PMU MELK M Program	By target landscape/cat	0	<10 %	10%	15%	20%	25%	Uptake will be incremental as successful farmer	\$25,000 (sub-

⁵⁶ Consisting of approximately 22,500 community members (based on 5 target villages per landscape with on average 2,000 inhabitants per village), approximately 300 government officials (150 per landscape), approximately 100 members of civil society organizations and approximately 100 private sector supply chain actors (beyond farmers).

% of rice farmers in the target landscapes applying sustainable rice production / value chain practices.	value chain guidelines to be developed by the project Cumulative	on guidelines to be developed by the project under component 2)		m Officer	chment and cluster							groups are inspiring others	contract to TARI)
Outcome 2.3 indicator Number of new public-private partnerships (coalitions, initiatives, etc.) in sustainable rice value chain	Cumulative	Review of reports and business cases Counts the number of new public-private partnerships in sustainable rice value chain that are either established or being pursued as a result of project interventions	Annual	MELK M Progra m Officer	By target landscape	0	0	0	2	4	6	Assumption that viable business partners and schemes can be identified and that enabling policy conditions in Tanzania remain conducive	\$0 (M&E and project staff time covered by project funding)
Component 3: Conservation and restoration of natural habitats													
Outcome 3.1 indicator Number of restoration and improved management initiatives attributed to the project	Counts the number of restoration and management projects under implementation, with clear indications for sustainability Cumulative	Reports on restoration and management activities validated by field visits and stakeholder interviews	Annual	MELK M Progra m Officer	By target landscape and type of initiative (restoration v management)	0	0	0	2	5	10	Assumption that viable restoration and management schemes can be identified and that enabling policy conditions in Tanzania remain conducive	\$25,000 (sub-contract to TAFORI)
Component 4: Project Coordination and M&E													
Outcome 4.1 indicator Number of MEL reports and KM products	Counts the number of Monitoring, Evaluation and Learning (Knowledge Management) products delivered by the project. PPR: project progress report QFR: quarterly financial report RE: reflection exercise MTE : midterm evaluation TE : terminal evaluation Non-Cumulative	Review of Monitoring, Evaluation and Learning products	Annual	MELK M Progra m Officer	By project By type of product: reports, guidelines, training materials, etc.	0	5 1 PPR ; 3 QFR ; 1 RE	7 2 PPR ; 4 QFR; 1 RE	8 2 PPR ; 4 QFR ; 1 RE; 1 MTE	7 2 PPR; 4 QFR; 1 RE	8 1 PPR; 1 closeou t report; 4 QFR; 1 RE; 1 TE		\$0 (M&E and project staff time covered by project funding)

Outcome 4.2 indicator Level of engagement in FOLUR through participation in global, national and regional forums and workshops	Monitors participation of project partners in the global FOLUR IP activities Non-Cumulative	Review of levels of participation in events	Annual	MELK M Program Officer	Gender disaggregated	3	3	3	3	3	3		\$0 (M&E and project staff time covered by project funding)
Outcome 4.2 indicator Level of engagement in FOLUR through participation in FOLUR training workshops	Monitors participation of project partners in the global FOLUR IP activities Annual	Review of levels of participation in events	Annual	MELK M Program Officer	Gender disaggregated	5	5	5	5	5	5		\$0 (M&E and project staff time covered by project funding)

GEF FOLUR Review of Experiences and Lessons Learn from Rice Sector Initiatives in Tanzania

Food Systems, Land Use and Restoration in Tanzania's Forest Landscapes

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Abbreviations

CAADP	Comprehensive Africa Agriculture Development Program
CCI	Climate Change Initiative
DADP	District Agriculture Development Planning
DSR	Direct-seeded Rice
EAC	East African Community
ERPP	Expanding Rice Production Project
ESA	European Space Agency
ET	Evapotranspiration
EU	European Union
FAO	The Food and Agriculture Organization of the United Nations
FBO	Farmer Business Organizations
FEG	Farmer Extension Groups
FFS	Farmer Field Schools
FOLUR	Food Systems, Land Use and Restoration
FRG	Farmer Research Groups
FYDP	Five Year Development Plan
GAFFSP	Global Agriculture and Food Security Program
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GEF	Global Environment Fund
IA	Irrigators' Association
ICT	Information and Communications Technology
IPPM	Integrated Pest Production Management
ITCZ	Intertropical Convergence Zone
IUCN	International Union for Conservation of Nature
KPL	Kilombero Plantations Ltd
KV	Kilombero Valley
KVFP	Kilombero Valley Flood Plain
LGA	Local Government Authority
LRWB	Lake Rukwa Water Board
LUC	Land Use Change
LULCC	Land Use Land Cover Change
MFIs	Micro-finance Institutions
MIT	Ministry of Industry and Trade
MoAFSC	Ministry of Agriculture, Food Security and Cooperatives
MODIS	Moderate Resolution Imaging Spectroradiometer
MoU	Memorandum of Understanding
NERICA	New Rice for Africa
PES	Payment for Ecosystem Services

PLUM	Participatory Land Use Management
PO-RALG	President's Office - Regional Administration and Local Governmen
PRA	Participatory Rural Appraisal
R/KWB	Rufiji/Kilombero Water Board
RS	Remote Sensing
SACCOS	Savings and Credit Cooperatives
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SEB	Surface Energy Balance
SEBAL	Surface Energy Balance Algorithm for Land
SEBS	Surface Energy Balance System
SMZ	Serikali ya Mapinduzi Zanzibar (Revolutionary Government of Zanzibar)
SRI	System for Rice Intensification
SSA	Sub-Saharan Africa
S-SEBI	Simplified Surface Balance Index
SSEBop	Operational Simplified Surface Energy Balance
SUA	Sokoine University of Agriculture
SWAT	Soil Water Assessment Tool
TAFSIP	Agriculture and Food Security Investment Plan
TDV	Tanzania Development Vision 2025
TPR	Transplanted Rice
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VDA	Village Development Associations
VLUP	Village Land Use Plan
WARDA	West African Rice Development Agency
WDS	Ward Development Committee
WUA	Water User Association
ZASDP	Zanzibar Agricultural Sector Development Program (ZASDP)
ZAWA	Zanzibar Water Authority
ZSGRP	Zanzibar Strategy for Growth and Reduction of Poverty

1 Literature Review

1.1 Current Situation of the Agricultural Sector in Tanzania

While the relative share of the agriculture sector over GDP is decreasing, it remains the mainstay of the Tanzanian economy employing almost 66% of the population (2014). It contributes about 30% of the country's GDP and 20% of export earnings⁵⁷. As such, the agriculture sector remains a key driver for poverty eradication and sustainable development. Despite the availability of abundant productive land and rich soils well suited for agriculture, the average agricultural growth rate was nevertheless only 3.9% per annum 2006-2014 and substantial investment in the sector is required in order to develop its potential. An estimated 55% of the land could be used for agriculture, while today only about 6% is cultivated. In addition, climate change is expected to increasingly have a negative impact on agricultural productivity unless appropriate action is taken to promote climate resilient farming practices and integrate them into production. As the security of agriculturally based livelihoods become more precarious an additional challenge is the growing rate of rural-urban migration, adding to the already significant urbanization trend in the country. Tanzania is struggling with large cohorts of young people entering the labor market every year as demonstrated by the fact that youth unemployment rates in mainland Tanzania stood at 13.7% in 2014⁵⁸, while in Zanzibar it is estimated to be higher.

There is tremendous potential to transform farmers from subsistence into commercial farming, generating jobs and livelihood opportunities, and providing raw materials for domestic industries. It is in this direction that the **Five-Year Development Plan (FYDP II) 2016/17-2020/21** focused on *"Nurturing Industrialization for Economic Transformation and Human Development"*. The main objective is enhancing the pace of progress towards the achievement of the Tanzania Development Vision 2025, the Government of Tanzania's long-term vision to guide its development. The vision for the economy is a transformation from a *"low productivity agricultural economy to a semi-industrialized one, led by modernized and highly productive agricultural activities which are effectively integrated and buttressed by supportive industrial and service activities in the rural and urban areas"*. The TDV aspires to transform the nation to a middle-income country, attaining a high quality of life, peace, tranquility and national unity, good governance, an educated society and a competitive economy by the year 2025.

The Five-Year Development Plan II aims at creating a conducive environment for doing business and investing in the country. In line with this objective, the Government has launched the *"Comprehensive Action Plan for the implementation of the Roadmap on the Improvement of the Investment Climate in Tanzania"* and produced a *"Blueprint for Regulatory Reforms to improve the business environment"* to be implemented by line ministries and agencies, such as the Ministry of Industry and Trade (MIT) and the Ministry of Agriculture (MoA). The Roadmap is an expansive program encompassing business related regulatory regime reforms across the economy. The Blueprint, on the other hand, comprehensively analyses the existing **regulatory challenges** taking into account international best practices and proposes robust principles and guidelines for reforms. It articulates clearly general and sector specific areas for reform and how to implement them with necessary adjustments to suit local conditions pertaining to the country. It sets out a benchmark for the government to

⁵⁷ Tanzania's Five Year Development Plan II

⁵⁸ TRADING ECONOMICS: Tanzania Youth Unemployment Rate: <https://tradingeconomics.com/tanzania/youth-unemployment-rate>

undertake a holistic approach to overcome challenges and constraints affecting policy, regulations, delivery, and coordination, which retard the growth of the private sector.

Tanzania in fact still faces a number of **policy and regulatory challenges** which slow down the growth of the private sector and the industrialization process at large. Several **laws and regulations govern also the agriculture sector**. These laws form the basis of most of the licenses, permits, registration, and certifications in the sector. Studies have shown that some of the regulatory roles have not been pro-business and they should be streamlined to improve the regulatory regime and enhance compliance and enforcement system. The agriculture sector regulatory framework often overlaps with other regulatory frameworks of other agencies. The existence of conflicting or duplicative policies and laws at the central and local Government levels is among such challenges. For instance, there is continued misinterpretation on the 1982 Local Government Finance Act and other laws governing the agriculture sector, resulting in **duplication of regulatory efforts and multiplicity of taxes and charges**. Due to **weak cross-references** in several laws, it has been shown that **compliance is unclear to business operators** and there is a **lack of transparency among the regulatory agencies** on how they exercise their regulatory functions. Furthermore, capacity in some of the agencies is relatively weak resulting in additional costs in terms of delays and excessive risk aversion towards adoption of new technologies.

In the broader framework, Tanzania is a signatory of the **Comprehensive Africa Agriculture Development Program (CAADP)** objectives: to (i) achieve an average annual sectoral growth of 6% and government allocation of budget to Agriculture at 10%; (ii) attain food security and nutrition; (iii) develop regional and sub-regional agricultural markets; (iv) integrate farmers and pastoralists into the market economy, and (v) achieve a more equitable distribution of wealth. The Tanzania **Agriculture and Food Security Investment Plan (TAFSIP)**, covering both mainland and Zanzibar, was developed as an implementation plan of the CAADP. TAFSIP is a 10-year road map for agricultural and rural development that identifies priority areas for public and private investments to promote agricultural growth, rural development, and food security and nutrition.

For mainland, the **Agricultural Development Policy** was developed in 2013 and implemented through the Agriculture Sector Development Program (ASDP) Phase I. **The subsequent ASDP Phase II**, launched in 2018, aims at *“transforming the agricultural sector (crops, livestock & fisheries) towards higher productivity, commercialization level and smallholder farmer income for improved livelihood, food security and nutrition”*⁵⁹. The ASDP II has four main pillars: -

- a) Component 1: - Sustainable Water and Land Use Management;
- b) Component 2: - Enhanced Agricultural Productivity and Profitability;
- c) Component 3: - Rural Commercialization and Value Addition;
- d) Component 4: - Strengthening Sector Enablers and Coordination.

ASDP II Component 4 focuses on Sector Enablers, Coordination and Monitoring and Evaluation. Its objective is *“Strengthened institutions, enablers and coordination framework”*. Priority investment areas are (i) Policy and Regulatory Framework and Business Environment Improvement; (ii) Strengthening organizational and technical capacities of existing and new small-scale producer, trade and processing farmer organizations and cooperatives movement; (iii) Promote and strengthen gender inclusiveness in the agricultural sector; (iv) Improve and strengthen vertical (from PO-RALG to RSs and LGAs) and horizontal coordination between ASLMs.

⁵⁹ ASDP II Document p. 36

(v) Improved Capacity and agricultural data collection and management systems (vi) Management Capacities and Systems Improvement (vii) Develop Agricultural Sector M&E System (viii) Improvement of Capacity in all levels (ix) Improvement of ICT for Agricultural Information Services and Systems; and (x) Provide microfinance services. Linking ASDP II Component 4 for three crops (Tea, Coffee and horticulture) with Agri-connect Result 1 will be key to achieve an improved policy, legislative and regulatory framework; increase trade promotion services; improve sector governance, coordination, and dialogue; increase capacity of District Authorities to support sector growth and improved nutritional outcomes, and as a crosscutting issue, promote and strengthen gender inclusiveness in the agricultural sector.

In the context of **Zanzibar**, rice is among the commodity value chain prioritized by the **Zanzibar Agriculture Development Program (ZASDP)**. Growth in the rice sub-sector in Zanzibar presents many opportunities for budding rural and urban economies and currently contributes significantly to food security, nutrition and economic growth. Rapid change and market dynamics often disadvantage small producers and business firms. Small producers and business firm are frequently failing to exploit market dynamics, due to their inability to meet production criteria, sanitary and quality standards. Also, there is need to enhance the capacity of integrating rice farmers into the district planning process (DADPs), backup horticulture as a lever for raising health and nutritional standards, fostering the application and adherence to quality and safety standards; expand financial services to relevant value chain actors including banking and insurance services targeted at the needs of horticulture farmers; support domestic, regional and export market development through strengthening rice distribution networks, supporting the branding of Zanzibar rice products for regional markets, facilitating market linkages with buyers in high potential markets; supporting the promotion of agro-processing activities in relation to targeted market including more protective and better designed packaging materials; expand access to affordable equipment and agriculture inputs and promoting the adoption of modern practices. The Tanzania FOLUR Child Project will align with the policies framed within the ZASDP and contribute, with selected interventions, to the development of the rice value chain.

1.2 Sector Context

There is one value chain targeted under the FOLUR project: rice (*Oryza sativa*).

Technical studies suggest that rice offers the highest potential for smallholders' increased income and nutrition based on, inter alia: -

- a) Agro-ecological conditions for potential increased productivity, production and quality;
- b) Potential for local value addition, local industrial development and opportunities for commercialization (domestically, regionally and on international markets);
- c) Opportunities for reaching premium markets and prices (example, certified organic);
- d) According to the Ministry of Agriculture, rice is the second most produced cereal crop in Tanzania, with over 1.68 million growers, 1.59 million of them being on the Mainland Tanzania and 79,736 in Zanzibar;
- e) Trade impact - (Rice is the main staple food crop in Zanzibar, ranking second in the mainland)⁶⁰;
- f) Opportunities for on-farm and off-farm job creation, income opportunities and entrepreneurship (and specifically for women and youth, particularly in the expanding horticulture sector) and multiplier effect on value chain actors;

⁶⁰ Ministry of Agriculture, Food Security and Cooperatives (2019) of Tanzania, Mainland

A weak enabling environment constrains development and growth, particularly hampering private sector investments. This includes excessive and complex tax policies, their uneven application, burdensome licensing and export procedures, inefficient and market-distorting pricing mechanisms, constrained access to finance also due to a lack of de-risking mechanisms, and opaque land titling policies.

Furthermore, it includes poor dialogue and coordination among and between public and private stakeholders, weak governance of producer groups, and limited local government capacity to contribute to agricultural development.

The ongoing related initiatives in Zanzibar are indicated in Table 1-1.

TABLE 1-1 **CURRENT RELATED PROJECTS - ZANZIBAR**

	Project Name	Financier	Project Duration (Years)	Amount (US\$)
1	Rice Irrigation Infrastructure Project	KOREA/SMZ	3	64,500,000
2	Expanding Rice Production Project	W/BANK/SMZ	2	2,100,000
3	Agri-connect-supporting Value Chains for Shared Prosperity	EDF-EU/SMZ	3	5,000,000
Total				71,600,00

TABLE 1-2 GEF FOLUR KEY IDENTIFIED PARTNERS

Cofinancing	Description	Time period	Funding source	Total	During the period of the project
In kind GoT support					
Ministry of Natural Resources and Tourism	In-kind contribution	2019-2023	Govt recurrent budget	1,000,000	1,000,000
Ministry of agriculture	In-kind contribution	2019-2023	Govt recurrent budget	1,000,000	1,000,000
Ministry of Water	In-kind contribution	2019-2023	Govt recurrent budget	1,000,000	1,000,000
Government of Zanzibar	Cash and in-kind	2019-2023	Govt recurrent budget		1,500,000
District authorities	Cash and in-kind	2019-2023	Govt recurrent budget	10,000,000	3,000,000
Total in-kind funding GoT					7,500,000
Ministry of Natural Resources and Tourism	Resilient Natural Resource Management for Tourism and Growth (REGROW)	2017-2022	WB	150,000,000	15,000,000
Ministry of agriculture	Expanding Rice Production Project (ERPP)	2015-2020	World Bank	22,900,000	9,160,000.00
Ministry of agriculture	Agri-Connect- Supporting Value Chains For Shared Prosperity	2018-2022	EU	119,025,000	11,902,500
Ministry of agriculture	Rice Irrigation Infrastructure Project	2019-2022	Govt. of Korea	64,500,000	6,450,000
Total grant-funding GoT					42,512,500
SAGCOT Secretariat	In-kind contribution	2021-2023		500,000	500,000
Rufiji Basin Authority	In-kind contribution	2021-2023		500,000	500,000
NLUPC	In-kind contribution	2021-2023		500,000	500,000
NCMC	National Carbon Monitoring Interim Project	2015-2019	Norway	4,283,492	1,070,873
TOTAL GoT					52,583,373
WWF Tanzania	Various	2019-2023	Multi-donor	2,500,000	2,500,000
GEF Agency		2019-2023		1,000,000	1,000,000
TOTAL WWF					3,500,000
IUCN	Protected area categories V and VI as landscape mechanisms for enhancing biodiversity in agricultural land, ecological connectivity and REDD+ implementation - Stabilizing Land Use (PLUS)	2017 - 2020	IKI	450,000	225,000
	Catalysing Private Sector Commitment to Implement the Bonn Challenge – A Platform for Success - Bonn Challenge and Private Sector	2019 - 2022	IKI	900,000	900,000
	Sustainability and Inclusion Strategy for Growth Corridors in Africa - SUSTAIN AFRICA	2020 - 2023	DGS	1,700,000	1,700,000
	Enhancing Adaptive Capacity and Climate Resilience of Vulnerable Smallholder Farming Communities and Agro-pastoral Systems in Semi-Arid Areas of Tanzania Mainland and Zanzibar	2020 - 2024	GCF	3,000,000	1,000,000
TOTAL IUCN					3,825,000
					59,908,373
TOTAL					61,979,246

1.3 Rice Trade

1.3.1 Imports

Tanzania imports of rice are forecasted to increase slightly in 2019/2020 due to increases in human consumption. Tanzania primarily imports long-grain milled rice from Pakistan, though it also imports smaller quantities from Thailand and India (Table 1-3). Imports in recent years have exceeded US\$75 million. As an EAC member country, Tanzania applies a common external tariff of 75% ad valorem or US\$345 per metric ton, whichever is higher, for imports from non-EAC countries. Rice imports from the United States are primarily for food aid programs.

TABLE 1-3 MAJOR RICE EXPORTERS TO TANZANIA⁶¹

Reporting Country	2016 Quantity (Metric Tons)	2017 Quantity (Metric Tons)	2018 Quantity (Metric Tons)
Pakistan	173	180	180
Thailand	23	51	30
United States of America	0	0	16
India	8	9	9
Others	0	0	1
Total	204	240	236

1.3.2 Exports

In September 2018, the Government of Kenya banned importation of rice from Tanzania due to low standards and packaging. The absence of punitive tariffs by other East Africa Community countries due to reduction in mixing of locally produced Tanzanian rice with imports from Asia to circumvent the East Africa Community Common External Tariff while re-exporting the Asian rice was a factor.

In addition, attractive prices in some markets in Kenya, Uganda and Rwanda where the Tanzanian rice is preferred because of its aroma and high-water absorption that makes it swell, also led to the rise in volume traded informally. The Tanzanian government expects to increase its rice exports to the Eastern Africa region by more than one-third in 2019/2020⁶¹. Trade supplies are expected to rise because of the July to August harvest and high carry-over stocks, which are expected to lower prices.

⁶¹ Source: - Global Agricultural Network (April 2019);

2 Description of Project Sites – Tanzania Mainland and Zanzibar

2.1 The Kilombero Valley

The Kilombero Catchment is located in south - central Tanzania. The catchment is characterized by high relief energy, with altitudes ranging from 200 m to 2500 m above sea level, and is surrounded by the Udzungwa Mountains in the north, as well as the Mbarika Mountains and the Mahenge Highlands in the southeast (Figure 2-1).

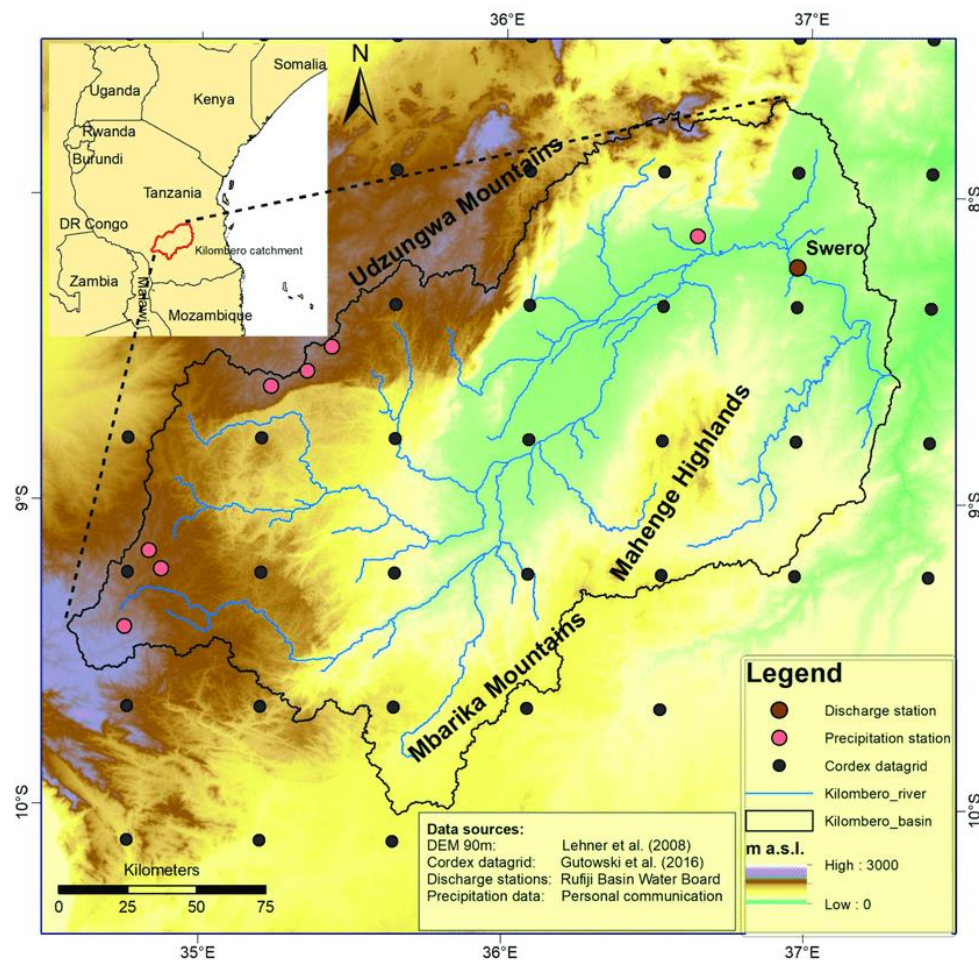


FIGURE 2-1 OVERVIEW AND LOCATION OF THE PROJECT AREA⁶².

In total, the catchment comprises 40,240 km² up to the confluence of Kilombero and Rufiji River. Although the Kilombero Catchment only covers 23% of the drainage area of the Rufiji Basin, it contributes 62% of the annual runoff volume (Ed Wilson, 2017). The floodplain system covers an area of 7967 km² (Mombo, Speelman, Van Huylenbroeck, Hella, & Moe, 2011), and contains the largest freshwater wetland within East Africa below a threshold of 300 m above mean sea level (Kangalawe & Liwenga, 2005). A big share of the floodplain is designated as a Ramsar site (Figure 2-2), which underlines the wetland's international environmental importance (Ed Wilson, 2017).

⁶² Source: (Näschen, et al., 2018)

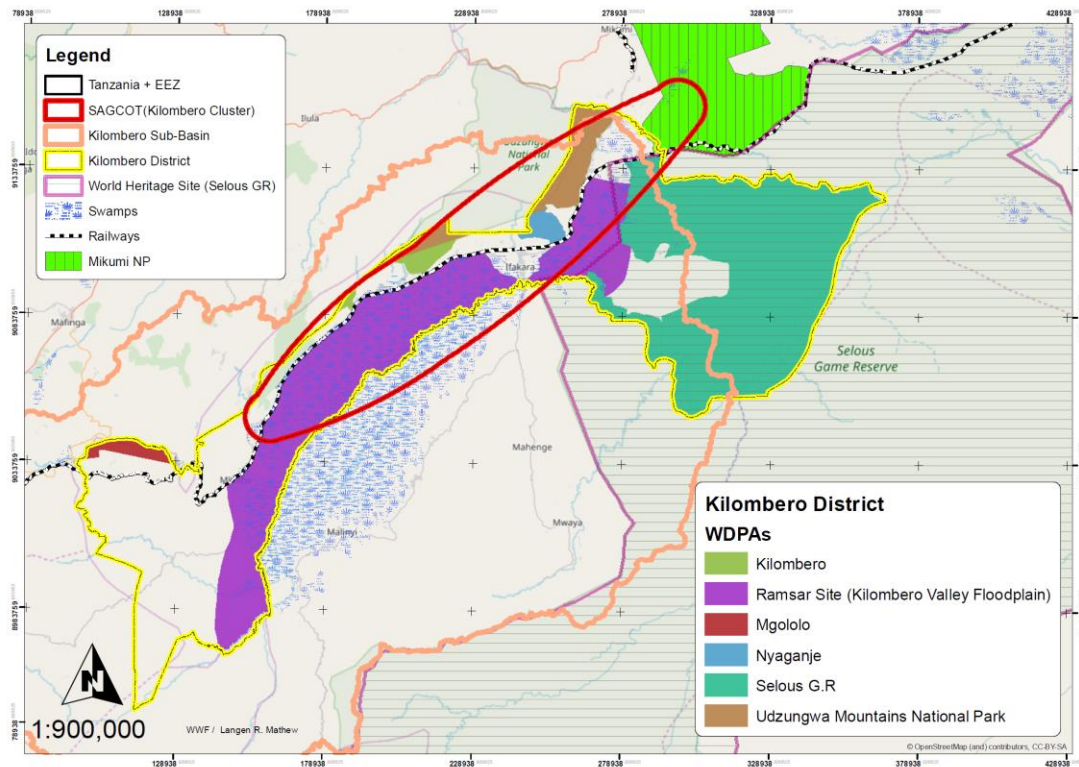


FIGURE 2-2 THE KILOMBERO DISTRICT AND THE RAMSAR SITE

The Kilombero River is the main tributary of the Rufiji River, representing the largest river basin in Tanzania. Water resources monitoring is scarce in the Kilombero Catchment, although it is prone to environmental changes with implications on water availability. Recent developments show an increase in population and agricultural land, and a decrease of natural landscapes, especially in the lower floodplain wetland of the catchment, while the upper catchment area is undergoing deforestation activities (Ed Wilson, 2017). Up to today, 9% of the national rice yield is produced in the Kilombero wetland, and the wetland area is characterized by patches of several land use activities, from small- and large-scale farmers to pastoralists and urban populations near the town of Ifakara at the northeastern bottleneck of the wetland (Gabiri, Burghof, Dieckkrüger, Steinbach, & Näschen, 2018). All these anthropogenic activities, in combination with ongoing climate change, alter the hydrological regime of the Kilombero River. Future activities foresee the establishment of an agricultural growth corridor in the Kilombero Catchment (Government of Tanzania, 2013), which will foster the pressure on water resources in terms of quantity and quality in the research area and for downstream riparian areas.

The regional climate is defined as sub-humid tropical climate, with distinct dry and rainy (November - May) seasons with a predominantly unimodal rainfall pattern (Koutsouris, Chen, & Lyon, 2016). Nevertheless, many teleconnections influence the regional climate, resulting in shifts between unimodal and bimodal rainfall patterns among the years. Years with a unimodal distribution of rainfall lack the short rains (November - January), whereas the bimodal rainy seasons are characterized by short (November - January) and long rains (March - May), which correspond mainly to the movement of the Intertropical Convergence Zone (ITCZ). The average annual precipitation is between 1200 and 1400 mm (Koutsouris, Chen, & Lyon, 2016), with strong interannual variability and spatial variability between the mountainous area and the lowlands, with

precipitation up to 2100 mm and 1100 mm, respectively (Ed Wilson, 2017). The temperature mirrors this pattern inversely, with annual mean temperatures of 24 °C in the valley and 17 °C in the uplands (Ed Wilson, 2017).

The catchment is predominantly characterized by Fluvisols in the valley bottom, whereas the upland regions are dominated by Acrisols and Nitisols. The western upland soils are mainly described by Lixisols, and in the lower eastern part Cambisol is the dominant soil type (Figure 2-3).

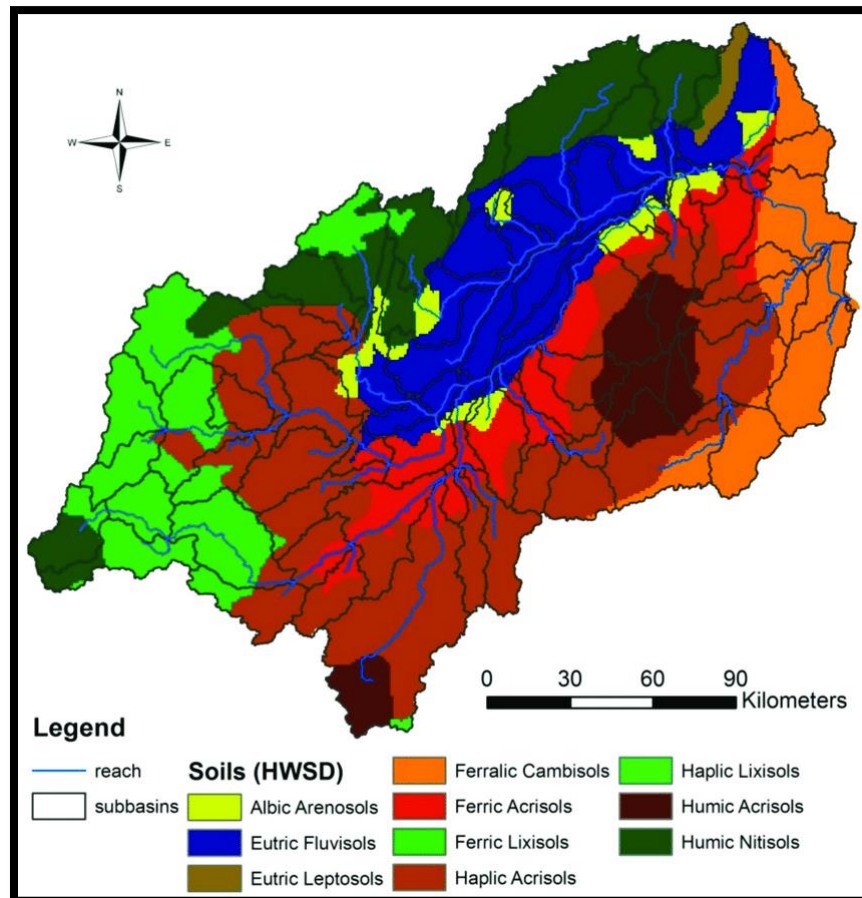


FIGURE 2-3 DISTRIBUTION OF SOILS FOR THE KILOMBERO CATCHMENT⁶³

The land cover of the upper catchment embraces a mixture of natural vegetation like tropical rainforests, bush lands, and wooded grasslands, with some patches of agricultural fields. The valley is surrounded by a Miombo woodland belt, whereas the floodplain itself is dominated by agricultural use and grassland.

2.2 Zanzibar

2.2.1 Zanzibar's Background Information

Zanzibar is part of the United Republic of Tanzania and consists of the two main islands, Unguja and Pemba and several small islets. Administratively, Zanzibar is divided into five regions, three of which are in Unguja

⁶³ (Näschen, et al., 2018)

(North, South and Urban West) and two regions are in Pemba Island, namely North and South Regions (Figure 2-4). The total land area of Zanzibar is 2,643 sq. km (Unguja 1,658 sq. km and Pemba 985 sq. km). Based on the 2012, National Population Census, the population of Zanzibar was estimated to be 1,303,569 in 2016, with an annual population growth rate of 2.8% (National Bureau of Statistics, 2013). Population density per sq. km, is 530 persons making Zanzibar the most densely populated area in East Africa.

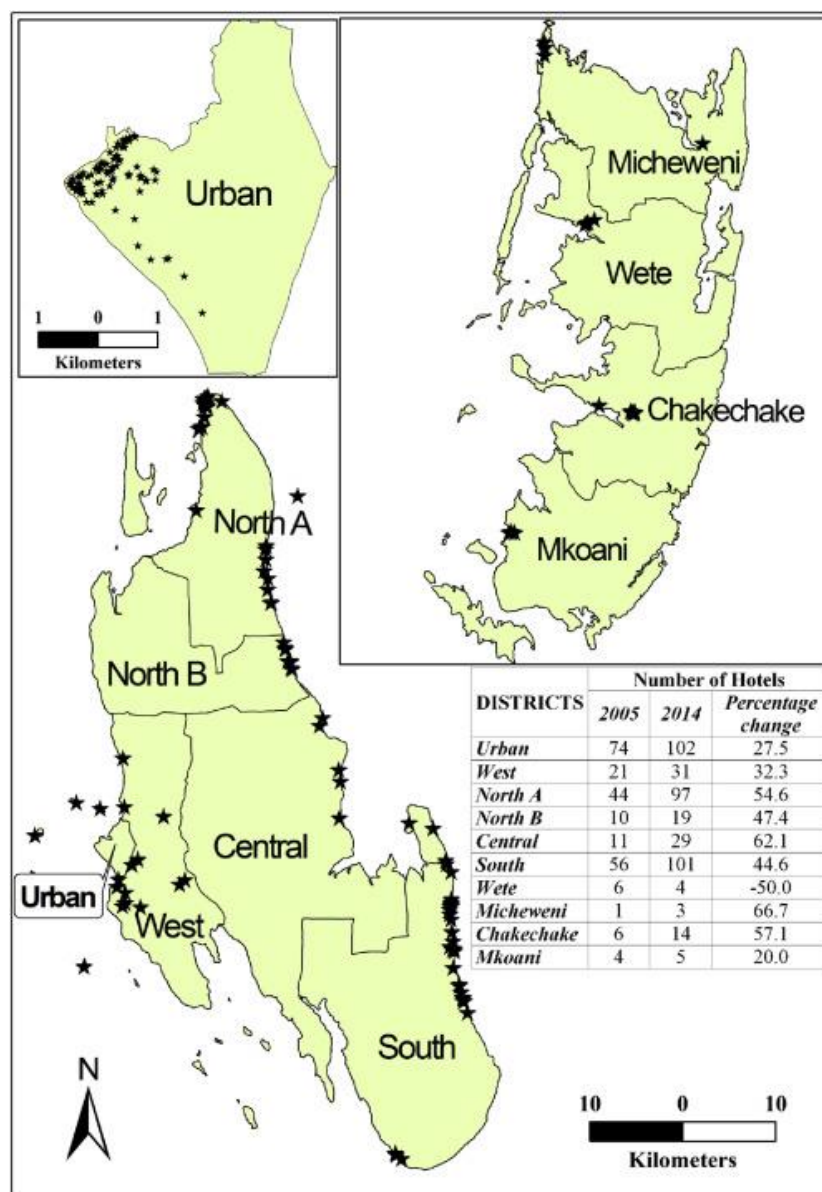


FIGURE 2-4 ADMINISTRATIVE MAP OF ZANZIBAR

With exception of Urban and West Region which have three districts, each of the remaining regions is divided into two districts, totaling eleven districts for the whole of Zanzibar. Districts are subdivided further into Shehia, and each district contains several Shehia. Shehia is the lowest official administration unit in the country and each Shehia consists of a number of villages and households.

Zanzibar is dominated by a tropical low land humid type of climate with an average annual rainfall of 1700 mm and mean maximum temperature of 26°C, which provide suitable conditions for production of most of tropical crops including rice, cassava, banana, maize etc. The Island cropping calendar is characterized with bimodal nature of rainfall and two cropping seasons are experienced i.e. the long rains (Masika) from March through to June and the short rains (Vuli) from October to December (Haji, Salehe, & Msinde, 2018). Agriculture is the main economic activity accounting for more than 70% of merchandise export earnings. Zanzibar agriculture is smallholder (with a per capita land holding of 0.25 ha), highly dependent of rainfall and characterized with limited use of improved productivity enhancing technologies.

Frequency of rainfall irregularities has been observed in Zanzibar since 2006 (Senga, 2014). The repeatedly weather shocks which are apparently increasing in frequency and severity do pose a great challenge to agricultural development and livelihood of significant proportion of the population directly or in directly engaging in agriculture. In addition, repeated shocks increase the risk of smallholder farmers falling into destitution and chronic food insecurity given the fact that they have been experiencing new shocks before recovering from the previous ones.

2.2.2 Zanzibar's Economic Performance

According to the Governor Bank of Tanzania's Monetary Policy Statement of June 2018 (Bank of Tanzania, 2018), in 2017, the Zanzibar economy registered robust performance, with real GDP growing by 7.5% compared with 6.8% recorded in 2016. Major contributors to growth included accommodation and food services, which contributed 36.0 percent, followed by agriculture, forestry and fishing (22.7%), and manufacturing (13.3%). Headline inflation decreased to 2.6% in April 2018 from 5.4% in June 2017, driven by food inflation, which eased to negative 1.1% in April 2018 from 4.6% in June 2017, following improved supply of food notably maize flour, green and yellow bananas, and sugar.

2.2.3 Demand and Rice Production in Zanzibar

Rice is Zanzibar's staple food with the current consumption standing at 61.3 kg/person per year. According to the Ministry of Agriculture, Natural Resources, Livestock, and Fisheries of Zanzibar (2018) rice production has increased from 39,000 tons in 2017 to 48,118 tons, during 2018. The increase has been attributed to the adoption of the system of rice intensification (SRI) in the archipelago - made up of Unguja and Pemba major islands with 1.4 million people (National Bureau of Statistics, 2013).

According to the office of the Chief Government Statistician, Zanzibar (2019), only a small proportion of cropland is irrigated. The Zanzibar Irrigation Master Plan (National Irrigation Commission, 2018) has identified 8,000 ha as suitable for irrigation development in both Unguja and Pemba islands. The master plan states that paddy occupies about 15,000 ha from the total cropland area of 122,600 ha including tree crops. Out of 15,000 ha, the irrigated area covers only 450 ha, and the rest is non-irrigated (7,550 ha rainfed lowland and 7,000 ha upland). Paddy has occupied a prominent position as a strategic crop for food security and economic development. It is the main staple food which accounts for more than 50% of staples consumed in Zanzibar. It is estimated that per capita annual rice consumption is 120 kg, and total annual rice requirement is estimated at 120,000 tons (Haji, Salehe, & Msinde, 2018).

Therefore, with production of 48,118 tons during 2018, Zanzibar has a gap of 71,882 tons of rice per year to meet the total demand of 120,000 tons of rice per year. That means the country must continue relying heavily on imports to feed its more than 1.4 million people as its efforts to increase or produce enough continues with support from foreign countries particularly South Korea, Indonesia, and China. The Revolutionary Government of Zanzibar (RGoZ) has been making intensive efforts to improve the agricultural sector, particularly since 2011 after the launch of 'The Agriculture Revolution/Transformation Program' with aim to increase rice production.

Despite existing and emerging challenges in farming which include insufficient or lack of modern skills and technology and impacts of climate change, the government has maintained its efforts for the last eight years, supporting rice farmers by offering agricultural subsidies to rice farmers by covering 75% of the cost of agro-inputs (GAFSP, 2019). Farmers get the inputs at subsidized prices for example Hansunil herbicide from China at Tshs.6,000 (\$2.6) instead of Tshs. 26,000 (\$11.3) per liter and fertilizers at Tshs.10,000 (\$4.4) for the 50-kilogram bag instead of Tshs. 60,000 (\$26).

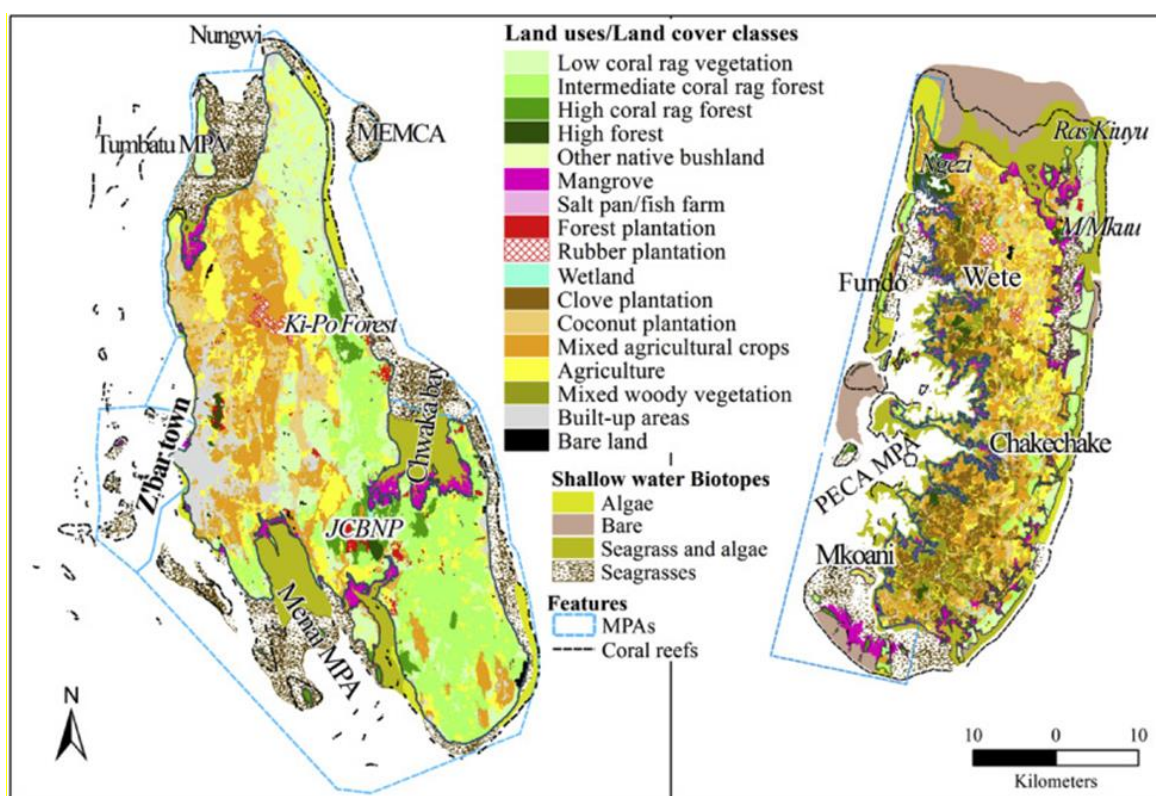


FIGURE 2-5 LAND USE/COVER CLASSES IN ZANZIBAR

On 13th December 2018, the Ministry of Agriculture, Irrigation, Natural Resources and Livestock, on behalf of the government, signed an agreement with a contractor from the Republic of Korea for the construction of a US\$50 million irrigation infrastructure that would cover a total of 1524 hectares (DASANCONSULTANTS, 2019). The irrigation infrastructure covers rice farms in Cheju, Bumbwisudi and Kibokwa villages in Unguja Island while in Pemba the farms are at Makwararani and Chamanangwe villages.

The project, which is being implemented in collaboration with other development partners designed a special 10 year agricultural program under the name of The Zanzibar Agricultural Sector Development Program (ZASDP) already in progress and to be implemented in three phases, two of which will be of three years and the other of four years.

Zanzibar has about 8,521 hectares of land suitable for rice irrigation farming and is targeting to produce at least 50 percent of the required rice by 2020. In Zanzibar farmers grow different kinds of rice which include New Rice for Africa (NERICA) an interspecific cultivar of rice developed by the Africa Rice Center (AfricaRice) to improve the yield of African rice varieties.

Experts report that NERICA rice (takes 80 - 90 days) is a cross between varieties of high-yielding Asian rice and the robust and disease-resistant African rice, developed at the West African Rice Development Agency (WARDA) - a rice research center. Other types of rice grown include; Super-India which takes four months, BKN-Supa (90 days), TxD 306 and TxD 88 which both take 120 days.

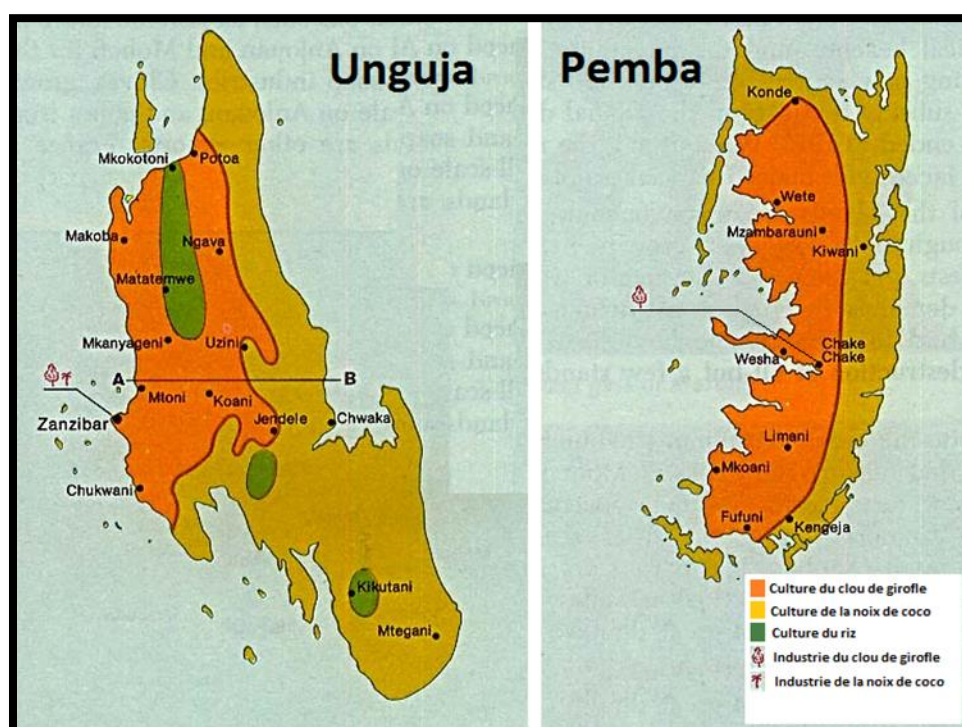


FIGURE 2-6 RICE GROWING AREAS IN UNGUJA AND PEMBA

In Zanzibar, wide varieties of spices are grown, and clove represents the most important export crop, contributing over 50% of foreign exchange earnings. Fruits such as mango, papaya, bananas, citrus, as well as coconut are essential crops in the islands' cropping pattern. Food crops cover 60% of the total cultivated land. Common food crops grown include cassava, rice, sweet potatoes, potatoes, sorghum, maize, legumes and tomatoes. Except for rice and often maize, the bulk of these crops are grown under rainfed conditions.

Zanzibar agriculture is characterized by smallholder farming with many of the farmers living at the subsistence or semi-subsistence level with a small amount of marketed crop production (Ministry of Agriculture, Food Security and Cooperatives, 2018). Agricultural activities in the isles are highly labor intensive with most farmers

depending on hand hoe and other traditional hand implements for crop production. In the absence of inputs subsidies, smallholders are generally unable to afford farm inputs resulting in relatively low agricultural productivity. Lack of improved, low cost traditional technologies or high value agricultural products also limit the growth of farmers' incomes. In addition, most agricultural production is not commercially oriented and support for services such as input supply, agro-processing and marketing are poorly developed hence leading to poor cost recovery and low incomes.

In sum, heavy dependence on the rainfed agricultural system; low investment in the agricultural sectors; inadequate access to financial services for agricultural producers and support services such as research, extension, plant protection, and input supply and distribution are among many identified problems facing agricultural performance.

2.2.4 The Potential for Irrigated Rice Agriculture in Zanzibar

The amount arable land in Zanzibar is estimated at 130,000 ha - of which 8,521 ha have been identified as having potential for irrigation (NEPAD-GoT, 2005); and, currently, Zanzibar has only 400 ha under irrigation. Preliminary studies indicate that Pemba Island has a reservoir capacity sufficient for 37 small dams estimated at 6.81 million cubic meters while Unguja Island has the capacity of 2.29 million m³ for three small dams in addition to abundant ground water resources (GAFSP, 2019). With the existing trends in production, which depend heavily on rain fed agriculture, production of rice is projected to reach 13,000 tons in 2020. However, with the development of 8,521 ha for irrigation and continued rain-fed farming, production could be raised to more than 40,000 ton/year (RGoZ, 2009). Thus, irrigation development has the potential to improve household food security significantly and reduce reliance on imported food. Although rice production has high potential under irrigated systems, production of vegetables and other high value crops could also provide good returns; cropping choices in future irrigation sites would depend on agronomic conditions and evaluation of profit potential.

Irrigation potential is also high in the other most commonly used irrigation method in Zanzibar - dry land irrigated through rainfall collection (RGoZ-MANR, 2009). Although there is little use of ground water pumping and weir/dam diversion structures with canalization, a variety of tropical crops are grown under rainfed agriculture at subsistence and cash crop levels. Both high potential and marginal lands are cultivated under rainfed conditions, at relatively low levels of productivity. Dependence on rainfed agriculture makes production vulnerable to adverse rainfall patterns such as terminal drought or intermittent dry spells during the rainy season. In the absence of effective conservation measures, drought and surface runoff also result in deterioration of production resource base.

A key element to improvement in water management and conservation is rainwater harvesting for dry land water management. The practice of rainwater harvesting offers farmers both production and conservation benefits and, with little improvement, incremental gains could be significant by virtue of the large amount of land under the rainfed sector. Traditional rainwater harvesting is most common in irrigated rice cultivation using earth basin structures in the weir/dam diversion systems. In contrast, rainwater harvesting in dry land rice farming is based on the construction of earth bunds to permit rainwater or gravity fed irrigation water to be collected and impounded in the field during the rainy season. This traditional system, while meeting the needs of farmers, does not comply with the general principles of efficient rainwater harvesting design and

implementation. The irrigation development plan and agricultural water use analysis conducted in Phase I of the 'Feasibility Study for the Development of the Agricultural Sector in Zanzibar' recommends modification of these traditional practices into more appropriate and suitable water harvesting system for better dry land water management. The package comprises a small-scale system built entirely on indigenous knowledge and predominately used for crop production.

2.2.5 Rationale for Sustainable Farming Practices' Interventions in Zanzibar

Since 2007, the Zanzibar Government has been undertaking various reforms aimed at improving the economy and achieving the Zanzibar Poverty Reduction Plan (ZPRP) targets through higher agricultural productivity, whereby it was agreed that irrigation farming has good potential to increase the stability and productivity of agriculture and could be regarded as one element in an integrated approach to poverty alleviation in rural areas (RGoZ, 2007). Studies and consultations conducted with beneficiaries after 2005 in Zanzibar (NEPAD-GoT, 2005) indicated intensification and diversification of food and cash crops; installation and improvement of agricultural infrastructure; and introduction of a holistic agricultural production were key issues to improving agricultural performance. Irrigation provides higher returns for land and labor through higher and more reliable yields, allowing higher value crop production, and thus contributing to improved incomes and food security. Rice, banana and sweet potato are considered important as food security crops and pulses and vegetables as second crop options targeted for the local market. High value crops such as fruits, vegetables and spices can also be further developed. Additionally, irrigation can assist in promoting local food sourcing (fresh fruits, herbs and spices, and vegetables) to meet the requirement of an expanding tourism industry.

Irrigation provides for a means to intensify production, a necessity within the context of the isles where the opportunity for expansion of cultivation is limited and little other income generating activities takes place. In the subsistence agricultural economy of Zanzibar, where labor is abundant and cash is in short supply, a labor-intensive production, low external input system of irrigation is an important component of rural development for the following reasons: -

- a) Absorption of the active employed population into a production system of double cropping under irrigation, instead of single cropping as in most rain fed activities;
- b) Gradual integration of the subsistence farmers into the market economy;
- c) Agricultural production to keep pace with population growth and;
- d) Reduction of environmental degradation resulting from the pressure on the land resources from rain fed agriculture.

Given the limited financial capacity of the farmers to undertake irrigation investment on their own, significant investment is essential in the following key areas: -

- a) Provision of appropriate technological packages related to small-scale, low-cost water harvesting technique for increasing production, improving land husbandry and conserving soil moisture;
- b) Capacity building in training of farmers and staff.

Water harvesting interventions would be introduced with the objectives of reducing soil moisture stress and loss effect on rainfed crop yield for increasing and stabilizing crop productivity, conserving production resource base and improving the livelihood condition of the local population. The basic design consideration would include installation of irrigation infrastructure, construction of contour bund water harvesting structure in the

rainfed area for interception, collection and storing of surface runoff water in the soil profile, cultural practices improvement and capacity building of the technical staff and the beneficiaries.

Greater focus is being placed on small-scale irrigation schemes as Government moves away from previous, more centralized methods of irrigation development and management (RGoZ-MANR, 2009). New modalities of irrigation scheme development are to be implemented so as to strengthen District Offices and accommodate privatization initiatives that are being implemented as part of the Government's development policy. These and other experiences in irrigation development globally highlight the following issues for program design: (i) irrigation schemes should be implemented on a contract basis with involvement of the private sector; (ii) beneficiaries should participate in the entire scheme implementation process; (iii) strengthening of District Offices should be incorporated in the implementation process; and (iv) tendering and contract award should be done in a fair and transparent manner.

3 Rice Farming Systems and Technology

Rice (*Oryza sativa*) is grown in more than 100 countries spread across six continents and in varying agroecological and socioeconomic conditions, with the annual global production amounting to over 600 million tons of paddy rice (the whole grain before milling), - 90% of which is located in Asia where the largest producing countries are China, India, Indonesia, Bangladesh, Vietnam and Thailand (Trébuil, 2004).

During the month of August 2019, the United States Department of Agriculture (USDA) estimated that the World Rice Production 2019/2020 will be 497.86 million metric tons, around 0.04 million tons more than previous month's projection. Rice Production last year (2018) was 498.62 million tons⁶⁴. This year's 497.86 estimated millions of tons could represent a decrease of 0.76 million tons or 0.15% in rice production around the globe.

Rice production systems have been classified over years differently depending on the context. Researching on performance of different rice farming systems in India, Rao *et al* (2017) considered the 'method of rice establishment' as criteria for classifying rice production systems across the globe. They summarized the information on rice production systems, resources used, crop productivity attained, the challenges encountered, and possible research needs for improving productivity in rice production systems, to meet the future food demands.

Therefore, based on the major methods of rice establishment of the world (A. N. Rao, 2017), the rice production systems are categorized as: -

- a) Transplanted rice (TPR) production systems, and
- b) Direct-seeded rice (DSR) production systems.

DSR production systems are further categorized as –

- i. Dry - seeded rice (dry - DSR) production system;
- ii. Wet - seeded rice (wet - DSR) production system, and
- iii. Water - seeded rice (water - DSR) production system.

⁶⁴ World Rice Production 2019/2020 - August 2019 - <http://www.worldagriculturalproduction.com/crops/rice.aspx>

According to Rao *et al* (2017), the productivity of TPR and DSR was reported to be similar when the best management practices are adopted. As already occurred in the developed world, a shift in adoption toward DSR production systems is occurring in developing world, due to advantages of DSR production systems such as lesser cost of production, increased resource (water, labor, and energy) use efficiency, and income compared to TPR.

Lower environmental footprint was found to be another advantage of DSR production systems when they were combined with other conservation agricultural practices. The need for continuous research efforts was stressed for understanding the evolving rice production systems across the globe and to develop practical integrated crop management strategies that improve rice productivity and production effectively, sustainably, and economically with minimal environment footprint.

According to the 2016/17 Annual Agriculture Sample Survey in Tanzania (Ministry of Agriculture, Food Security and Cooperatives, 2018), paddy was the second most produced cereal crop in the country with about 1,676,859 operators of whom 1,597,123 (95.2%) being in Tanzania Mainland and 79,736 (4.8%) in Zanzibar. During the long rainy season, a total number of 1,018,879 operators were engaged in paddy production and 591,016 operators in long rainy season.

Furthermore, the total area planted with paddy in Tanzania was 1,455,564 ha with 1,431,996 ha (98.4%) in Tanzania Mainland and 23,567 ha (1.6%) in Zanzibar. In Tanzania Mainland, Tabora Region (248,703; 17.0%) had the largest area planted with paddy, followed by Morogoro (221,864 ha; 15.2%) and Shinyanga (212,990 ha; 14.5%).

In Zanzibar, Kusini Pemba Region (8,196 ha; 34.8%) had the largest area planted with paddy, followed by Kaskazini Pemba (5,983 ha; 25.4%). The total area of paddy harvested in Tanzania was 991,909 ha: 970,141 ha (97.8%) in Tanzania Mainland and 21,768 ha (2.2%) in Zanzibar. Total production of paddy in Tanzania was 1,382,794 tons of which 1,353,957 tons (97.9%) were from Mainland and 28,837 tons (2.1%) from Zanzibar. The average yields of paddy was 2.5 tons/ha in Tanzania Mainland and 3.1 tons/ha in Zanzibar.

Morogoro Region with 332,280 tons (24.0%) and crop yield of 4.0 tons/ha had the highest paddy production in Tanzania Mainland, followed by Mbeya with 246,649 tons (17.8%) and a yield of 2.2 tons/ha; and Tabora with 171,150 tons (12.4 percent) and a yield of 2.9 tons/ha (Figure 3-1).

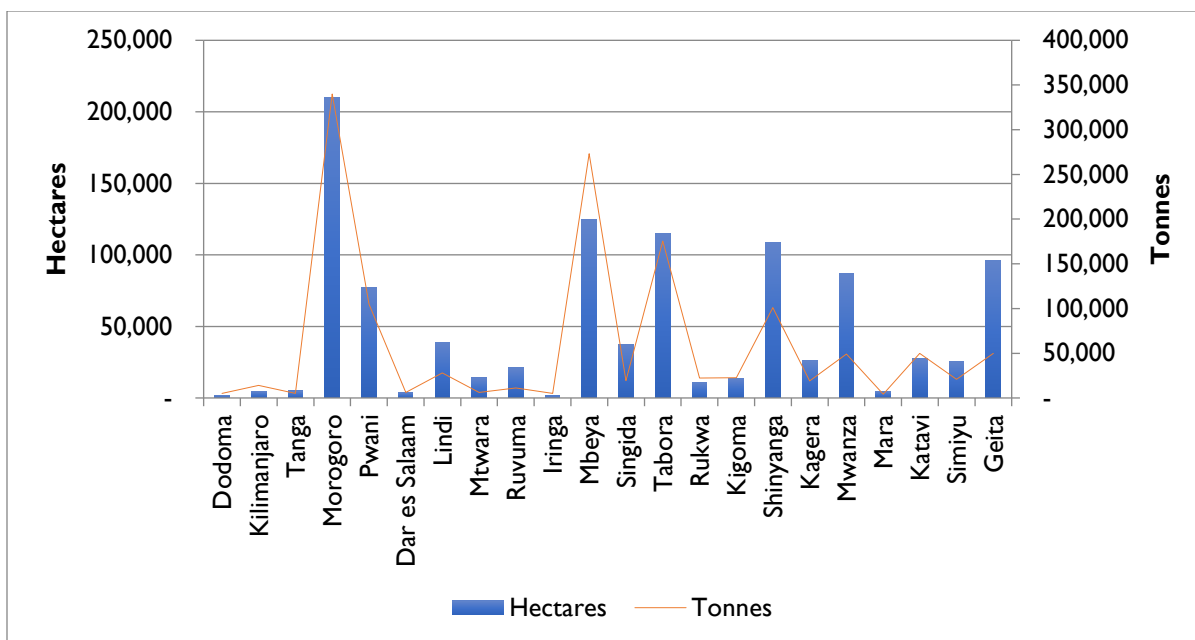


FIGURE 3-1 HARVESTED AREA (HA) AND PRODUCTION (TONS) OF PADDY BY REGION IN TANZANIA MAINLAND, 2016/17 AASS

In Zanzibar, the total area of paddy harvested was 21,768 ha resulting to a total production of 28,837 tonnes of paddy at an average yield of 1.3 ton/ha. The highest production of paddy was recorded in Kusini Unguja (9,990 tonnes), followed by Kusini Pemba (7,912 tonnes) as illustrated on **Error! Reference source not found..**

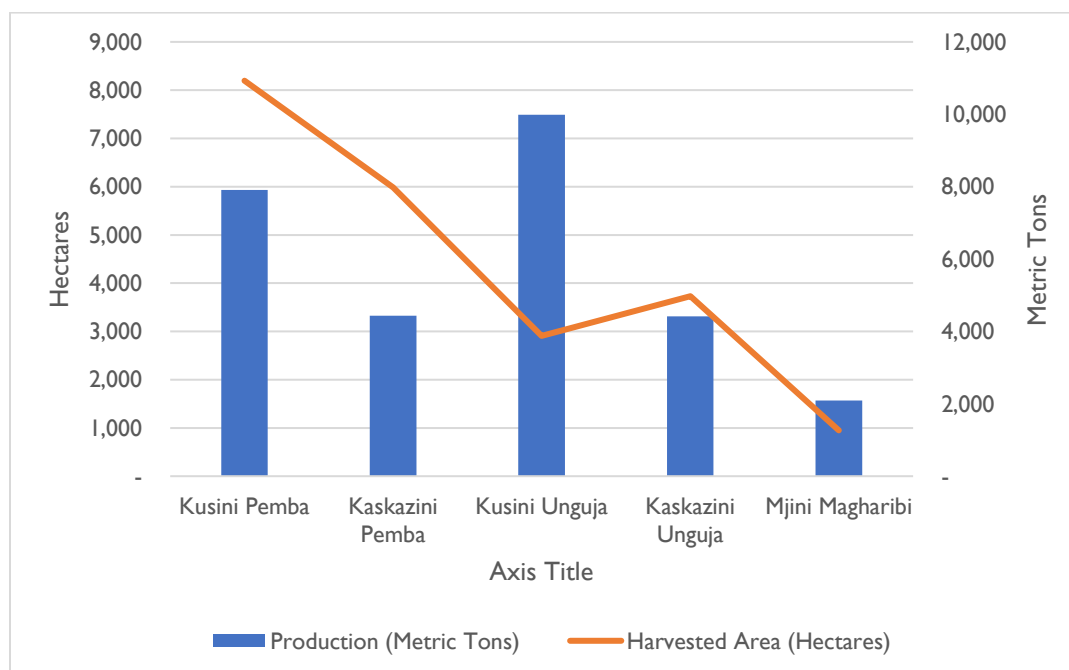


FIGURE 3-2 AREA HARVESTED (HA) AND PRODUCTION (TONS) OF PADDY BY REGION, ZANZIBAR, 2016/17

With large amounts of suitable, unfarmed, arable land, a high rate of self-sufficiency and current low yields, the Government of Tanzania endeavors to increase rice production and become a large net-exporter of rice for

the region and for Africa (Ministry of Agriculture, National Rice Development Strategy - Final Draft, 2009). System for Rice Intensification (SRI) is one of the strategies being investigated to improve small-holder rice production, both by the government and the private sector. The largest SRI effort in Tanzania to date is associated with the Kilombero Plantations Limited (KPL), which reportedly has 5,000 ha under rain-fed cultivation, 215 ha under irrigation, with the capacity to annually produce 33,000 tons of milled rice and 5,000 tons of rotation crops (beans and pulses.) KPL implemented SRI methods to lift smallholder yields from 3 tons/ha to over 5 tons/ha, and by 2014 tripled the average production of 6,500 farmer families living within 50 km of KPL. In 2015, this increased to 7,700 families.

3.1.1 System for Rice Intensification

SRI is a set of low-cost crop management techniques, which promotes community-led agricultural growth, while reducing and even reversing the effects of climate change. SRI differs significantly from the traditional rain-fed farming system used by most farmers and, as practiced in Kilombero, is characterized by three distinct practices:

- a) **Timing:** Under SRI, younger seedlings are transplanted when they are only 8 - 12 days old, as opposed to 21 - 40 days old under rain-fed conditions.
- b) **Number of seedlings, depth and spacing:** Rather than broadcasting or planting 3 - 4 seedlings per hole, only 1 - 2 seedlings are planted per hole, at a depth of 1 - 2 cm and a wider spacing (20 × 20 cm) in order to prevent resource competition.
- c) **Water Management:** Under SRI water is managed such that continuous flooding is not necessary; rather, water is added or taken out of the field to facilitate maximum tillage and health of the rice seedling - as epitomized in Figure 3-3. Agricultural extension officers also emphasize using organic fertilizers and pest control practices as an important component of SRI.



FIGURE 3-3 A RICE FARM IN KILOMBERO - DEMONSTRATING SRI TECHNIQUES

Some of the farmers in Mngeta have already adopted and mastered the technology. ‘Instead of continuously flooding paddy fields, SRI methods use smaller quantities of water to alternate wetting and drying the field during the growing cycle, reducing water requirement and production cost,’ explained one respondent from Mngeta village.

Since its introduction, SRI technology has evolved into a participatory learning process that offers farmers a range of management practices to adopt selectively according to local conditions and resource access. “Initially, we thought SRI was a strict recipe, but now we recognize that SRI methods present a menu of different practices to be adapted to suit local conditions and cropping systems,” said one respondent, during data collection in Mngeta village.

Discussion with KPL staff revealed that the company has been collaborating with other development agencies to promote SRI, training over 8,000 smallholder farmers in 10 villages within a 30 km distance around the farm, covering about 10% of all the farmers in the area. Moreover, SRI group members have benefitted from credit-covering inputs (seed, fertilizer, and herbicide) and farm implements (ox-plough).

The technology promoters, including KPL, USAID and even the government, had expected that by using SRI smallholder farmers in the villages surrounding KPL would raise productivity from less than 1 t to 3.5 t/ha under rain-fed conditions, and up to 6 t/ha under SRI’s irrigation system. According to a survey conducted in October 2017, more than 50% of farmers who have adopted SRI reported to have gained economically, recording significant yield improvement.

Nonetheless, not all farmers in the area report this rosy picture of SRI. While some farmers acknowledge to have benefited from the knowledge and skills acquired through the training and credit services they received, other farmers feel that SRI has not lived up to its promise on productivity or livelihoods improvement – citing the failed first round of credit and subsequent efforts to recover loans. Other farmers have abandoned SRI altogether, saying that it is considered too labor intensive.

3.1.2 SRI in the Kilombero Valley

The System of Rice Intensification (SRI) has been promoted in rice growing areas worldwide – including Tanzania’s Kilombero district – aiming to reduce the cost of production while improving farm-level productivity, and thereby increasing household income and food security.

Kilombero valley in Tanzania is a high-potential area for rice production, where it is the main staple as well as the leading cash crop. Over 90% of the rice in Kilombero is rain-fed and is grown on lowland rice fields. Under the traditional rain-fed farming system, rice fields are covered with flood water from February to April, which poses several challenges – including crop loss due to water logging, soil fertility loss due to leaching and reduced supply of water for downstream water users.

During the 2009/2010 cropping season, Kilombero Plantation Limited (KPL) – a large-scale producer of rice and maize within Mngeta division – working in collaboration with USAID and other financial development agencies, introduced SRI technology in order to improve productivity and production among smallholder farmers.



FIGURE 3-4 THE APPLICATION OF SRI TECHNOLOGY IN THE FIELD

3.1.3 Challenges of the SRI Technology in the Kilombero Valley

Uptake of SRI practices remains relatively minimal compared to the number of farmers who were trained by KPL and other partners. While seed selection has been more widely adopted, most farmers tend to avoid SRI components that require monetary investments, such as agrochemicals. Some farmers also continue to plant local varieties due to buyers' preference for aromatic varieties that are more readily marketable. Hence the adoption rate of improved rice varieties even among SRI members remains low.

However, all hope is not lost. SRI converts have continued to benefit from training and credit facilitation. There is a sizable level of uptake in some villages, such as Njage, Itongoa and Chita, where sustained interest in SRI has mostly been attributed to groups having strong leadership. The existence of a functioning irrigation scheme in Njage village has had a significant influence on the farmers' choice to support an active cooperative union. Farmers have embraced this technology, some of them recording yields of up to 40 bags per acre (7 ton/ha) compared to the previous 25 bags (4.3 ton/ha) or less using traditional varieties and conventional methods of rice production. In future, these farmers are expected to continue embracing the technology, using the knowledge and skills acquired during the last 10 years.

Focus group discussion participants confirmed that SRI can potentially reduce water use, increase land productivity, and reduce reliance on herbicides – reducing overall production cost. Engaging community members in all stages of SRI under participatory approaches – through SRI groups, for example – encourages members to take up the entire recommended technology package, and those who have done so have achieved significantly higher yields.

4 Research on Rice, Land and Water Resources in Tanzania

4.1 Rice Production and Research in Zanzibar

4.1.1 The Expanding Rice Production Project

The Expanding Rice Production Project (ERPP)⁶⁵ – World Bank injecting \$22.9 million to support the rehabilitation of irrigation schemes and an input voucher scheme for rice input packages in its project zones, aims to increase rice produced and marketed in targeted areas of Morogoro (mainland) and Zanzibar, leading to improved rural incomes and food security. This will be achieved through activities related to sustainable seed systems, improved crop productivity through better irrigation and crop management, and innovative marketing strategies (GAFSP, 2019). The project includes efforts to manage the irrigation scheme as a block, facilitate bulk purchase of inputs, and coordinate crop sales through a warehousing program. The project contributes to climate change adaptation by supporting improved irrigation and water management systems.

According to GAFSP (2019), some 13,369 poor people, 36% of which are women, had benefited from the project as of December 2017. The project is anticipated to ultimately support about 165,345 people producing irrigated rice in 18,500 hectares of land in the Tanzania mainland and Zanzibar. Project monitoring systems will evaluate the participation of women farmers in the targeted irrigation schemes and assure that women do not lose access to land when productivity and incomes rise.

Some 131 on-farm demonstrations have been established at seven locations. Over 820 farmers participated in the demonstrations, involving four new upland varieties and up to seven new lowland varieties, in three rice agro-ecologies – lowland rainfed, lowland irrigated, and upland. In Zanzibar, a total of five improved rice varieties selected by farmers from the ten that were introduced last season, were advanced through on-farm demonstrations at 16 sites to confirm their superiority based on farmers' and market preferences.

1,108 farmers have adopted practices promoted by the project. The project is promoting improved water-use efficiency in irrigated rice production by supporting the System of Rice Intensification (SRI), which can reduce water-use by up to 50%. The project has provided training on SRI as well as the required infrastructural input needed to adopt new technology to farmers. To date, over 600 farmers have participated in training activities, including extension agents, irrigation technicians, and lead farmers. Participating farmers have been equipped with knowledge and skills on seed production, variety selection and harvesting.

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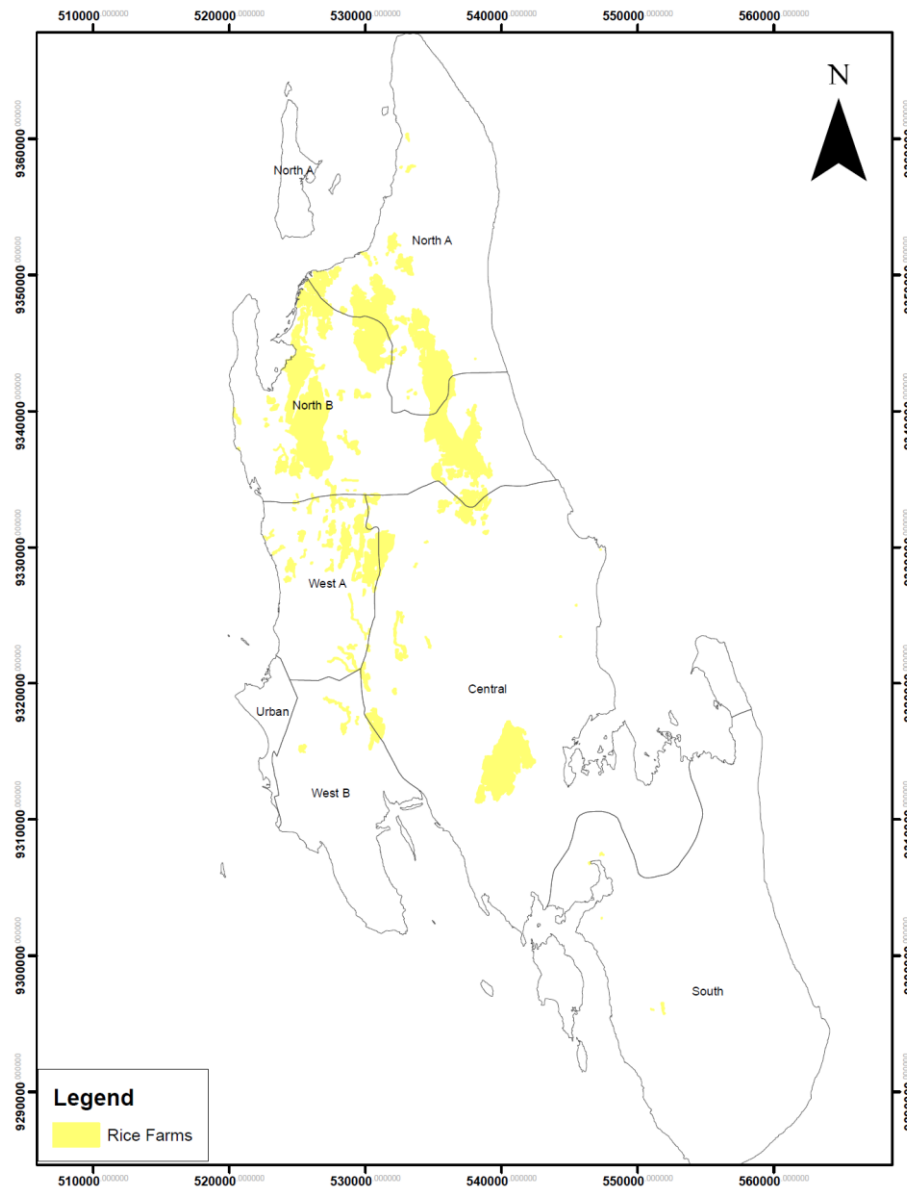


FIGURE 4-1 ZANZIBAR LAND USE MAP

4.1.2 ZANRICE – a Matching Grant Fund Project

A Matching Grant Fund project of the Competitive African Rice Initiative (CARI) and Ministry of Agriculture and Natural Resources to strengthen rice value chain in Zanzibar since 2015.⁶⁶

⁶⁶ www.cari-project.org

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Goals

The goal of the project is to integrate 4,573 rice farmers into sustainable and competitive business models that lead to increased paddy production as well as improvements in quality. As a result, income of the farmers is expected to double by the end of the 2-year project. This contributes significantly to the reduction of poverty of small holder farmers in Kibokwa, Kilombero and Cheju Rice valleys, Zanzibar, Tanzania.

Approach

In order to double the yield and income of beneficiaries, support is given to the beneficiaries through training on Good Agricultural Practices (GAP) and access to modern agricultural technologies. By supporting information sharing and contract farming arrangements between farmers and aggregators and off takers, the project enables farmers to market their products.

The technical packages and GAP training include demonstrations on the use inputs (fertilizers and agrochemicals), good farming practices and resource conservation. Farmer Business School (FBS) training increase farmers' financial literacy and teaches them how to manage their farm as a business.

Project strategies

- a) Enhancing rice production capacity of 5,500 rice farmers
- b) Enhanced use of certified seeds and improved inputs (fertilizer and agrochemicals)
- c) Conducting GAP trainings on System of Rice Intensification (SRI), Water Harvesting Integrated Pest Production Management (IPPM) and Post-Harvest Handling
- d) Improved information sharing ICT platform that enable farmers monitor and manage their rice supply chain facilitated by aggregation of paddy by Farmers Business Organizations (FBOs)
- e) Improved linkages among rice value chain actors (Farmers, Extension Agents, Input Dealers, Off-takers, Millers and Financial institutions)
- f) Encouraging crop diversification to help improve family nutrition and provision of alternative source of income.

4.1.3 Performance of NERICA Cultivars in Zanzibar

The cultivars of NERICA (New Rice for Africa), which are characterized by early maturity and high yield potential under rainfed conditions, have the potential to increase rice production in Tanzania, where rice cultivation is greatly affected by a short rainy season. During 2013, Sekiya *et al* (2013) conducted trials in Zanzibar to examine the yield performances of 14 NERICA cultivars at five locations during the long-rains season (Masika) and at another five locations during the short-rains season (Vuli). The NERICA cultivars produced significantly higher yields than local cultivars at five locations (Sekiya, Khatib, Makame, Tomitaka, Oizumi, & Araki, 2013). Yields of 12 NERICA cultivars were associated with rainfall ($R^2 = 0.367$ to 0.732) such that they yielded well during Masika (109 to 343 g m^{-2}) and poorly during Vuli (11 to 68 g m^{-2}). Spikelet number per panicle and percentage of filled spikelets (% filled spikelets) accounted for 70 to 90% of the yield variation in all cultivars, suggesting that yield was determined mainly during the latter part of the growth period. In some cultivars, yield was associated with rainfall during the latter part of the growth period but the yield of the remainder was associated with rainfall during the early part. A selected group of farmers, extension workers and researchers evaluated grain quality. Some cultivars scored well, especially NERICA 1. They concluded that NERICAs are generally suitable for production during Masika and that NERICA 1 especially should be promoted due to its

high grain quality. However, for double cropping of NERICAs, measures must be implemented for increasing or maintaining the water status of the soil during Vuli.

4.1.4 Evaluation of Irrigation Water Quality for Paddy Production

Kahimba *et al* (2016) conducted research at Bumbwisudi rice irrigation scheme in Zanzibar Island. This research was conducted to evaluate the performance of paddy rice cultivation in Zanzibar in terms of yield, quality of water for irrigation, and water productivity in Zanzibar - whereby water quality was evaluated to determine its suitability for irrigated paddy rice production.

The research site was situated at 06° 03' 32"S and 39° 15' 37"E and 40 m above mean sea level, about 13 km North East of Zanzibar town – where soil texture is sandy clay loam (54% sand, 13% silt and 33% clay).

Irrigation water quality was therefore assessed in terms of its quality parameters by laboratory determination of most important water quality parameters; the pH, total dissolved solids measured in electrical conductivity (EC), sodium content measured in sodium adsorption ratio (SAR) and bicarbonate. (Kahimba, Ali, & Mahoo, 2016) Sampling points were selected such that the samples taken are representative of the different sources from which water is obtained for irrigation. The sampling points were uniformly distributed throughout the sources within the irrigation scheme.

Irrigation water analysis in the study area revealed no restriction in its use for rice cultivation. All parameters analyzed for quality evaluation water source in Bumbwisudi irrigation scheme are within the FAO acceptable range for irrigation purposes and farmers can continue using it as irrigation water because it is free from salinity and sodium hazards.

4.1.5 Pesticide Use among Smallholder Rice Farmers

In an interview study conducted among smallholder rice farmers in Rufiji, Tanzania coastal mainland, and in Cheju, Zanzibar, farmer's pesticide use, and risk awareness were assessed. The farmers generally lacked knowledge or possibilities to manage the pesticides as prescribed by the manufacturers (Stadlinger, Mmochi, Dobo, Gyllba, & Kumblad, 2011).

According to Stadlinger *et al* (2011), few farmers knew what kind of pesticides they were using and had never seen the original packages, as pesticides were usually sold per weight or already diluted without labeling. Protective equipment was rarely used since they were not aware of risks associated with pesticides or did not know where to purchase protective gear. Only half of the farmers were aware of pesticides' health hazards and few associated pesticides with environmental problems.

The pesticide use was relatively low, but based on farmers' pesticide handling and application practices, health risks were a major concern. Most farmers did not believe in successful rice cultivation without using pesticides to control pests. However, estimated yields did not differ between pesticide users or farmers using conventional methods or neem tree extract. To avoid negative effects on human health and the environment, Stadlinger *et al* (2011) concluded that the farmers need basic education and better assistance in their farming practices and pesticide management.

4.1.6 Land Cover/Change of Coastal Marine Ecosystems in Zanzibar

Over the past three decades, coastal marine ecosystems of Tanzania have experienced a notable decline in the state of their environment through loss of natural habitats and biodiversity. Much of this change is attributable to human activities.

Senga (2014) investigated changes that have occurred as a result of human activities and climate change/variability, for the period between 2001 and 2011. Two demographically different locations in Zanzibar, namely Kisakasaka and Bumbwini were selected for the study. Landsat ETM+ images were used to locate and quantify the changes for which the intensity analysis method was employed. The study revealed that between 2001 and 2011, the mangrove, cultivated land/shrubs and bare land covers declined by 127.4 ha (33.9%), 46.0 ha (7.4%) and 10.2 ha (22.6%) respectively while mixed trees, 'Jangwa la bahari' and water covers increased by 147.2 ha (11.1%), 35.8 ha (119.7%) and 0.6 ha (0.02%) respectively for Kisakasaka location. During the same period, cultivated land/shrubs, mangrove and mixed trees covers declined by 262.2 ha (8.8%), 86.3 ha (12.6%) and 49.4 ha (1.3%) respectively while paddy, bare lands, 'Jangwa la bahari' and water covers increased by 165.6 ha (37.6%), 109.7 ha (837.4%), 103.9 ha (151.5%) and 18.7 ha (0.8%) respectively for Bumbwini location.

The study also revealed significant increases of population from 6,034 and 23,212 to 15,400 (155.2%) and 34 638 (49.2%) from 1988 to 2012 for Kisakasaka and Bumbwini locations respectively. Although long term rainfall data analysis for Zanzibar revealed no significant trend in amount, length of growing season and number of wet days indicated significant negative trends while both mean and minimum temperatures showed significant positive trends.

It was concluded that changes in climate together with population pressure had mainly contributed significant changes in land cover observed over the respective study areas (Senga, 2014). Hence concerted actions are required to reverse the observed/perceived changes.

4.1.7 Evaluation of the Performance of (SRI) at Bumbwisudi Rice Irrigation Scheme

Declining water resources, low rice yields and a widening gap between current rice demand and production in Zanzibar necessitates a change from the current rice production system to a more efficient system of production such as the system of rice intensification (SRI).

In an attempt to evaluate the efficacy of SRI practice and determining the optimum spacing and transplanting age of seedlings for better grain yield, productive tillers and water productivity, a field experiment in a Randomized Complete Block Design (RCBD) was set with 13 treatments and three replications at Bumbwisudi rice irrigation scheme in Zanzibar (Ali, M.Sc Dissertation, 2015). The experiment was conducted during vuli season from September 2013 to January 2014. SUPA BC rice variety was transplanted at square spacing (20, 25, 30, 35) cm and 8, 10, 14- and 21-days seedlings ages. Eight days old seedlings transplanted at 20 x 20 cm spacing (T1) (SRI plot) recorded significantly higher grain yield (7.38 t/ha) as compared to 21 days old seedlings under continuous flooding at 20 cm x 20 cm (T13) (5.283 t/ha). Lower grain yield of (5.14 t/ha) was in older seedling age of 14 days and spacing 25 x 25 cm (T10). There was 39.8% increase in yield in SRI practice compared to continuous flooding. Treatment T5 (10 days old seedling) with 20 x 20 cm spacing produced maximum productive tillers per hill (32/hill). High water productivity was obtained in T5 (0.44 kg/m³) as compared to (0.24 kg/m³) in continuous flooding. Highest water use efficiency (WUE) was observed in T1 (12.06

kg/ha/mm). Amount of water (46.7%) could be saved by using SRI while still producing reasonable yields instead of continuous flooding. Irrigation water analysis in the study area revealed no restriction in its use for rice cultivation. Zanzibar has the potential of increasing yield and water productivity and reducing water use in irrigated rice under SRI.

4.2 Rice Production and Research in the Kilombero Valley, Tanzania Mainland

4.2.1 Land-Use/Cover Change at the Kilombero Valley

Changes in land-use and production systems (e.g. extension and intensification of agricultural production) have consequences for ecosystems functioning and biodiversity, as habitats are destroyed and ecosystems' resilience is degraded. In Tanzania, changes in land use have caused a chronic loss of natural forest in river basins. The average annual rate of deforestation has increased over the past decades from -1.02% between 1990 and 2000, to -1.1% between 2000 and 2005, and to -1.16% between 2005 and 2010 (Devisscher, 2010). In 1990, the forest area in Tanzania was about 41.5 million hectares. This area has now decreased to 33.4 million hectares or about 38% of the total national territory. An example of deforestation is the loss of 41 sq km of natural forest cover in the southern slopes of Mount Kilimanjaro over the past decades. This loss is mainly due to expansion of intensive crop cultivation, growing population settlements, logging, burning for charcoal production, livestock grazing, and landslides due to logging on steep slopes (Devisscher, 2010). Dam projects have also affected riverine forests as a result of decreasing river flows in many areas, such as the Pangani River and Delta.

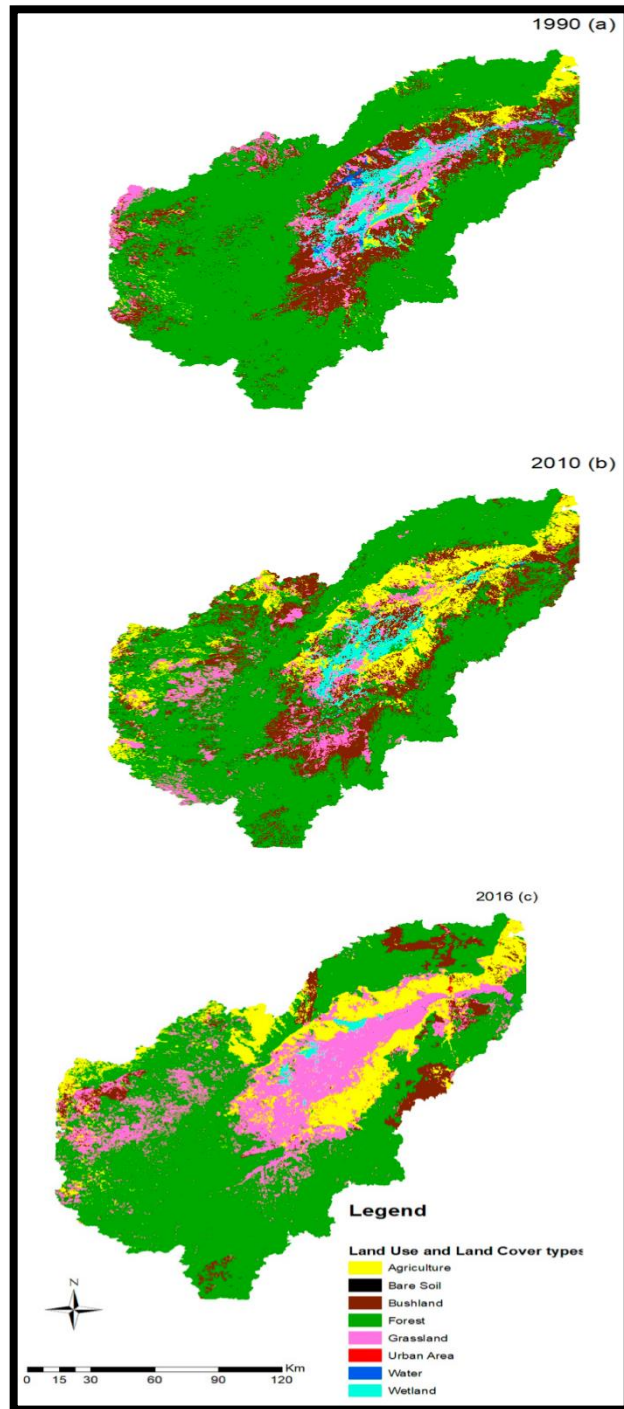
Degradation of natural forests does not only modify habitat and impact wildlife, but also climate regulation and water storage capacity. Stress and deterioration can also undermine the forests' buffer capacity increasing risk of floods in the rainy season and droughts in the dry season. Despite large deforestation between 1990 and 2010, some efforts have focused on reforestation. Currently, the total area under planted forest is 240,000 hectares, which relates to 1% of the total forest area. The entire forest area in Tanzania is under public ownership and administration (FRA 2010). The primary designated function of 71% of this area is production, 6% is biodiversity conservation, and 24% is multiple use (FRA 2010).

Land use change (LUC) driven by human activities and natural factors has resulted in the global loss of native biodiversity and the alteration of ecological processes and services across different ecosystems. It is thus necessary to analyze the trends and driving factors that influence land use changes.

In their study, Msofe *et al* (2019) used moderate resolution Landsat images from the United States Geological Survey (USGS) archives, analyzed using the random forest (RF) algorithm and mapped in ArcGIS 10.2 software to examine the LUC trends from 1990 to 2016 in the Kilombero valley floodplain (KVFP), Tanzania. Participatory rural appraisals (PRA) and household questionnaire surveys were used to assess the potential drivers of LUC.

The results (Figure 4-2) show that, from 1990 to 2016, the agricultural land and grassland increased by 11.3% and 13.3%, respectively, while the floodplain wetland area decreased from 4.6% in 1990 to 0.9% in 2016 (Msofe, Sheng, & Lyimo, 2019).

FIGURE 4-2 LAND USE MAPS OF THE KILOMBERO VALLEY FLOODPLAIN: (A) LUC MAP OF THE KVFP IN 1990; (B) LUC MAP IN 2010; AND (C) LUC MAP IN 2016⁶⁷



Based on a questionnaire survey, Msofe *et al* (2019) found that the intensification of human activities was identified as the proximate driver while population growth, a growing market demand and price incentives for agricultural and forest products coupled with improved infrastructure and biophysical factors such as soil properties, climate variability and terrain characteristics were identified as the underlying drivers of LUC. However, there was interplay among these factors acting simultaneously as well as differently that influence land use changes (Msofe, Sheng, & Lyimo, 2019). Based on these findings, future sustainable land management strategies should include the introduction of the alternative environmentally friendly sources of livelihood, such as beekeeping, the promotion of community participation and education on the importance of sustainable wetland management.

⁶⁷ Source: Msofe *et al* (2016): Land Use Change Trends and Their Driving Forces in the Kilombero Valley Floodplain, Southeastern Tanzania. Pp. 27.

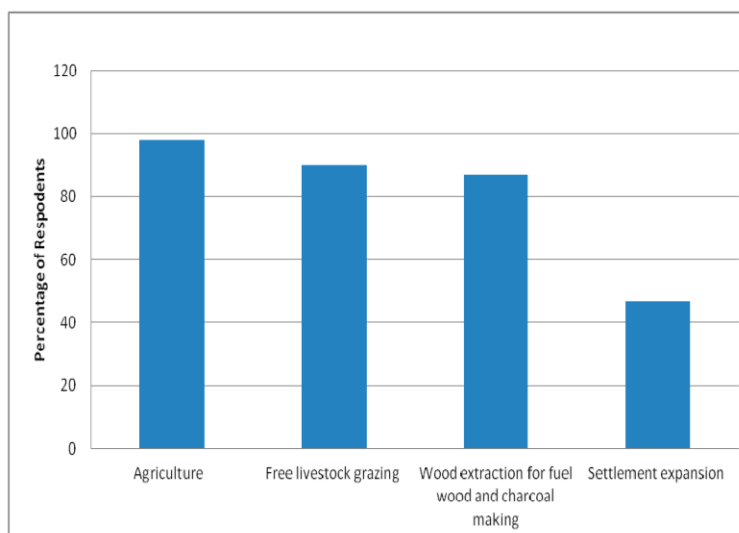


FIGURE 4-3 CONTRIBUTION OF HUMAN ACTIVITIES TO LUC BY PERCENTAGE OF THE RESPONDENTS IN THE KVFP⁶⁸

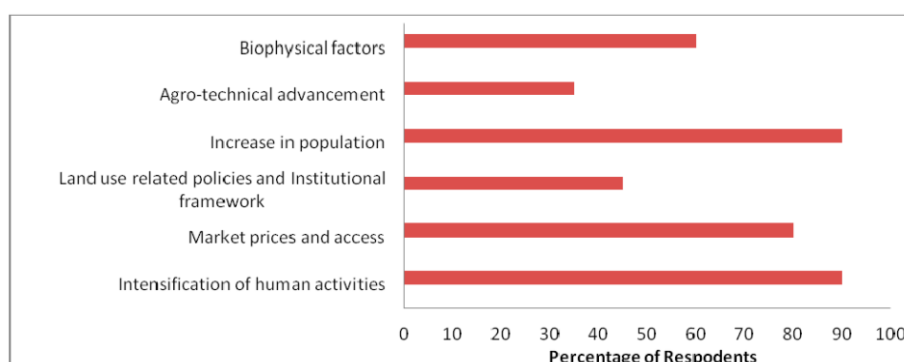


FIGURE 4-4 DRIVING FACTORS OF LAND USE CHANGE IN THE KVFP BY PERCENTAGE OF RESPONDENTS⁸

Connections between social drivers (human activities) and ecological drivers (natural events) are currently considered as key factors affecting land use change in tropical wetland ecosystem (Msofe N. K., 2019). However, the complexity interaction of these socio-ecological drivers is often poorly understood.

Msofe (2019), conducted research in the Kilombero floodplains entitled: ‘Socio-Ecological Drivers of Land Use Change and Wetland Conversion in Kilombero Valley Floodplains, Tanzania’, which was published in American Journal of Environmental and Resource Economics. Her paper examined the interaction of these two systems in the Kilombero valley floodplain.

Kilombero valley floodplain being one of the largest tropical wetlands in Africa - offering a wide spectrum of habitats for plant and animal species sustaining several ecosystem services and ecological functions, which has been under threat of wetland loss and degradation, had to be studied. The study used the documentary review approach to investigate the interaction of socio and ecological systems in the study area. The study revealed

⁶⁸ (Msofe, Sheng, & Lyimo, 2019)

that population growth, market growth and price incentive for cash crops and timber products coupled with improved infrastructures, policy and institutional framework being the social drivers, while flat terrain characteristics, heavy black alluvial soils coupled with high water holding capacity, increased temperature and rainfall variability accompanied with prolonged dry spells are the ecological drivers of land use change and wetland conversion in the study area (Msofe N. K., 2019). However, she found that there are relationships among these drivers, as they act simultaneously as well as differently to influence land use changes in the study area. The study recommended that socio-ecological interactions and the needs of local communities whose livelihood is highly dependent on wetland resources must be central to the development of wetland policies and wetland management approaches.

The Kilombero Valley floodplain (KVFP) inhabits a very large natural wetland of which over 70% is protected. Diverse mammals, amphibians, fish and bird species populate the area. Importantly, KVFP harbors 75% of the world Puku antelope population (Nindi, Maliti, Bakari, Kija, & Machoke, 2014). Most human activities in the area include large- and small-scale farming, pastoralism and fishing. Recently, population pressure, overgrazing and aligned human activities have pressed strain on the land and water resources in the KVFP. The situation prompted the government of Tanzania to resettle some of the pastoral families so as to achieve sustainable natural resources management.

Therefore, their paper ((Nindi, Maliti, Bakari, Kija, & Machoke, 2014)) provided an insight of this resettlement exercise as a multilayered land use conflict and its effects to the land resources and people's livelihoods. Focused group discussions, key informant interviews both using checklists and literature review were the methods used for data collection. The Sukuma agro-pastoralists, Maasai and Barbaig pastoralists were the most ethnic groups affected by the resettlement exercise. It was envisaged that a pragmatic approach to land and water resources management such as effective land use plans, natural resource monitoring plans, sensitization programs and rule of law are needed to avoid future conflicts over land resources use and to ensure people-centered development process is achieved.

Although the value of ecosystem services provided by wetlands is well demonstrated, they continue to disappear globally (Muro, Strauch, Lopez, Thonfeld, Steinbach, & Truckenbrodt, 2017). Lack of spatial and temporal information to guide conservation and management strategies is a common challenge. The release of the Landsat archive and now the Sentinel satellites are allowing the generation of higher quality spatial and high cadence temporal information, and even optical and SAR data fusion. Muro *et al* (2017) used Landsat 5 and Sentinels-1 and -2 imagery to map and reveal Land Use Land cover trends that have been occurring in the Kilombero floodplain, Tanzania, since the 90's. Farm encroachment has already transformed over 50% (350.000 ha) of the natural grasslands and wetlands in the floodplain during the last ~25 years, and the trend is expected to continue. Fusing mapping results from Sentinel-1 and Sentinel-2 they were able to separate temporarily inundated grasslands from non-inundated grasslands. This was important for two reasons: inundated grasslands are vital for several endangered species of mammals (e.g. puku antelope), and these areas are unlikely to be transformed into farmland any time soon due to the high cadence of floods. However, climate change and water management upstream might change this in the future.

The systematic monitoring and map production service that SWOS is providing is proving essential, especially in areas where information is scarce such as tropical wetlands. SWOS mapping products of Kilombero are being

currently used to support the development and implementation of strategies for the sustainable management of large wetland landscapes.

More work is still necessary to produce a systematic global coverage of wetland trends. Inconsistencies defining land cover-classes occurred using images from different years and different sensors, and more will be found when comparing products that use different nomenclatures (e.g. maps produced to fulfill national, European or international obligations). Building on standardization efforts like the Land Cover Meta Language for the definition of classes might overcome the inconsistencies derived from using different methodologies, sensors, or sources of information (Muro, Strauch, Lopez, Thonfeld, Steinbach, & Truckenbrodt, 2017).

Land Use Land Cover Change (LULCC) has a significant impact on water resources and ecosystems in sub-Saharan Africa (SSA). On the basis of three research projects Leemhuis *et al* (2017) aimed at describing and discussing the potential, uncertainties, synergies and science-policy interfaces of satellite-based integrated research for the Kilombero catchment, comprising one of the major agricultural utilized floodplains in Tanzania. LULCC was quantified at the floodplain and catchment scale analyzing Landsat 5 and Sentinel 2 satellite imagery applying different adapted classification methodologies (Figure 4-5). LULC maps at the catchment scale served as spatial input for the distributed, process-based ecohydrological model SWAT (Soil Water Assessment Tool) simulating the changes in the spatial and temporal water balance in runoff components caused by LULCC.

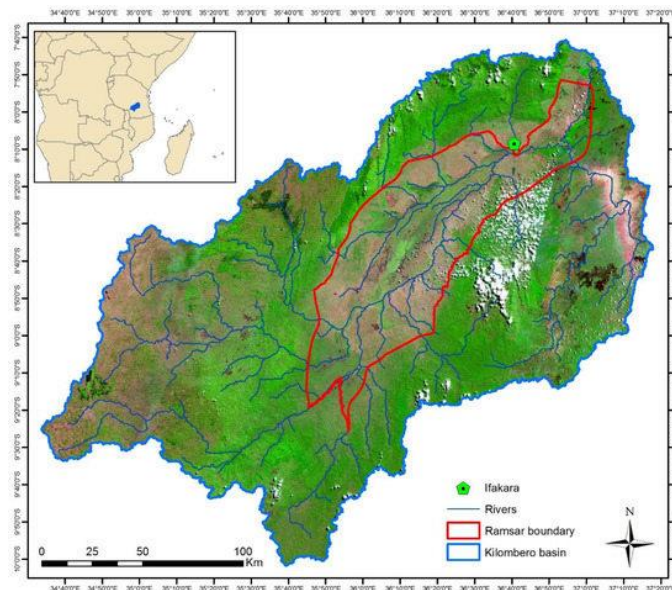


FIGURE 4-5 SENTINEL-2 IMAGE OF THE STUDY AREA. RGB: 12, 8A, 4⁶⁹

The results (Leemhuis, et al., 2017) revealed that over the past 26 years LULCC has significantly altered the floodplain and already shows an impact on the ecosystem by degrading the existing wildlife corridors. On the catchment scale the anomalies of the water balance are still marginal, but with the expected structural changes of the catchment there is an urgent need to increase the public awareness and knowledge of decision makers regarding the effect of the relationship between LULCC, water resources and environmental degradation

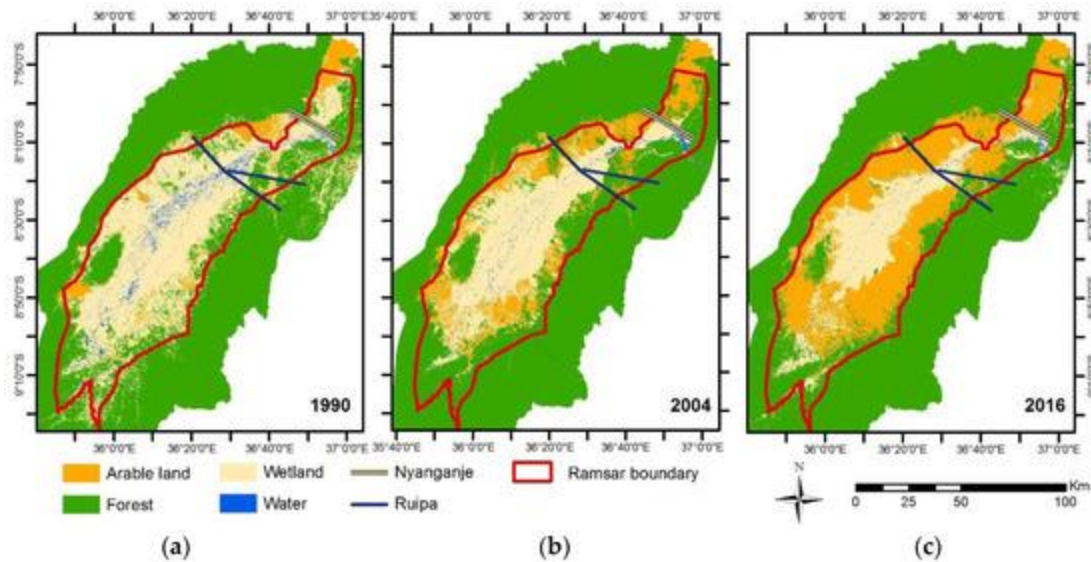


FIGURE 4-6 LULC MAPS OF THE KILOMBERO FLOODPLAIN FOR 1990 (A), 2004 (B) AND 2016 (C). INDIVIDUAL OVERALL MAP ACCURACIES WERE >80%. WILDLIFE CORRIDOR LOCATIONS FOR RUIPA AND NYANGANJE WERE EXTRACTED AND MODIFIED FROM JONES *ET AL.* (2012)⁶⁹

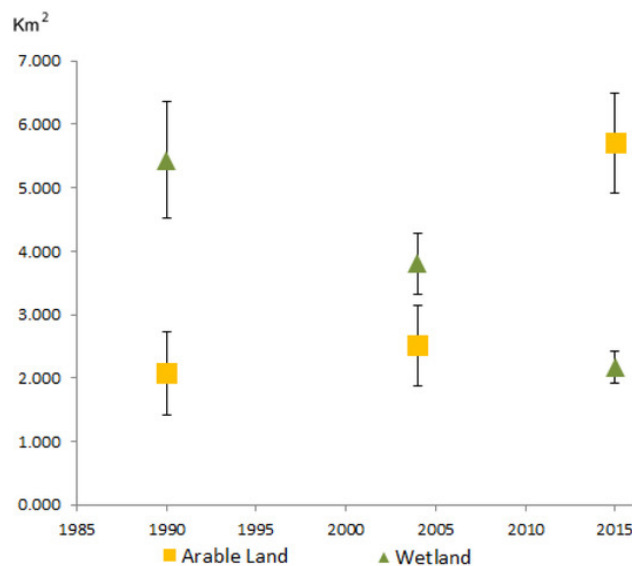


FIGURE 4-7 AREA ESTIMATED FOR WETLANDS AND ARABLE LAND ACROSS THE STUDY PERIOD, WITH THEIR ESTIMATED ERRORS AT A 95% CONFIDENCE INTERVAL⁶⁹

Fire is one means of management in the Kilombero region. Agricultural areas but also natural grasslands are regularly burnt in expectation of the rainy season to boost grass growth during the following growing season. Hence, fire prone areas can be seen from the satellite images even though they are not classified here. Jones *et al.* (2012) reported the recent loss of functionality of two wildlife corridors - Nyanganje and Ruipa. They

⁶⁹ Source: Leemhuis et al (2017). Sustainability in the Food-Water-Ecosystem Nexus: The Role of Land Use and Land Cover Change for Water Resources and Ecosystems in the Kilombero Wetland, Tanzania

connected the Selous Game Reserve to the South-East with the Udzungwa Mountains National Park to the North-West. The LULC analysis indicated that these areas were still connected in 1990, with only a few areas classified as arable land. In 2004, the proportion of arable land increased and spread between forests and wetland area. The 2016 result revealed that direct connectivity between the wetland along the Kilombero river and the Udzungwa and Selous protected areas is no longer existent. According to the maps, only the southern tip of the Ramsar site was not agriculturally utilized in 2016. Despite a relatively high forest loss, mostly non-forested natural areas have been converted into agriculture. From 1990 to 2004, wetlands, water bodies and natural grasslands were reduced from 6598 km² (± 1404 km²) to 3911 km² (± 718 km²). By 2016, they were further reduced to 2237 km² (± 263 km²). Whereas arable land increased slightly from 2082 km² (± 655 km²) in 1990, to 2511 km² (± 638 km²) in 2004 and 5704 km² (± 788 km²) by 2016. According to Leemhuis *et al* (2017), due to the large coverage of forested areas and persistent cloud coverage at higher altitudes, forest losses/gains were inconclusive during the first period. During the second period, forests and open forests were estimated to go from 14,408 km² (± 718 km²) in 2004 to 12,922 km² (± 751 km²) by 2016.

The analysis at the catchment scale provides more thematic details since more land use classes were defined. Specifically, forests are subdivided in subclasses comprising natural forest types such as montane forest, closed woodland, open woodland and anthropogenic forest types such as teak plantations. LULC conversion north of the Kilombero river is largely determined by topography. The steep slopes of the Udzungwa mountain range are inappropriate for crop cultivation, though a few banana plantations can be found. Therefore, conversion mainly takes place for crop cultivation in the floodplain area reaching further towards the Kilombero river, and partly along the forest fringes. Natural grasslands north of the river almost completely disappeared in 2014 (Figure 4-8). South of the Kilombero river, topography has less impact on land use decisions and conversion reaches both further into the floodplain and also further away from the river towards the woodlands. Primary forests are increasingly converted in smaller patches to teak plantations. Teak plantations can also be found at the slopes of the Udzungwa mountains north of the Kilombero river but at a much smaller extent. Area proportions of each LULC class from the 1970s to 2014 are depicted between 1994 - 2004 and 2004 - 2014, respectively.

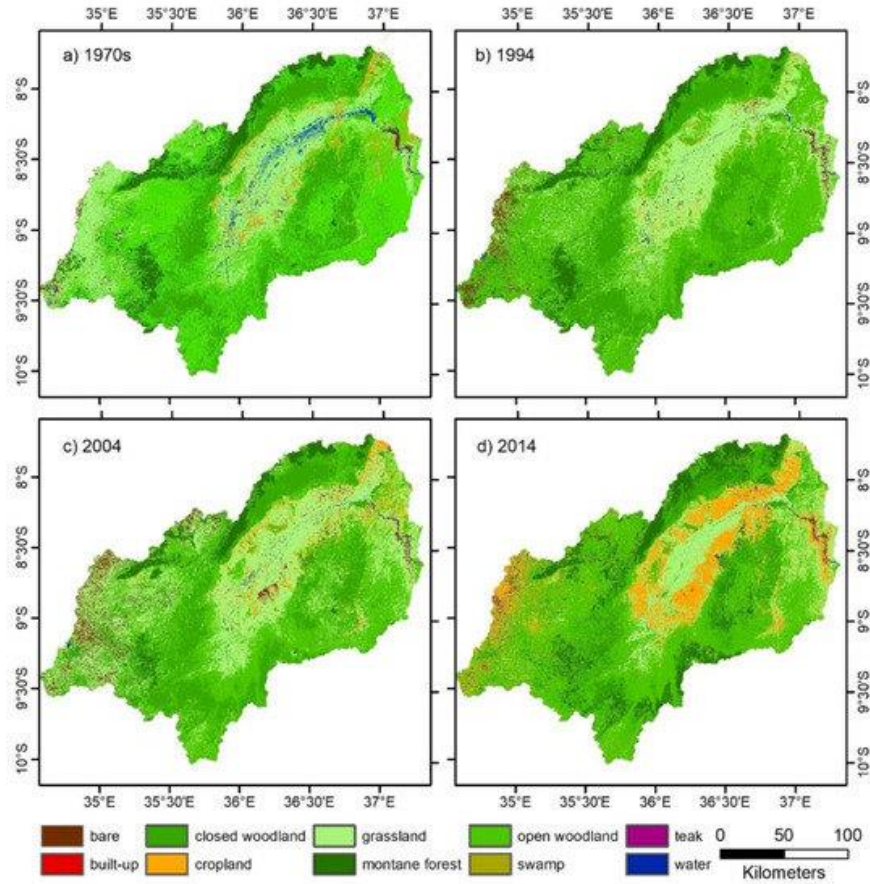


FIGURE 4-8 LULC CLASSIFICATIONS FOR FOUR-TIME STEPS: (A) 1970s, (B) 1994, (C) 2004 AND (D) 2014⁶⁹

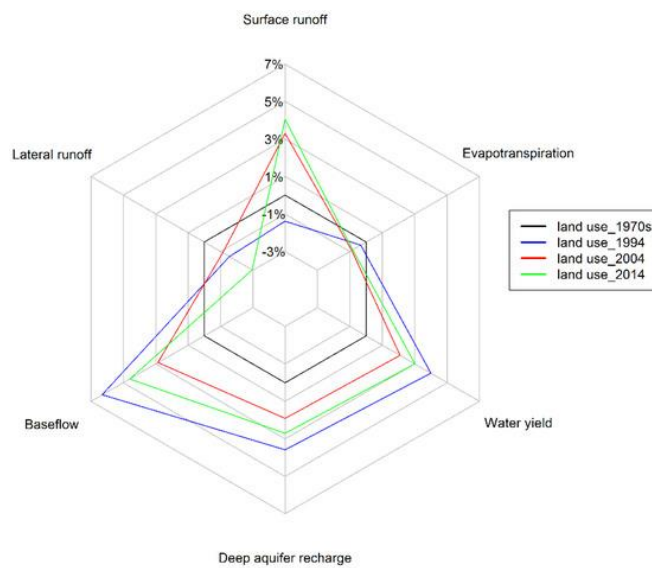


FIGURE 4-9 PERCENTAGE SHIFTS IN WATER BALANCE COMPONENTS FOR THE WHOLE CATCHMENT AND INVESTIGATION PERIOD (1958 - 1970) THROUGH THE APPLICATION OF DIFFERENT LAND USE MAPS⁶⁹

4.2.2 Hydrological Modeling in the Kilombero Floodplain

Deterioration of upland soils, demographic growth, and climate change all lead to an increased utilization of wetlands in East Africa. This considerable pressure on wetland resources results in trade-offs between those resources and their related ecosystem services. Furthermore, relationships between catchment attributes and available wetland water resources are one of the key drivers that might lead to wetland degradation. To investigate the impacts of these developments on catchment-wetland water resources, Näschen et al (2018) applied the Soil and Water Assessment Tool (SWAT) to the Kilombero Catchment in Tanzania, which is like many other East African catchments, as it is characterized by overall data scarcity. Due to the lack of recent discharge data, the model was calibrated for the period from 1958 - 1965 ($R^2 = 0.86$, NSE = 0.85, KGE = 0.93) and validated from 1966 - 1970 ($R^2 = 0.80$, NSE = 0.80, KGE = 0.89) with the sequential uncertainty fitting algorithm (SUFI-2) on a daily resolution. Results show the dependency of the wetland on baseflow contribution from the enclosing catchment, especially in dry season. Main contributions with regard to overall water yield arise from the northern mountains and the southeastern highlands, which are characterized by steep slopes and a high share of forest and savanna vegetation, respectively. Simulations of land use change effects, generated with Landsat images from the 1970s up to 2014, show severe shifts in the water balance components on the sub-catchment scale due to anthropogenic activities. Sustainable management of the investigated catchment should therefore account for the catchment - wetland interaction concerning water resources, with a special emphasis on groundwater fluxes to ensure future food production as well as the preservation of the wetland ecosystem.

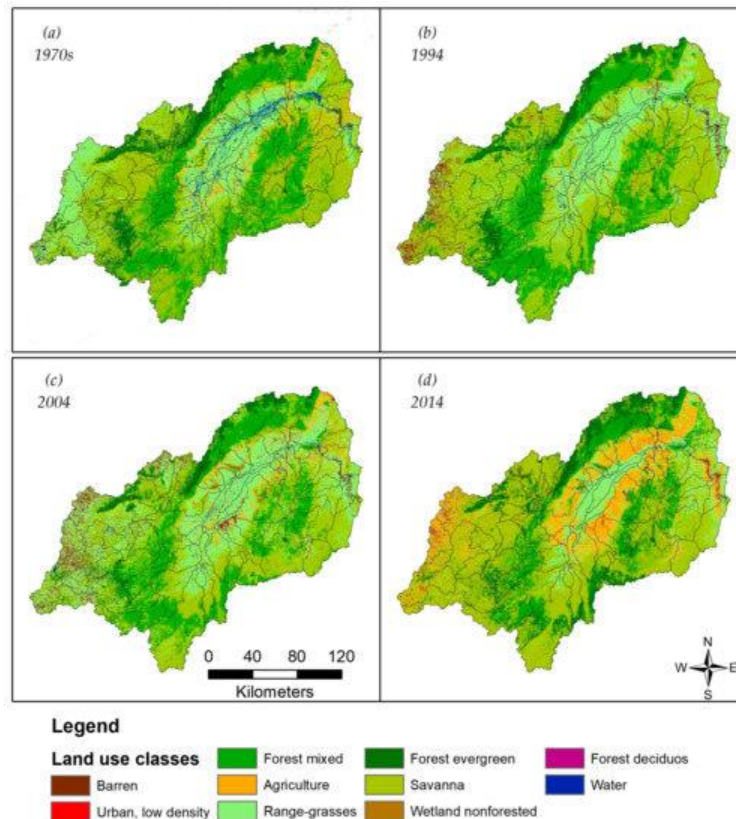


FIGURE 4-10 LAND USE AND LAND COVER CLASSIFICATIONS FOR FOUR TIME STEPS RANGING FROM (A) 1970s, (B) 1994 AND (C) 2004 TO (D) 2014 (MODIFIED AFTER LEEMHUIS *ET AL* (2017)⁷⁰)

Evapotranspiration (ET) plays a crucial role in integrated water resources planning, development and management, especially in tropical and arid regions. Determining ET is not straightforward due to the heterogeneity and complexity found in real-world hydrological basins. This situation is often compounded in regions with limited hydro-meteorological data that are facing rapid development of irrigated agriculture. Remote sensing (RS) techniques have proven useful in this regard. In this study, Senkondo *et al* (2019) compared the daily actual ET estimates derived from 3 remotely-sensed surface energy balance (SEB) models, namely, the Surface Energy Balance Algorithm for Land (SEBAL) model, the Operational Simplified Surface Energy Balance (SSEBop) model, and the Simplified Surface Balance Index (S-SEBI) model. These products were generated using the Moderate Resolution Imaging Spectroradiometer (MODIS) satellite imagery for a total of 44 satellite overpasses in 2005, 2010, and 2015 in the heterogeneous, highly-utilized, rapidly-developing and data-limited Kilombero Valley (KV) river basin in Tanzania, eastern Africa. Their results revealed that the SEBAL model had a relatively high ET compared to other models and the SSEBop model had relatively low ET compared to the other models. In addition, they found that the S-SEBI model had a statistically similar ET as the ensemble mean of all models. Further comparison of SEB models' ET estimates across different land cover classes and different spatial scales revealed that almost all models' ET estimates were statistically comparable (based on the Wilcoxon's test and the Levene's test at a 95% confidence level), which implies fidelity between and reliability of the ET estimates. Moreover, all SEB models managed to capture the two spatially-distinct ET

⁷⁰ Source: Näschen *et al* (2018) Hydrological Modeling in Data-Scarce Catchments: The Kilombero Floodplain in Tanzania

regimes in KV: the stable/permanent ET regime on the mountainous parts of the KV and the seasonally varied ET over the floodplain which contains a Ramsar site (Kilombero Valley Floodplain). According to Senkondo *et al* (2019), their results have the potential to be used in hydrological modelling to explore and develop integrated water resources management in the valley. They believe that their approach can be applied elsewhere in the world especially where observed meteorological variables are limited

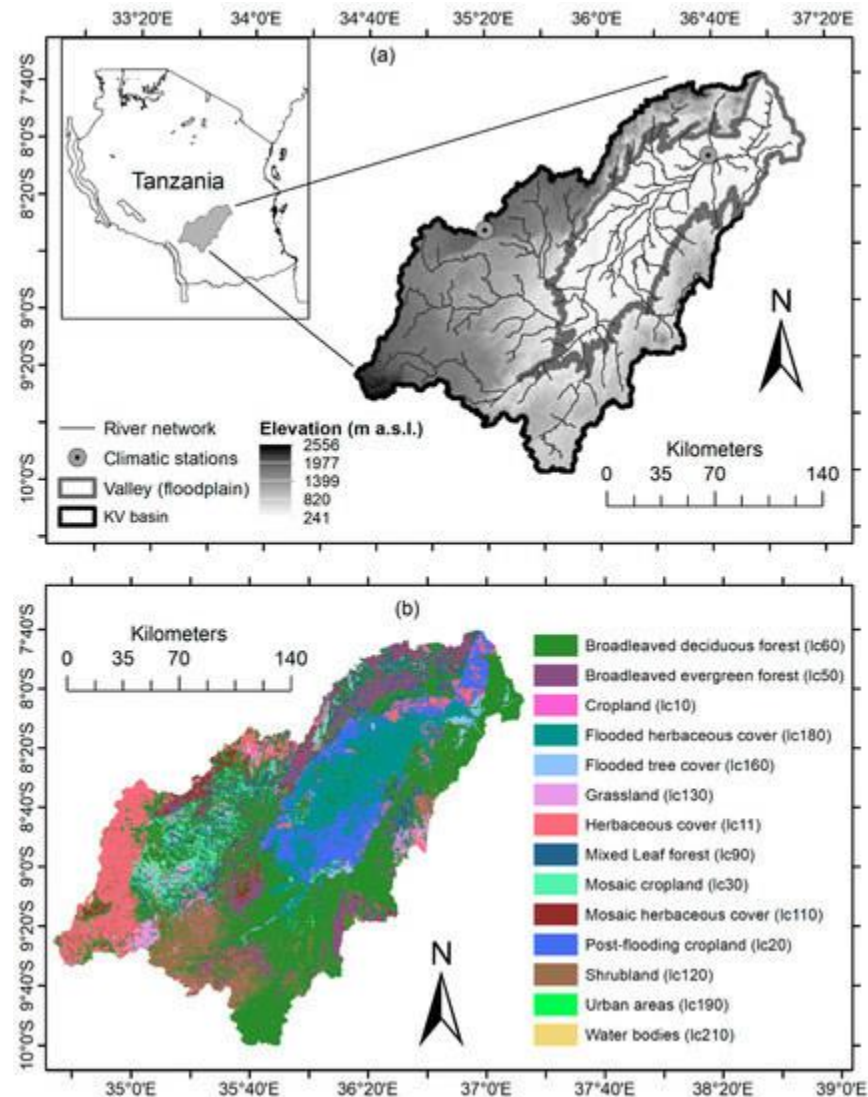


FIGURE 4-11 THE STUDY AREA MAP OF KILOMBERO VALLEY (KV) RIVER BASIN LOCATED IN SOUTHERN CENTRAL TANZANIA. (A) THE STREAM NETWORK, CLIMATIC STATIONS AND WETLAND VALLEY (FLOODPLAIN). (B) LAND COVER CLASSES OF THE KILOMBERO VALLEY (KV) RIVER BASIN BASED ON THE 300 M SPATIAL RESOLUTION GLOBAL LAND COVER MAP FOR THE YEAR 2015 PROVIDED BY THE EUROPEAN SPACE AGENCY (ESA) CLIMATE CHANGE INITIATIVE (CCI)

Looking at their results, all the SEB models were able to capture the two distinct ET regimes over the KV basin (Figure 4-12). The two distinct ET regimes can be distinguished as the relatively high ET regime over the mountainous parts of the basin and the areas across the periphery of the Valley bottom and the relatively low ET regime over the floodplain which comprises the Ramsar site (Kilombero Valley Floodplain). The two distinct

ET regimes found in their study were in line with the findings from other previous researchers who performed snapshots (for the 136th, 184th, 228th, and 303rd days of the year in 2010) estimation of ET using MODIS satellite imagery and the Surface Energy Balance System (SEBS) model⁷¹.

The relatively high ET regime over the mountainous area, in particular, can be partly attributed by the presence of the forests which receive moisture from the dense network of tributaries draining the mountains (both Udzungwa, and Mbarika mountain ranges) and orographic rainfall. On the other hand, the relatively low ET regime experienced by the floodplain was partly attributed by the dryness of the area (during the dry period) which partly, brought by seasonal crops which became dormant (i.e., low ET) after being harvested at the beginning of the dry season (Senkondo, Munishi, Tumbo, Nobert, & Lyon, 2019). This suggestion is supported by other researchers⁷² who attributed the dryness of wetlands in the Ramsar site with the high utilization of the wetlands in the KV basin.

⁷¹ Munishi-Kongo, S. Ground and Satellite-Based Assessment of Hydrological Responses to land cover change in the Kilombero river basin, Tanzania. Ph.D. Dissertation, University of KwaZulu-Natal, Pietermaritzburg, South Africa, 2013

⁷² Mombo, F.M.; Speelman, S.; Huylensbroeck, G.V.; Hella, J.; Pantaleo, M.; Moe, S. Ratification of the Ramsar convention and sustainable wetlands management: Situation analysis of the Kilombero Valley wetlands in Tanzania. *J. Agric. Ext. R. Dev.* 2011, 3, 153–164

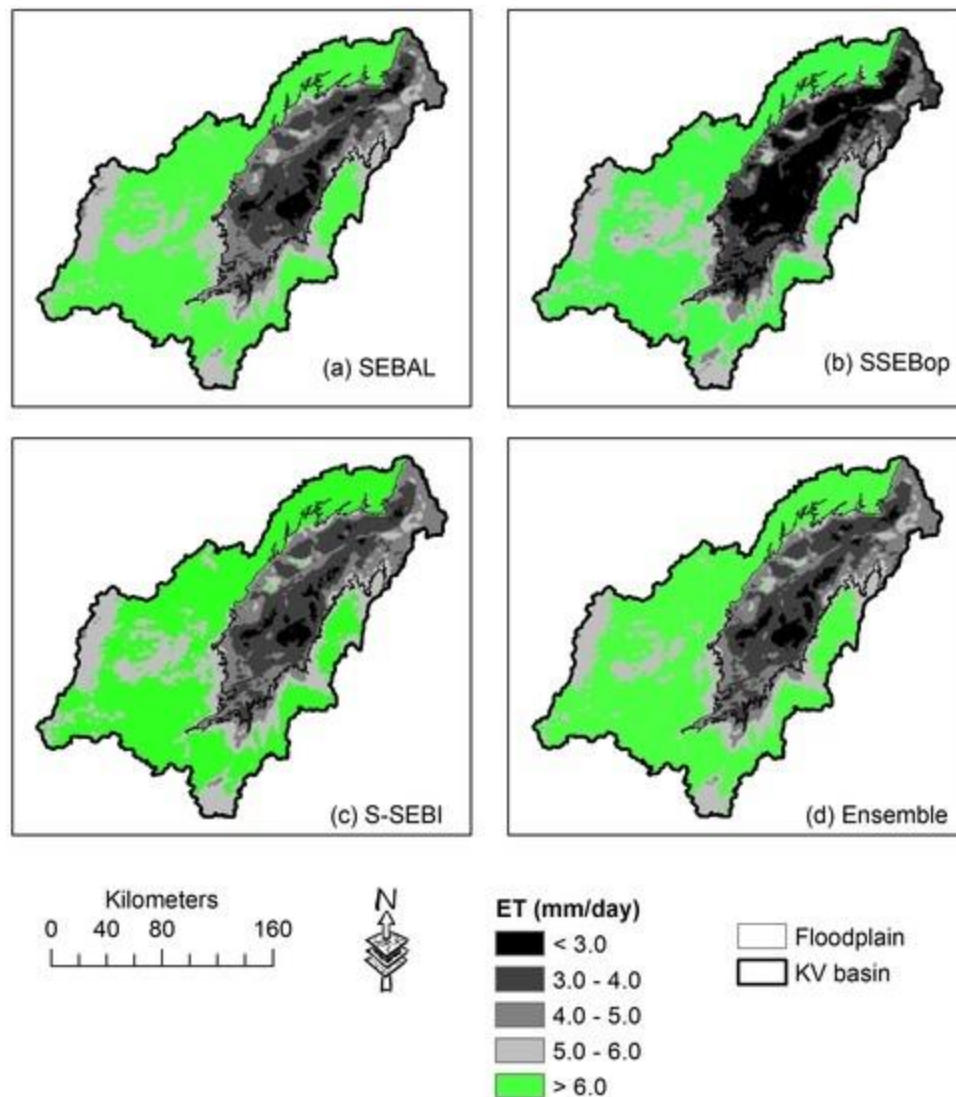


FIGURE 4-12 THE LONG TERM MEAN DAILY ACTUAL DAILY EVAPOTRANSPIRATION (ET) IN THE KILOMBERO VALLEY (KV) RIVER BASIN FOR THE 25 MODIS SATELLITE OVERPASSES. (A) THE ACTUAL ET DERIVED BY THE SEBAL MODEL, (B) THE ACTUAL ET DERIVED BY THE SSEBOP MODEL, (C) THE ACTUAL ET DERIVED BY THE S-SEBI MODEL, AND (D) THE ACTUAL ET DERIVED BY THE ENSEMBLE MEAN OF ALL 3 MODELS

Local knowledge of the history and ecology of wetland ecosystems is very useful in wetland resources management, especially when other historical ecological information is not available and can be integrated with scientific knowledge to introduce better management of resources. Ntongani et al (2014) assessed existing local knowledge on land use/cover changes in the Kilombero wetlands, thereafter investigated local knowledge on its effect on avian population in the wetland and identify factors influencing local knowledge on such changes in the study area. Random sampling was used to obtain representative sample population for their study. Structured questionnaire and focus group discussions were used to extract information from local people in six villages. Study results from multi-response analysis (Ntongani, Munishi, More, & Kashaigili, 2014) showed that natural forests had been converted into cropland and bushed grassland, grassland to crop land, grassland to grazed land, forest to settlement and grassland to settlement. Land use change was singled out as primary cause of decrease in avian community in the wetland. Threats to the conservation of avian species

were identified as livestock grazing, drought, use of poison, traps and bush meat hunting for food. Age and education level were seen as determinants of household's knowledge on the ecological changes. This pool of existing knowledge is important among wetland users and stakeholders in order to generate conservation strategies of the wetland ecosystem.

Using 48 vegetation survey plots (0.08 ha) combined with Landsat 5 and 7 TM imagery, Seki et al (2017) assessed the influence of long-term (1990 - 2011) land use and land cover change on the biodiversity of the Kibasira Swamp. Information on perceptions of adjacent communities on historical changes and drivers for the changes were also collected. Results showed an increase in the area covered by open water by 1% and forest by 4% between 1990 and 1998 whilst *Cyperus papyrus* L and cultivated land area decreased by 8% and 3%, respectively on the same period (Seki, Shirima, Mustaphi, & Marchant, 2017). Between 1998 and 2011, there was a decrease in areas covered by water by 35% and forest by 9% whereas *C. papyrus* L increased by 40% and cultivated land increased by 8%. These changes have affected the biodiversity of the swamp and adjacent to it as numbers of mammals have declined. However, the Swamp still provides extensive habitat for plants and bird species despite the ongoing human pressure. Interventions may be necessary to maintain biodiversity in Kibasira Swamp to ensure sustainable ecosystem services

4.2.3 Sustainable Water Use Technology in Paddy Production

Crop scientists/experts categorize paddy as a 'very thirsty crop', and environmentally unfriendly if not properly designed and managed. In China, for example, it is estimated that up to five cubic meters of water are used to produce one kilogram of paddy rice (5 m³/kg of paddy), while releasing two thirds of the nitrogen applied to the crop in the environment (Trébuil, 2004), a situation that calls for proper planning, design and management of paddy production – if it has to be done sustainably.

At the same time, research in Tanzania has proved that employing good land and water management systems such as SRI, less water will be used and higher yields harvested. For example, Katambara *et al* (2013) indicated that water use under SRI practice was found to be 1.026 m³/m² against 2.882 m³/m² in conventional practice. This suggests that SRI can save water up to 64%. In addition, the water productivity obtained ranges from above 0.29 to 0.47 kg/m³. This suggests to the authors that SRI practices are suitable for water-stressed areas in Tanzania.

Rice production in Tanzania is increasingly important to the national economy and is among the major sources of employment and income for many farming households. While Tanzania meets 98% of its own rice demand, rice productivity in the country is low (Food and Agriculture Organization of the United Nations, 2015). According to a December 2018 YouTube video (Ministry of Agriculture, System of Rice Intensification Transforming Lives in Tanzania. 3:45 min., 2018), this is mainly aggravated by the impacts of climate change, inadequate use of improved technologies, low levels of involvement of the private sector in the rice value chain, poor irrigation infrastructure, limited involvement of youth in agriculture and limited knowledge among small-scale farmers on executing good agricultural practices. With support from the Government of Venezuela, FAO implemented the Partnership for Sustainable Rice System Development in Africa project, which is promoting the SRI as a means of addressing current constraints. The project is being implemented in three districts (Kilombero, Kilosa and Mvomero) in Morogoro region covering five irrigation schemes. The video,

entitled SRI: Transforming lives in Tanzania includes perspectives on SRI from farmers and other stakeholders (FAO/Government of Venezuela, 2018).

Working in Tanzania, Kenya and Uganda on an adaptation to the impacts of climate change through land and water management (FAO/Government of Venezuela, 2018), it has been concluded that the SRI technology has proved that even under moisture stress conditions, rice yields can be improved considerably better in comparison to yields harvested through other technological packages. Farmers have learned a great deal about the importance of managing and conserving soils and water (SWC) in their village using the approach adopted by the project. However, the Ministry of Agriculture (2018) believes that, although during the project inception, farmers had a lot of enthusiasm, during the period of implementation; great efforts are needed to encourage more participation in sustainable soil and water conservation activities in the highland areas.

4.2.4 FAO's SRI Training for Young Farmers in the Morogoro Region Shows Positive Results

In March 2019, Kizito Makoye reported about the FAO/SUA's project success – whereby some three years back, a 32-year-old farmer (Rashid Kilula) from the remote village of Kiroka in Tanzania's Morogoro region, had received SRI training from the United Nations Organization for Nutrition and Agriculture (FAO). In his article (Makoye, 2019), reports that Kilula explained how young people have had little knowledge of modern cultivation techniques and many have moved to the cities to look for jobs, feeling that they have little access to money and opportunities to influence decisions. Since 2011, the United Nations Organization for Nutrition and Agriculture (FAO) has run an innovative public-private partnership project for young people working in agriculture. The project uses climate-smart agricultural techniques and provides work opportunities and access to markets. Using 'The private and public partnership model for youth employment', the FAO wants to focus on these challenges by strengthening human capital and knowledge transfer to create jobs. FAO cooperates with the Tanzania Federation of Cooperatives, a nationwide umbrella organization for 6,000 trade associations including specialized savings and credit associations.

According to Makoye (2019), Kilula and some others in Kiroka have adopted the SRI, which they think is especially useful due to the recurring drought. The Mahembe Mwaya and Kiroka Rivers are the main sources of water for Kiroka village. And in the past they used to flow throughout the year, but as a result of climate change rains have been reduced over the years, these rivers became seasonal, and the dwindling water supply has affected the farmers thereto. So SRI eliminated the necessity of Msoga having to submerge her paddy fields underwater as people here traditionally do. The initiative, which is aimed at men and women between the ages of 18 and 35, has trained over 800 people in facilitation; as a ripple effect, the initiative can reach over 15,200 young people. The farmers also expressed new enthusiasm and shown a positive change in their perception of agriculture. Shortly after using SRI, Kilula's crops were three times as large as before - an increase from four to eleven sacks of rice. Now he sells the profits and uses the money he earns to improve his quality of life. In addition, the use of pesticides is reduced or avoided, and the project encourages biological control. With SRI production, a farmer's income can be quadrupled – whereby, during 2018 there was a farmer who produced 11.6 tons per hectare. Aisha Ali (35) from Kiroka harvested over 50 sacks of rice per hectare after using SRI. Young people in rural areas who have been trained by the FAO return to their communities with renewed commitment and have learned the new skills of other young people. Kilula is sure he will be able to take care of his family despite declining rainfall.

It was learned that only 267 out of almost 3,000 farmers who had joined the project (as not everyone was keen to embrace the System of Rice Intensification or SRI). SRI is a cultivation technique that involves transplanting eight- to 10-day-old paddy seedlings instead of waiting the usual 20 days to do so. Because of the reduced water supply here, the new technique was a godsend to Msoga.

4.2.5 Interest-driven Partnerships: a Win-win for River Flow and Farmers' Fields

SUSTAIN's project report in the Lake Rukwa basin (Nkonu, 2017), found that until very recently, the Katuma river in Tanzania was on the verge of drying-up. The main reasons for the reduced river flow were illegal abstractions of water by smallholder paddy farmers and irregular and reduced rainfall due to climate change.

The Katuma catchment consists of the Mpanda, Msanginya and Katuma rivers and feeds into the Lake Rukwa Basin in southwestern Tanzania. The catchment is not only important for the basin and downstream communities, but also, and critically to the survival of Katavi National Park and its surrounding ecosystems. The park is approximately 4,500 km², the third largest national park in Tanzania and very rich in biodiversity. The park encompasses the Katuma river and the seasonal Lake Chada floodplains. It is often said by locals that "without Katuma river, there will be no Katavi National park".

In recent years, the flow of the Katuma river reduced so significantly that the river was re-classified in 2000 from perennial to seasonal. Paddy-field farming is common in the region and often practiced using informal irrigation schemes that are inefficient and poorly managed resulting in significant water losses. These irrigation schemes are often characterized by hand-dug and unlined canals and controlled by village entrepreneurs. Due to the absence of formal irrigation infrastructures, these ad-hoc schemes use sand bags at various points upstream to block and redirect water from the Katuma into the irrigation canals.

As part of IUCN SUSTAIN - Africa Initiative, a rapid water assessment was undertaken by SNV in collaboration with Local Government Authorities (LGAs) and the Lake Rukwa Water Basin (LRWB) to assess the situation. It was concluded from the results that a multi-faceted approach of stakeholder engagement was needed, in combination with awareness raising and the implementation of sustainable farming practices as critical to restoring the river's flow. Next, a joint task force comprised of LGAs, LRWB and community representatives took down the illegal water channels in the catchment. The task force made a commitment to the affected communities to work with the SUSTAIN-Africa team to provide alternative irrigation facilities for farmers (Nkonu, 2017).

As farming is the main economic activity in the Katavi region, the task force worked with SUSTAIN team members in developing a Katuma Catchment Water Resource Strategy and an Action Plan in order to address the concerns of the farmers. According to Nkonu (2017), the solution was to construct efficient but low-cost irrigation structures with a self-financing strategy to provide water to smallholder farmers in the affected areas. A Regional Irrigation Commission designed a low cost irrigation scheme to be constructed. To secure finance for construction of the scheme, a Build-Operate-Transfer (BoT) strategy was adopted, meaning the investor recoups his investment with some profit, and then transfers ownership of the system to the Water User Association (WUA). An entrepreneur, who hitherto had run an illegal scheme servicing over 5000 smallholder farmers, agreed to invest in an improved irrigation scheme in Mnyagala village at a cost of about US\$90,000. The LRWB supported the Katuma WUA to enter into a BoT agreement with the entrepreneur. The contract

stipulated key responsibilities, including re-payment of construction costs. The WUA also entered into an MoU with the LRWB in order to extract water from the river for irrigation purposes.

Today construction of the new irrigation scheme is completed. Farmers pay for irrigation water but at a much lower cost than before. The new scheme and arrangement is expected to significantly improve water use efficiency and cater to a higher number of farmers. More importantly, the flow of the Katuma river has seen significant improvements benefitting livelihoods, ecosystems, and Katavi National Park. In order to further improve water use efficiency, SUSTAIN-Africa has introduced the System of Rice Intensification (SRI) to smallholder rice producers. This system, which has been tested in the Kilombero valley, will improve farmers' yields and significantly reduce water use in the process.

4.2.6 Evaluation of SRI in Tanzania

Between 2012 - 2018, over twenty journal articles by Tanzanian authors and/or about SRI in Tanzania were published in various scientific journals, globally. An additional six theses (three from Sokoine University of Agriculture and two from Ohio State University) were also completed.

During 2018, a review article on SRI in Tanzania (Toungos, 2018) appeared in the International Journal of Innovative Agriculture & Biology Research; a second review (Mboyerwa P. A., 2018) was published on the Potentials of system of rice intensification (SRI) in climate change adaptation and mitigation in the International Journal of Agricultural Policy and Research. S.T. Materu (Stanslaus Terengia Materu, 2019) subsequently published an article on Water use and rice productivity for irrigation management alternatives in Tanzania in the journal Water; Kangile and others (Kangile R. J, 2018) also authored an article on Socio-economic and field performance evaluation of different rice varieties under System of Rice Intensification in Morogoro, Tanzania – which appeared in the Agricultural Research & Technology: Open Access Journal. All four 2018 articles found that SRI's track record in Tanzania was quite positive and the expansion of SRI had substantial benefits in the future with regard to climate change (especially water saving), increased productivity for rice, and increased economic benefits for farmers.

During 2017, two research publications about SRI in Tanzania were added to the SRI-Rice research database. Included were: -

A study by Nakano and others (Yuko Nakano, 2017) on the Impact of training on the intensification of rice farming: evidence from rainfed areas in Tanzania. This study investigated the impact of rice production training in a modified version of the System of Rice Intensification (SRI) on the performance of small-scale rice farmers in a rain-fed area of Tanzania. Utilizing the plot level variation, the study employed propensity score matching (PSM) to assess the impact of training on technology adoption, productivity, and profitability. The authors also estimated a difference-in-differences model with plot fixed effects using recall panel data covering the periods before and after training. They found that trainees achieved an average paddy yield of 4.7 tons per hectare and rice profit of US\$ 191.5 per hectare on the plots where new technologies were adopted, which is higher by about 1.3 - 1.8 tons and US\$ 119 - 137 per hectare than on the other plots. The study suggested the high potential of transforming favorable rain-fed rice growing areas in SSA so as to achieve a rice Green Revolution through training in modern input use and improved agronomic practices.

An article by Emmanuel Tumusiime (Tumusiime, 2017) entitled: 'Suitable for whom? The case of system of rice intensification in Tanzania' was published in The Journal of Agricultural Education and Extension. His study

examined the suitability of SRI for diverse small-scale farmers in Tanzania by exploring if poor and non-poor farmers adopt the system to a similar extent. The results indicate that middle-wealth group adopt SRI to a greater extent compared to the wealthier and poorer groups. The extent of adoption by wealthier and poorer groups is similar, although constraining circumstances differ. Access to factors that consistently explained adoption: contact with extension services, land with water, and labor, vary systematically among groups.

During 2016, there were several research publications about SRI in Tanzania added to the SRI-Rice research database. Included were: -

An Ohio State University PhD dissertation by Patrick Bell (Bell, 2016) on the Sustainable Intensification for food security and climate change adaptation in Tanzania. One of the dissertation findings suggested that if SRI was adopted throughout the Lower Moshi Irrigation Scheme (LMIS), there would be potential to increase rice production by 4,173 tons/ha due to increased water use efficiency and the ability to increase the area under rice production. This translates into a potential net income in the region of US\$622,000 annually.

An article by Reuben and others (Paul Reuben, 2017) in *Agricultural Sciences* on the influence of transplanting age on paddy yield under the System of Rice Intensification. Their results suggested that transplanting at younger age of 8 - 12 days is recommended for Mkindo area in Mvomero District as well as other areas with similar soil conditions and agro- ecological characteristics.

An article by Katambara and others (Katambara, Mng'ong'o, Chamb, & Zacharia, 2016), entitled as 'Characteristics of rice produced under direct and indirect SRI practices in Chimala Area in Mbarali district Tanzania', which was published in the *Journal of Agriculture and Sustainability* reported that yields under SRI practices were more than 16 ton/ha against less than 8 ton/ha for conventional rice growing practices.

The Southern Agricultural Growth Corridor of Tanzania (SAGCOT), an inclusive, multi-stakeholder partnership was developed to rapidly develop Tanzania's agricultural potential. In a May 26, 2015 IPP Media article, SAGCOT Centre Deputy CEO Jennifer Baarn noted that the Kilombero Plantations Limited (KPL) formed a public-private partnership between Rubada (8.7%) and Agrica (91.3%), which was established in July 2008 to redevelop the Mngeta Farm. Over US \$ 45 million of the projected \$75 million were being invested.

At the same time, KPL reportedly had 5,000 ha under rain-fed cultivation, 215 ha under irrigation, with the capacity to annually produce 33,000 tons of milled rice and 5,000 tons of rotation crops, which included beans and pulses. KPL implemented SRI methods to lift smallholder yields from 3 tons/ha to over 5 tons/ha, and tripled the average production of 6,500 farmer families living within 50 km of KPL. In 2015, this increased to 7,700 families.

A 2014 FAO publication (Food and Agriculture Organization of the United Nations, 2014) on adapting to climate change through land and water management in Eastern Africa discusses the results and lessons learned from pilot projects in Ethiopia, Kenya and Tanzania. The FAO/Sida-supported pilot project 'Strengthening capacity for climate change adaptation in land and water management' proposed an integrated package of approaches that addressed the drivers of vulnerability and targeted climate change impacts. It focused on technologies that improve soil health and facilitate water conservation, the diversification of the sources of livelihood and income, and the strengthening of local institutions. Of the fifty trained farmers during 2012-2013, 74% adopted SRI, with yields climbing to as high as 11.6 t/ha in SRI plots (Traditional fields averaged 1.65 t/ha). Plants grown with SRI methods also showed increased biomass yield and improved root development, which contributed to

increased resilience to drought and longer-term soil health. Due to the success of Tanzania SRI projects described, the authors (Food and Agriculture Organization of the United Nations, 2014) wrote, 'Efforts are required to ensure that most farmers in rice growing areas (in Tanzania) are encouraged to adopt the SRI technology, particularly the improved water management, as this is a beneficial adaptation to increasing weather variability, reduced water supply and the predicted impacts of climate change. SRI technology should also be spread nation-wide by institutionalizing it into district- and national-level plans where irrigation is practiced'.

In August 2013, Katambara and others (Zacharia Katambara, 2013) published a review article on adoption of SRI in Tanzania in the journal *Agricultural Sciences*. The authors write that SRI was introduced in Tanzania in 2006 by Kilombero Plantations Limited, a company in Morogoro that introduced SRI as a response to the government slogan of 'Agriculture First' (Green Revolution) which was intended to support agriculture to increase country's food security. Currently, SRI is being practiced in Mkindo and Dakawa in Morogoro region, and Mwanza and Kilimanjaro Regions. Each of the regions has acquired the technology from either India or Kenya.

Following successes in implementing SRI in various regions, varying results have been observed. Among them include increased grain yields, water use efficiency, number of panicles, and number of productive tillers. In Mkindo area, for a spacing of 25 cm by 25 cm, the grain yield was 6.3 tons/ha, which was higher than conventional practice, which recorded a yield of 3.83 tons/ha. In the same study above, the ground biomass obtained was 10.7 tons/ha for SRI compared to 8.9 tons/ha in conventional practice. In addition, other results from the same area indicated that water use under SRI practice was found to be 1.026 m³/m² against 2.882 m³/m² in conventional practice. This suggests that SRI can save water up to 64%. In addition, the water productivity obtained ranges from above 0.29 to 0.47 kg/m³. This suggests to the authors that SRI practices are suitable for water-stressed areas in Tanzania.

SRI has been generating considerable interest in a project in Kilosa that is being implemented by FAO in collaboration with the Government of Tanzania. The project, which is funded by the Government of Venezuela through South-South Cooperation, trained 150 youths in SRI methods, who went on to recruit over 400 youth and 20 adult farmers. One of these groups won the best seed competition; some of the farmers were hired to provide extension services and seedlings to other farmers. In addition to outlining the information above, a video on YouTube's *Kilimo Biashara* channel follows the story of a Godfrey Pascal, a young farmer from Ilonga, Kilosa, who after a training on SRI, harvested 52 sacks (or bags) of rice from an area of 1.5 acres. However, his high yields on a small piece of land led others to believe he was using witchcraft to transfer crops from other farmers to his field until the government eventually intervened through the extension officer! Godfrey subsequently emerged as the best farmer of 2017 for Kilosa District and Morogoro region (Ministry of Agriculture, 2018).

5 Recommended Activities for the GEF Tanzania FOLUR Child Project in Tanzania

5.1 Sustainable Use of Land and Water resources in Rice Production

Detailed Land Use Management Plans will be developed in selected rice producing villages with approved stage-4 Village Land Use Plans (VLUPs) from the Kilombero Valley and Zanzibar.

The Planning Phase of all approved, stage-4 Village Land Use Plans (VLUPs) will begin after a thorough understanding of potential and limitations of their planning areas. Sectoral planning teams will prepare specific management proposals for each delineated land management unit within specific planning areas. Important issues to be addressed during the planning phase in land use management proposals will include land use management proposals for grazing (especially for Kilombero) – which may indicate the carrying capacities and grazing systems (grazing plans/ patterns) for areas needing: -

- a) Seeding or reseeded: type of seed, rates and manner of which shall be subscribed by the range officer;
- b) Soil fertility improvement methods (type, rate);
- c) Weed, bush and pest control methods;
- d) Prescribed burning for eradication of undesirable plants, pests and animal species;
- e) Soil erosion control measures;(contouring, terracing, tree/vegetation planting)
- f) Special conservation measures (soil, water, wetlands);
- g) Provision of facilities (watering, livestock handling, fencing, livestock route).

Also, land use management proposals for agriculture (especially rice farms for both Kilombero and Zanzibar) will indicate the following: -

- a) Recommended agronomical practices and modalities for extension services (farmer field schools, contract farming, demonstration plots etc);
- b) Recommended soil and water conservation measures;
- c) Outlined fertility restoration proposals;
- d) Potential areas for irrigation and appropriate irrigation methods – with their associated structures such as lined irrigation canals, weirs, water harvesting etc;
- e) Amount of land required to meet family needs based on improved farming techniques (+ gross margins per recommended land utilisation type);
- f) Proposal on other feasible alternative sources of supplementary income to farmers;
- g) Potential for large rice scale farming.

With legal assistance from the districts and planning teams, all village councils will formulate by-laws to safeguard the plans for sustainability.

Typically, the rice value chain part of the GEF FOLUR Program will be comprised of the following four components: -

5.1.1 Component 1: Water Resources Management and Infrastructure

5.1.1.1 Component 1.1: Establishing Catchment Management Systems

Using the integrated landscape management approach, formulate Water User Associations (WUAs), wherever they don't exist, and provide training on water abstraction and user rights as per national policy across the entire project area (Zanzibar and Tanzania mainland);

Train and build capacity to Kilombero LGA officials as well as those in Zanzibar; extension officers and village leaders on how to nurse WUAs – along with responsibilities to look after irrigation infrastructure, water use efficiency;

The project will also engage in pioneering development of mechanisms that reward good stewardship of natural resources, including the structuring of Payment for Ecosystem Services (PES) schemes in Zanzibar and the Kilombero Valley.

5.1.1.2 Component 1.2: Rehabilitation/Installation of Irrigation Infrastructure

This component will support adoption of various irrigation and water conservation techniques including farmland conservation through bunds construction; run-off management through construction of drainage channels, outlets and water improvement; construction of access roads; gulley control by construction of check dams and vegetative controls; and biological conservation techniques and soil improvement. Irrigation infrastructure will be confined to a relatively well-defined area with water harvesting activities implemented more broadly. Activities will be undertaken in the following areas: -

- a) Expansion and rehabilitation of irrigation within selected existing irrigation;
- b) Development of rainwater harvesting schemes under a well-managed, dry - land watered system in the command area.

The project will give special attention in the construction of contour bunds for collection of surface runoff water where runoff is directly intercepted and stored in the soil profile for the crop growing area during rainfall. This system is based on rain water harvesting and conserving moisture but important secondary effects include nutrient harvesting and erosion control. Mechanical plowing of deep soil, using disking, sub-soiling or chiseling and animal traction plowing in the relatively shallow and light soil will be employed in combination with the water harvesting technique to improve water conservation.

5.1.1.3 Component 1.3: Strengthening Irrigation Management Capacity

In order to support investment in irrigation and water harvesting infrastructure, the project will build the capacity of communities, private sector, and NGOs to support project implementation and maintenance of water harvesting/irrigation structures. The program will also focus on enhancement of farmers' skills for operation and maintenance of irrigation infrastructure through a training program for irrigators associations (IA) management designed to provide IA leaders with training services to improve their management skills and manage their organizations successfully. This component will also include provision of training courses to ministerial staff so as to fill gaps in qualified staff in the respective disciplines.

Construct efficient, but low - cost irrigation structures with a self - financing strategy to provide water to smallholder farmers in the affected areas. A Regional Irrigation Commission in Kilombero has to design a low cost irrigation scheme to be constructed. To secure finance for construction of the scheme, a Build – Operate - Transfer (BoT) strategy has to be adopted - meaning the investor recoups his investment with some profit, and then transfers ownership of the system to the Water User Association (WUA). Other partners have to be convinced to partake in construction (e.g. KPL, Kilombero LGA, entrepreneurs etc). The Rufiji/Kilombero Water Board (R/KWB) and ZAWA will be influenced to support Kilombero and Zanzibar WUAs, respectively, to enter into a BoT agreement with the entrepreneur. The contract will stipulate key responsibilities, including repayment of construction costs. The WUAs also enter into MoU with the R/KWB and ZAWA in order to extract water from the river (or other sources) for irrigation purposes.

5.1.2 Component 2: Promoting Soil Fertility Improvement and Catchments Management Approach

The second component will address the problem of declining soil fertility and land degradation caused by lack of an integrated catchments approach. Extension services and awareness raising activities will be extended beyond the irrigation/rainwater harvesting command areas to entire catchments in order to reach the farming population cultivating along hill terraces and water sources.

Activities will include sensitization on appropriate farming-systems in order to protect the catchments against environmental degradation, and capacity building and productivity improvements for catchments farmers and communities. By way of implementing stage 5 & 6 of VLUP processes, the component will also help develop a mechanism for catchments management and planning that incorporates downstream and upstream stakeholders.

5.1.3 Component 3: Strengthening Management/Financial Capacity of Farmers’ Organizations

To-date Zanzibar has not developed an agricultural credit and rural finance policy to guide financial institutions operations with respect to serving rural clients (Food and Agriculture Organization of the United Nations, 2014). This could apply to Tanzania mainland as well. Other major constraints facing access to financial services include:

- a) Lack of clear policy objectives and guidelines with respect to rural financial services;
- b) Lack of legal and regulatory framework to guide Micro-finance Institutions (MFIs) and the operations of SACCOs, particularly for the protection of depositors’ interests;
- c) Lack of saving mobilization for the generation of loanable funds;
- d) Over-dependence on donors and external funds for provision of loans for promotion of pre-determined technologies;
- e) Inadequate management capacity in grassroots MFIs;
- f) Lack of adequate governance and supervision of SACCOs and other informal savings and credit groups;
- g) Inappropriate loan guarantee and a lack of linkages between banks and MFIs;
- h) Lack of integrated management information system within MFIs, which prevents effective individual loan monitoring and follow-up.

The third component will try to address some of the issues identified above within the context of farmers organizations. For farmers’ organizations to play a role that includes functions broader than the management

and distribution of irrigation water or the maintenance of the canals, it will be important to develop stronger farmer associations. This component will enhance management capacities of farmers in entrepreneurship, organizational and marketing skills. Through their groups, farmers will be encouraged to engage in income generating activities and through joint responsibility will access inputs, markets, financial services and processing and storage facilities.

For the purpose of deepening financial intermediation among the farming communities' formation of the sustainable Saving and Credit Association (SACAs) and Savings and Credit Cooperatives (SACCOs) will be encouraged and the program will potentially establish revolving fund/credit systems. The project will develop modalities of organizing farmers to form Village Development Associations (VDAs) that will have the functions to jointly provide services related to provision of tractor services, provision of seeds and fertilizers, collection of water fees, and to perform other activities.

It will also be important to identify the institutional or policy constraints affecting farmer organizations and related service providers or suppliers (such as credit or inputs). An examination of the legal, policy and institutional framework will be essential to address the underlying issues affecting both irrigation authorities, farmers, and the private sector.

5.1.4 Component 4: Strengthening Research and Extension Services

The program will include a component on research and extension services to provide farmers, and IAs/farmer organizations with services to improve production and marketing of their crops. A variety of research and methodologies would be used. In research, the component would support adaptive research trials through the use of Farmer Research Groups (FRG) and demonstration plots in farmers' fields using Farmer Extension Groups (FEG). Introduce the System of Rice Intensification (SRI) to smallholder rice producers to improve on water use efficiency across the project area. This system, which has been tested in the Kilombero valley (FAO/Government of Venezuela, 2018) (Kahimba F. C., 2014) and Zanzibar (Ali, M.Sc Dissertation, 2015), will improve farmers' yields and significantly reduce water use in the process

Particular attention will be placed on selecting promising new rice varieties and in promoting soil fertility improvement. In order to give farmers in the program area more exposure and opportunities for exchanging ideas and experiences, exchange visits would be organized for farmer members of farmer field schools (FFS), research groups, and other farmers associations to similar groups elsewhere within and outside project sites.

Training and seminars will be provided and organized to enable the farmers to become aware of the impacts of various policy issues and regulations that directly and indirectly affecting their production system, profitability and marketing opportunities and the measures needed to minimize these risks and uncertainties. Requisite training will also be provided to farmer groups and associations on input supply and marketing focusing on multiplication of clean disease-free seeds and planting material for sale to fellow farmers and maintaining quality standards.

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The project design considers several key lessons learned from other GEF and non-GEF projects. These include relevant experiences related to pursuing integrated land-water management of natural resources through sustainable and inclusive value chains, the management and restoration of protected and other critical biodiversity areas, and approaches related to community involvement in participatory forest and water management. Below overview gives an overview of the key lessons learnt from a number of projects in this regard.

Key GEF regional interventions of relevance:

1. UNDP/GEF - Extending the Coastal Forest Protected Area Sub-system in Tanzania:

Historically Coastal Forests with little or no timber or water values have been a low priority for government investment, and reserve management, which was transferred to district mandates in the 1970s, is grossly underfunded and understaffed. Despite many reserves, several large forest patches with essential biodiversity values remain unprotected. This project works with Government, mainly through the forest sector, WWF and other NGOs; to strengthen overall conservation and management of the Coastal Forests of Tanzania, focusing on both Zanzibar and three priority landscapes in south-eastern Tanzania.

Key Successes: The project achieved most of its primary relevant objectives, but it has significant shortcomings, mainly through it not completing many of the processes it initiated, such as the designation of VLFRs. Because of considerable coordination delays, hence its attainment of objectives and results is evaluated as marginally satisfactory. The project worked closely with a small number of organizations, but with many communities. The active engagement of stakeholders has been vital to fulfilling its achievements; hence stakeholders' participation was evaluated as satisfactory.

- Conservation plans for Matumbi, Kilwa and Lindi landscapes completed, approved, and under implementation and income-generating schemes and financing instruments introduced into numerous communities.
- Significant increase in the METT scores for nine protected areas: Malehi, Mbinga, and Mitundumbea in Kilwa; Chitoa, Litipo, Noto, and Rondo in Lindi; and Jambiya-Muyuni and Mtende in Zanzibar.
- Nine Memoranda of Understanding (MoU) over joint responsibilities in the conservation of coastal forest signed between TFS and districts of Mkinga, Handeni, Muheza, Pangani, Bagamoyo, Mkuranga, Kisarawe, Rufiji, and Kibaha.
- Total funding for coastal forest conservation increased by TFS in nine districts to US\$ 250, 375; business plans for Jozani Chwaka National Park and Ngezi Forest Nature Reserve prepared and three newly developed and approved for the Forest Reserves of Kiwegwa-Pongwe, Masingini, and Msitu-Mkuu.
- Country Ownership: The Government has built incrementally upon the preliminary groundwork, e.g., National Forest Policy (1998), the Tanzania National Coastal Forest Task Force formed in 2002, and the Tanzania National Forest Programme of 2001-2010. Ownership by high-level Government is evident through the willingness to establish new Nature Reserves or to upgrade existing protected areas to

Nature Reserves. Also, there has been recognition of the fact that local communities play an essential part in conservation activities, and the Government has supported the establishment of community forests through the involvement of the local authority planning processes at district level.

Key Problems: The project has been poorly managed with ineffective communication, unauthorized pre-financing, significant disruption to staffing, and escalating levels of distrust between WWF and its partners. As a result, very little activity is reported to have been carried out in the second half of the project.

- Financing delays leading to interruptions in implementation on the ground and disappointment of community partner's expectations.
- Financing delays leading to pre-financing of activities made in good faith but unauthorized.
- Overspend on project management amounting to US\$ 940, 330 of GEF money that should have been spent on direct conservation activities, and which is mainly responsible for the project being unable to take advantage of the six-month no-cost extension granted to it after the MTE.

Key Lessons from Terminal Evaluations:

Strategic:

- Having an independent coordination body is a highly successful mechanism for projects involving institutions from the mainland and Zanzibar.
 - Conflict of interest: While WWF was uniquely placed to provide an implementing role in the south of the country, it should have been apparent that having a body coordinating three implementing partners where one of those partners was the same organization posed real risks of a conflict of interest.
- Successful results on-the-ground engender trust and garner support.
 - Local communities: The importance of the local community and local authorities in the efforts to sustainably manage the coastal forests cannot be over-emphasized. They are central to the chances of success.

Financial:

- A buffer period needs to be introduced into the FACE to facilitate the flexibility necessary to implement complex projects.
 - Delays in disbursements and pre-financing: While the narrative operational reports have generally been produced on time, the financial statements have usually been delayed. This has a 'knock-on' effect in that delayed reports result in delayed disbursements.
 - System for Financial control: While the benefits of the system for financial monitoring and reporting are recognized, it poses significant constraints on the implementation of projects, especially those requiring flexibility of management and implementation response when working in remote areas with poor infrastructure, limited institutional capabilities, and variable weather.
- Partner institutions should be made responsible for tracking and reporting all their financial contributions to a project.

- Management Effectiveness Tracking Tools: The process of scoring the METTs appears to have been considered as a hoop to jump through rather than as an essential management tool to direct Project activities and resources.
- Allocation of funds: One of the essential consequences of the pre-financing issue has been a significant loss of trust in WWF by the other implementing partners.
- Management costs: The TET views the massive overspend on project management and the biased distribution of project funds in favor of WWF and at the expense of their government partners with grave concern.
- Financial Control: Internal Control procedures are frequently overridden or ignored. There is a substantial risk of failure to achieve the Internal control objectives on the reliability of financial reporting.

Design:

- The coordination and implementation roles need to be kept separate so that in any given project, the same organization does not play two roles.
 - Separation of roles: Complete separation of roles should have been ensured by maintaining the UNDP-CO responsible for disbursing funds separately or by appointing or establishing a separate body as the PMU (even though this may also have led to delays in disbursement).
- It is essential to include in the design of projects, income-generating activities, or other actions that bring direct economic benefits to those communities whose behaviors the project is seeking to change or whose involvement/increased awareness it is hoping to catalyze.
 - TRAC funding: While the Project design incorporated TRAC funds, nowhere are the activities associated with this funding spelled out explicitly. It is also worth drawing attention to a lesson learned by the Lead Evaluator from many other projects, and that is that producing results successfully on-the-ground is often more important than producing paper. Paper rarely galvanizes the interest in the same way that tangible results do, and results engender trust amongst local communities by proving that changes are possible and demonstrating the efficacy of the methods used. They sometimes also draw the attention and support of senior politicians to a project's aims.
- GEF projects should look at the efficacy of including an additional period of continued low-level (low-cost) technical support to beneficiaries beyond the time necessary to achieve the outputs to consolidate the achievements and increase their likely sustainability.
 - MTE insight: Given the required institutional and community behavioral change needed to make the project a success, and an additional year for the project implementation would have been advisable. Another critical insight that still resonates with the project is the time that it takes to build trust with communities, establish acceptable procedures, and effect behavioral change.
- All GEF projects should be able to stand alone in terms of impact indicators.
 - Impact indicators: The TET entirely agrees that the omission of direct biological impact indicators is a weakness, and these should have been included even if there was a duplication with the REDD initiative. The measurements for such indicators would still only have to have been measured once, also if used by both projects. As it is, with the delayed implementation of the REDD initiative, no such direct measures of impact are available to this project.

Project Management:

- Too close a focus on achievement of the log frame's indicators can lead to key elements of the project being lost.
 - Logical Framework: Implementation of the Project has closely followed the logical framework. While this is standard practice, there is a weakness inherent in the approach in that by focussing on achieving the indicators, the broader intent of the project's designers can become lost.

2. Reducing Land Degradation in the Highlands of Kilimanjaro Region:

The project Reducing Land Degradation in the Highlands of the Kilimanjaro Region – commonly referred to as the 'Kilimanjaro Sustainable Land Management Project' was designed to create an enabling environment for the adoption of Sustainable Land Management (SLM) practices by decision-makers and farmers in the Kilimanjaro Region of Tanzania. The project was designed to address four key barriers to the adoption of Sustainable Land Management in the region, which are: Limited livelihood opportunities outside of wasteful use of natural resources; Weak incentives for adoption of SLM; Weaknesses in the policy, planning and institutional environment that influence SLM; Inadequate skills at all levels required for promoting and adopting SLM.

Key Successes: The project has contributed meaningfully towards its goal, which is that sustainable land management should provide the basis for economic development, food security, and sustainable livelihoods, and restoring the integrity of ecosystems in the Kilimanjaro highlands. By introducing measures to alleviate land degradation while simultaneously promoting sustainable socio-economic development, the project has contributed significantly to improving ecosystem health and soil fertility at the sites of intervention, thereby improving the productivity of the land, increasing the earning capacity of farmers, and improving human well-being.

- Relevance to national priorities and community needs.
- Strong country ownership.
- An implementation model that was firmly embedded in government institutions.
- Robust, results-based adaptive management and comprehensive M&E.
- Working through partnerships with other government entities and harnessing local capacity.
- A focus on capacity building, institutional strengthening and community empowerment.
- Effective awareness-raising and knowledge sharing.
- A comprehensive exit strategy focused on institutional and financial mechanisms for sustainability.
- Timely and dedicated support from the UNDP CO.

Key Problems: The project faced many challenges relating to early problems with project design, emergent issues relating to systemic administrative inefficiencies, problematic procurement, and staff changes, as well as various externalities that impacted on compliance with progress and financial reporting. Despite this, skillful and strategic use of the M&E plan in results-based, adaptive management of the project resulted in the overall implementation of the M&E.

- Delayed implementation and poor project coordination in the early stages.
- Weaknesses in initial project design and budgeting.
- Problems with effective and efficient use of the government financial system in the early stages.
- Procurement of suitably skilled and experienced service providers.
- High stakeholder expectations cannot be met.
- Strengthening and diversifying the stakeholder base and shifting from working through consultancies to establishing working partnerships with non-government partners.

Key Lessons from Terminal Evaluations:

Project Design:

- Setting more realistic goals and narrowing the spread of activities that the project attempts to address (i.e., go 'narrow and deep' rather than 'shallow and broad'). This would improve the probability of effective delivery of project outcomes, enhance cost-effectiveness, and the ability of the project to make a more significant impact on a landscape scale.
- More careful selection and phrasing of indicators and targets, to ensure that they are SMART (specific, measurable, achievable, relevant, and time-bound) and correct. Ideally, all Outputs should be linked to at least one particular indicator with carefully selected targets, to allow accurate and balanced assessment of project performance.
- More attention should be given to ensuring accurate budgeting with provision built in for cost escalation over the lifespan of the project.
- The time frame for the project development process should be kept within reasonable bounds.

Sustainability:

- Establish institutional mechanisms for ongoing coordination and accountability: All stakeholders reported that it would be critical for the office of the RAS to play an ongoing role in coordinating the implementation of SLM by local authorities within the region. The RAS has indicated willingness to continue with this role, subject to appropriate resources and technical backstopping being available.
- Develop a strategic plan that identifies and prioritizes key SLM activities to be pursued in each district, groups activities under thematic areas and links these to appropriate sources of funding and institutional partners:
 - Maintaining the enabling environment for SLM: This theme might include activities such as regional coordination, monitoring, and evaluation (both of environmental and social impact and investment programs and public expense), managing donor relations, mainstreaming, promoting linkage between related initiatives and regional (or inter-regional) knowledge-sharing, and providing ongoing training and capacity development (see point iii, below).
 - Strengthening commercial and advisory services for SLM: Appropriate activities under this theme might include: provision of marketing support for SLM products (for example the development of value-added products, links to eco-labeling and certification systems to help access niche markets); strengthening rural financial services; ongoing capacity building for improved financial literacy and strengthening of producer organizations.

- Scaling-up of SLM activities: Instead of trying to sustain the full spectrum of businesses across the whole region, it is recommended that stakeholders be brought together to develop a strategic plan that identifies and prioritizes which activities should be pursued in which areas. When resources are limited, it is not cost-effective to try and do everything everywhere. It makes more sense for some activities to be focused in individual Districts, whilst others may be supported across several or even all the Districts.
- Provide ongoing training and provide opportunities for knowledge sharing: Ongoing training and skills development will be necessary to cope with staff turnover in District Municipalities and other stakeholder institutions, and to ensure that skills are kept up to date.
- Strengthen and diversify working institutional partnerships: As part of the exit strategy of the project, it is recommended that formal agreements be put in place to cement partnership agreements with selected institutions to provide ongoing technical or other backstopping support to the Regional Secretariat and the Districts for scaling-up SLM across the region.

3. Sustainable Management of Inland Wetlands in Southern Africa: A Livelihoods and Ecosystems Approach:

The UNEP/GEF project Sustainable Management of Inland Wetlands in Southern Africa: A Livelihood and Ecosystem Approach" (SMIWSA) was primarily motivated by existing interest in southern African countries to sustainably manage their wetlands as part of their sustainable development agenda and in view of the increasing use of wetlands by rural farmers to meet their food security needs. This growing use of wetlands posed a threat to their ecological functioning in both biodiversity and hydrological terms, and hence, their protection and sustainable use coincided with UNEPs portfolio, which calls for environmental protection and management, among others. In this effort to manage wetlands, several southern African countries were also supported by organizations such as the International Union for the Conservation of Nature (IUCN), the International Water Management Institute, and the Worldwide Fund for Nature (WWF), among others.

Key Successes: The project attempted to influence the policies, programs, and practices on wetlands in eight countries in a short period of four years. In doing so, it was able to use organizations such as IWMI, IUCN, and FAO with regional and local presence in all the countries of southern Africa.

- The project was able to take advantage of institutions already established in southern Africa, IWMI, IUCN ROSA, and FAO to supervise implementation, rather than create project offices in each country.
- The production of a key publication, "Guidelines on the management of inland wetlands in Southern Africa," was another highlight of the significant achievements of this project, since it is a key policy document that can be used by practitioners, policymakers and international donors and organizations.
- 50% of communities, at a minimum of four pilot sites, adopt best practice strategies developed in this project.
- The database is established within the formation of interventions, their impacts, advantages, and disadvantages.

- The project helped to highlight the critical role of wetlands in livelihood and ecological terms and that since then, there is evidence of increased wetland research and information in southern Africa.

Key Problems:

- Inadequate awareness of the dangers of unsustainable practices that could impair the functions of wetlands.
- Inadequate policies are relevant to the management of wetlands.
- Lack of technical information, guidelines, and technologies for the sustainable management of wetlands.
- Threats to the ecological sustainability of wetlands.

Key Lessons from Terminal Evaluations:

Project Design:

- Since the project was designed to operate in eight countries, there were, according to the observation of one of the country's focal points, expectations from participating countries that the project would establish a project office in each country. One thing that can be learned from this is that in the design of projects such as this, the expectations of all participants should be clear and where a project makes a conscious decision that may not meet expectations of key partners such as countries, it is an issue that must be managed to improve relations and country ownership. In connection with this, it appears that a possible mechanism for enhancing the participation and interest of partner countries is to make budgetary allocations that they directly supervise, and for community groups, training and trips organized to visit exemplary sites can be powerful learning mechanisms.
- According to progress reports submitted by IWMI to UNEP, in order to get countries involved, collaborating teams were identified in some of the countries, and this was often linked to the national focal point. The choice of a national focal point was perceived to be the single most important factor determining the successful implementation of activities within countries. This lesson, confirmed by one of the project officers from a participating country, is not surprising in that the adoption of new technological approaches is well served if there are champions and change agents.
- Influencing official policies during the course of a relatively short term project is virtually impossible if one's intention is to influence national policies unless it is on a particularly urgent issue such as a looming disaster or risk, and it seems much better to develop and promote tools that enable processes of policy change to function and design follow-up mechanisms beyond the life of a typical project which runs for three to five years. This is because the experience shows that policy reviews tend to be lengthy political processes that may not be achieved within a single four-year project phase, even if you are working in just one country.

Knowledge:

- Several key knowledge products, such technical guidelines came just before the project ended, allowing no time for testing of the guidelines or establishment of an ordered process for their adoption by the participating counties. It became clear that the project could have restated its key outcomes. In hindsight, the project should have limited itself to the characterization of wetlands, generation of

information on their management status, threats to their functioning, the support to post-graduate work, and the development of guidelines for improved management of wetlands. A strong internal and participatory evaluation could have helped in this regard. The outcome that was meant to create changes in management practices in at least four countries during the short duration of the project was far too ambitious.

4. Conservation & Management of the Eastern Arc Mountain Forests of Tanzania (CMEAMF) project.

The project had its origin in an international conference on the Eastern Arc Mountains (EAMs) organized by the Tanzania Forestry Research Institute (TAFORI) in 1997. Following this conference, the FBD of the MNRT developed a proposal for funding to the GEF. Project development funds totaling \$ 214,308 were granted through a PDF A and a PDF B from the GEF to assist in the design of the project. A successful proposal to the GEF resulted in the \$12 million projects which had four main objectives, two of which formed the UNDP/GEF project totaling \$5 million, and two the World Bank/GEF project totaling \$7 million:

- Objective 1: To bring together multiple stakeholders with interests in Eastern Arc to develop a consensus about how best the biodiversity can be conserved and to elaborate that consensus as a comprehensive and wide-ranging strategy for the conservation of the Eastern Arc Mountain Forests. (UNDP)
- Objective 2: To support the implementation of community-based conservation initiatives in priority pilot areas in the Uluguru Mountains and to develop lessons that can be extended to other areas. (UNDP)
- Objective 3: To support a process of institutional reform that will strengthen the capacity of national institutions to undertake participatory forest biodiversity conservation. (WB)
- Objective 4: To improve the long-term financial flows for forest biodiversity conservation in the Eastern Arc by developing and implementing a sustainable financing and delivery mechanism. (WB)

Key Successes:

- Significant enlargement of the forest area in the Eastern Arc Mountains (EAMs) under enhanced legal protection status. Four Forest Reserves covering a total area of 178,503 ha were upgraded to the status of Nature Reserves. An additional four forest reserves, covering a total area of 81,879 ha, are in various stages of being categorized as Nature Reserves. Three forest reserves proposed for categorization have been categorized, totaling an area of 3,019 ha, and five others are at an advanced stage in the categorization process.
- Significant increase in the number of Government personnel attached to Nature and Forest Reserves. Over the project life, and during the last two years, the number of staff in Nature and Forest Reserves has increased dramatically. Since the project began, there are 93 new foresters employed in the Nature Reserves. A total of 200 new Assistant Foresters were employed by FBD, and 153 more will be added next year.
- A Nature Reserves Centre has been established in the FBD (in Morogoro) as a direct result of this project. The Government created the Centre in 2008 and has increased the number of staff over the project life to the current level of 4 and will increase this by another three during the next fiscal year.
- The Government has established a budget code for Nature Reserves in its national budget.

- A good deal more information of good quality exists now on the forests and biodiversity of the EAMs and on the conservation status of many elements of this biodiversity compared to what existed at the outset of the project.
- A conservation strategy for the whole of the EAMs has been developed, and this was done in a participatory way, which has the added benefit of encouraging a participatory approach to further strategy development. The strategy is being used by the Endowment Fund to guide its financial support decisions.
- A better understanding of the threats to the forests and to the biodiversity contained therein exists now compared to what existed at the outset of the project.
- A Biodiversity Conservation Strategy and a Protected Areas strategy were developed.
- The awareness level regarding the importance of the forests and biodiversity of the EAMs has increased in central, regional, district, and village government entities and in local communities.
- The concept and practice of operating as a group have been successfully introduced into many villages where villagers had no previous group experience of any kind. This significantly enhances prospects for the sustainability of some project outcomes.
- 73 Village Savings and Loans (VS&L) were established by the project in the project area, and another 33 were self-established outside the project area, indicating strong replicability of the model promoted by the project. The establishment of VS&Ls has enhanced the well-being of villagers in some villages bordering and nearby to the UNR.
- Community capacity related to sustainable agricultural land management and financial management has been enhanced through the training of Paraprofessionals and Community-Based Trainers (CBTs).
- An effective capacity-building strategy was implemented as part of the VS&L activity and can be replicated not only in other VS&Ls but also in other activities that involve building capacity. This strategy differs significantly from the conventional approach adopted by many projects of building capacity primarily through workshops.
- The important groundwork was done that facilitated forest carbon work in Tanzania. Until the project contracted the Edinburgh Centre for Carbon to work on carbon baselines and changes in the EAMs, no one had undertaken this type of work in Tanzania. Now, four years later, there is a great deal of interest in carbon in the country, and some of the people working on the issue were first exposed to it through the project's work.

Key Problems:

- Overly ambitious expectations for the budget and time frame assigned for the project (design issue).
- There were gaps in time during which the project had no PC. There was a gap of approximately four months without a PC when the first PC left to assume another position (now Director of Forests, FBD). There was another time gap of approximately the same length after the sudden death of the second PC.
- There was slow progress during the first three years of the project due to several reasons, including the decision of the PC not to employ anyone other than one Technical Advisor for the strategy component. Thus, even though the ProDoc had envisaged contracting a Project Officer and an M&E expert, it was only the PC and the Technical Advisor who worked on the strategy elements.

- Managing the project as two separate but related initiatives instead of a single project with several components. The CARE component was, in fact, managed more in the traditional PIU sense, and the impression of the TET is that the PC basically assumed responsibility for the strategy component and left the responsibility for the Uluguru component to CARE even if all project funds were channeled through the Government.
- There were some problems with the functioning of several Committees, including a less-than-ideal functioning of the project steering committee (called the Project Management Committee or PMC), which only met seven times, in one case, leaving a gap of 21 months between meetings. In addition, some other technical and coordinating committees established early on by the project ceased to function altogether. (project governance issue)
- Lack of agreement on benefit-sharing arrangements. —While several hundred villages have been supported to develop JMAs, only a limited number of these have been signed by the Government—particularly those relating to NFRs. This is large because the law remains silent on how the benefits of forest management—particularly in forest reserves managed for timber production purposes – can be equitably shared with participating communities. In many cases, benefit-sharing arrangements remain in legal limbo – with de facto management at the local level taking place in return for vague promises about benefits later.
- Lack of implementation of the Government's policy to relocate people from the EAMs to other less environmentally sensitive areas. Nine billion TSHs were committed by the Government in March 2006 for, amongst other things, relocation of people from the mountains through the —National Strategy for Urgent Action on Land Degradation and Conservation of Water Catchment Areas (MKAKATI), but with little success.
- Population growth rate in some of the EAM blocks, including the Uluguru Mountains, the pilot area of this project. Although this is acknowledged as an important underlying threat to many of the EAM forests by the GOT and others, very little is being done to address this underlying cause of many of the direct threats to the EAM forests. Lack of addressing this issue makes it much more difficult to achieve expected project outcomes and negatively affects the prospects for sustaining positive outcomes achieved by the project.

Missed Opportunities:

- Support for those Districts intent on implementing the Government's policy to relocate people from the mountains. The project might have done more to support the Government's efforts in finding solutions to relocate people, especially from the designated corridor areas focusing on those Districts such as Morogoro Rural District, where the District Commissioner is intent on implementing the policy.
- Support to remove the barrier presented by the lack of government-approved benefit sharing guidelines associated with JFM. It might well be argued that because this was supposed to be done by the much larger TFCMP project, this project should not have dealt with the issue. Nevertheless, it could have been a subject of much higher weight during the project formulation/negotiation stage, especially as GEF projects should work to remove critical barriers, and these should take place within a conducive policy and legislative framework.
- Opportunity to introduce some measures that may help address one important underlying root cause of forest degradation, population growth rate in certain mountain blocks of the EAMs.

Key Lessons from Terminal Evaluations:

Project Design:

Minimizing numbers of external consultancies and ensuring the involvement of FBD staff resulted in institutional strengthening. An even greater focus on ensuring FBD staff in the field (not just a senior manager in Dar) had the overall picture regarding the conservation status of the EAMs and more conservation-related information regarding the areas where they work at their fingertips would have been useful. When asked specific conservation-related questions, FBD field staff often replied that this question would have to be answered by the Technical Advisor. Although attention was given to the capacity building, and the National Execution modality adopted by the project enhanced capacity building opportunities, an even greater focus on the capacity building may have improved sustainability prospects even more.

Strategy:

Had the project successfully implemented all aspects of the approach, the impact on the forest would almost surely have been felt. Delays during the first three years of the project had a negative impact on the Uluguru component 's ability to achieve its objective. Even more important than the time factor, critical barriers including lack of agreed benefit-sharing guidelines, and a less-than-optimum choice of target forest (Nyandinduma) did not permit the project to advance as far as anticipated on JFM. A more rigorous and impact-oriented monitoring system, with a focus on the ultimate desired impact on the forest, would have also been helpful.

Summary of lessons and benefits

Summary of Key Lessons
Strategic
<ol style="list-style-type: none">1. Having an independent coordination body is a highly successful mechanism for projects involving institutions from the mainland and Zanzibar.2. Successful results on-the-ground engender trust and garner support.3. A more rigorous and impact-oriented monitoring system, with a focus on the ultimate desired impact on the forest can have positive results.
Financial
<ol style="list-style-type: none">1. A buffer period should be introduced to facilitate the flexibility necessary to implement complex projects.2. Partner institutions should be made responsible for tracking and reporting all their financial contributions to a project.
Design
<ol style="list-style-type: none">1. The coordination and implementation roles need to be kept separate so that in any given project, the same organization does not play two roles.2. It is important to include in the design of projects, income-generating activities, or other actions that bring direct economic benefits to those communities whose behaviors the project is seeking to change or whose involvement/increased awareness it is hoping to catalyze.

Summary of Key Lessons
<ol style="list-style-type: none"> 3. GEF projects should look at the efficacy of including an additional period of continued low-level (low-cost) technical support to beneficiaries beyond the time necessary to achieve the outputs to consolidate the achievements and increase their likely sustainability. 4. All GEF projects should be able to stand alone in terms of impact indicators. 5. Setting more realistic goals and narrowing the spread of activities that the project attempts to address (i.e., go 'narrow and deep' rather than 'shallow and broad'). This would improve the probability of effective delivery of project outcomes, enhance cost-effectiveness, and the ability of the project to make a more significant impact on a landscape scale. 6. More careful selection and phrasing of indicators and targets, to ensure that they are SMART (specific, measurable, achievable, relevant, and time-bound) and verifiable. Ideally, all Outputs should be linked to at least one indicator with carefully selected targets, to allow accurate and balanced assessment of project performance. 7. More attention should be given to ensuring accurate budgeting with provision built in for cost escalation over the lifespan of the project. 8. The time frame for the project development process should be kept within reasonable bounds. 9. The expectations of all participants should be clear, and where a project makes a conscious decision that may not meet expectations of key partners such as countries, it is an issue that must be managed to improve relations and country ownership. 10. Minimizing numbers of external consultancies and ensuring the involvement of staff resulted in the institutional strengthening.
Project Management
<ol style="list-style-type: none"> 1. A focus that is too close in achieving the logical framework indicators can lead to the loss of key elements of the project.
Knowledge and Sustainability
<ol style="list-style-type: none"> 1. Develop a strategic plan that identifies and prioritizes key SLM activities to be pursued in each district, groups activities under thematic areas, and links these to appropriate sources of funding and institutional partners. 2. Provide ongoing training and provide opportunities for knowledge sharing. 3. Strengthen and diversify working institutional partnerships.

Annex 11 Gender Assessment

<https://drive.google.com/file/d/1hXAGNU8BH1cGThL45K64Nv97iHHOjBhu/view?usp=sharing>

Annex 12 Environmental and Social Management Framework and Process Framework

<https://drive.google.com/file/d/1cXBKpeUj7hWP6axUTwnYiaRubRfrMkdc/view?usp=sharing>

Title of project: Food Systems, Land Use and Restoration in Tanzania's Forest Landscapes

Countries/Geography: Tanzania Mainland (Kilombero District) and Zanzibar (North A and North B)

Screening for climate risks ensures that WWF creates durable projects and programmes in the face of climate change. This internal climate risk screening tool is intended to help you think through climate-related risks at the early stages of project/programme design.

According to the UNFCCC IPCC 1.5 Degrees Report, risk is defined as:

*"The potential for adverse consequences where something of value is at stake and where the occurrence and degree of an outcome is uncertain. In the context of the assessment of climate impacts, the term risk is often used to refer to the potential for adverse consequences of a **climate-related hazard**, or of **adaptation or mitigation responses** to such a hazard, on lives, livelihoods, health and well-being, ecosystems and species, economic, social and cultural assets, services (including ecosystem services), and infrastructure. Risk results from the interaction of vulnerability (of **the affected system**), its exposure over time (to the hazard), as well as the (climate-related) hazard and the likelihood of its occurrence."*

1. **Which ecosystems are present in your project area(s)?** (These are the natural elements of the **affected system** that are exposed to climate-related hazards.)

- | | |
|---|---|
| <input type="checkbox"/> Coral reefs | <input type="checkbox"/> Montane/Alpine |
| <input checked="" type="checkbox"/> Coastal | <input type="checkbox"/> Temperate oceans |
| <input type="checkbox"/> Deserts and xeric shrublands | <input type="checkbox"/> Tropical oceans |
| <input type="checkbox"/> Deltas and estuaries | <input type="checkbox"/> Peatland |
| <input type="checkbox"/> Boreal forests and taiga | <input checked="" type="checkbox"/> Streams, rivers, riparian |
| <input checked="" type="checkbox"/> Temperate forests | <input type="checkbox"/> Seagrass |
| <input type="checkbox"/> Tropical and subtropical forests | <input type="checkbox"/> Saltmarsh |
| <input type="checkbox"/> Temperate grasslands | <input checked="" type="checkbox"/> Wetlands |
| <input checked="" type="checkbox"/> Tropical and subtropical grasslands | <input type="checkbox"/> Created forest |
| <input type="checkbox"/> Ponds and lakes | <input type="checkbox"/> Created grassland |
| <input type="checkbox"/> Mediterranean shrubs and Forests | <input type="checkbox"/> Created other |
| <input checked="" type="checkbox"/> Mangroves | <input type="checkbox"/> Created wetland |

☐ Other: Mixed Broad-Leaved Forest

Priority conservation targets in project area (e.g. specific landscapes or seascapes, freshwater bodies, forests, oceans and reefs, wildlife species, etc.)

The Kilombero district hosts the majority of the Kilombero Valley Ramsar-designated wetland system as well as other areas of high biodiversity significance, including the Selous Game Reserve, Tanzania's largest National Park and a designated World Heritage Site, parts of the Eastern Arc Forests, and a major wildlife migration corridor.

The Unguja landscape in Zanzibar covers historically rich coral rag forests and hosts the islands' major aquifer systems, which is the basis for food crop production.

2. Describe the social and economic elements of the landscape/protected area the project/programme will be working in. (These are the socio-economic elements of the **affected system** that are exposed to climate-related hazards.)

Communities and their main livelihoods in project area(s)

Unguja (Zanzibar)

Agriculture is the predominant occupation of the workforce and contributes 87% of the average incomes of farming households in the district, with fishing and tourism accounting for the remaining. About 59% of North A district population do practice subsistence farming, with major food crops being paddy, banana, yams, cassava, tomatoes, maize and millet, and the major cash crops being cloves and seaweeds. Agricultural practices are generally low intensity, characterized by a high dependence on rain-fed agriculture, poor agricultural practices, high post-harvest losses, inadequate access to agricultural inputs and appropriate irrigation technologies, and the use of primitive farm tools.

With regards to livestock ownership, North A district has residents who rear different types of livestock including cattle, goats, chicken and ducks. Residents within North B district rear animals such as cattle, goats, pigs, chicken, ducks, turkeys, rabbits and donkeys.

Kilombero

The majority of the (mainly rural) population in the Kilombero Valley are subsistence farmers of maize and rice, as well as fishing and livestock. In addition, there are large plantations of teak wood in the Kilombero valley. In the lower floodplain, rice cultivation constitutes the main crop system, in light of the favorable conditions in the seasonably flooding wetland systems. 80% of the district's population is engaged in agriculture.

Rice production is expected to further grow with planned investments for irrigation schemes in the Valley. In the north-west of the district, Illovo Sugar Company's sugar-cane plantations occupy most of the low-lying area.

Major relevant industries or economic sectors in project area(s) (e.g. specific commercial agricultural crops, fisheries, forestry, mining, major infrastructure, manufacturing, etc.)

32% of the Tanzania's National Gross Domestic Product derives from the agricultural sector, employing 13 million people nationally, and by far also the major industry in both project areas, with tourism and fisheries in particular relevant in Unguja (Zanzibar).

3. **Which climate-related hazards will affect the project area/landscape over the period 2020 to 2050?**
(Use data from leading climate change models)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Changes in timing of seasons | <input type="checkbox"/> Loss of other ecosystem goods |
| <input checked="" type="checkbox"/> Increased rainfall | <input type="checkbox"/> Food and timber productivity |
| <input checked="" type="checkbox"/> Decreased rainfall | <input type="checkbox"/> Avalanche |
| <input checked="" type="checkbox"/> Drought | <input type="checkbox"/> Biomass cover |
| <input type="checkbox"/> Desertification | <input type="checkbox"/> Ocean acidification |
| <input checked="" type="checkbox"/> Flooding | <input checked="" type="checkbox"/> Increased incidence/changing distribution of disease |
| <input type="checkbox"/> Freshwater flooding | <input checked="" type="checkbox"/> Pests |
| <input type="checkbox"/> Storm surge | <input checked="" type="checkbox"/> Soil erosion |
| <input checked="" type="checkbox"/> Loss of water source | <input type="checkbox"/> Soil Quality |
| <input checked="" type="checkbox"/> Heat waves/Hotter days | <input checked="" type="checkbox"/> Coastal erosion |
| <input type="checkbox"/> Cold spells/Frost | <input checked="" type="checkbox"/> Coastal inundation |
| <input type="checkbox"/> Wildfires | <input checked="" type="checkbox"/> Coastal saltwater intrusion |
| <input type="checkbox"/> Changes in wind | <input checked="" type="checkbox"/> Water quality |
| <input type="checkbox"/> Wind damage | <input type="checkbox"/> Wildfire |
| <input checked="" type="checkbox"/> Soil erosion | <input type="checkbox"/> None |
| <input checked="" type="checkbox"/> Coastal erosion | <input type="checkbox"/> Other: |
| <input type="checkbox"/> Mudslides/Landslides | <input type="checkbox"/> Uncertain or do not know |
| <input type="checkbox"/> Ice/Permafrost melt | |
| <input checked="" type="checkbox"/> Sea level rise | |
| <input type="checkbox"/> Increased aridity | |

4. **Which climate-related hazards have become more frequent or severe and have negatively impacted your project area(s)? These can be anecdotal or based on collected data.** (These are the **climate-related hazards** the affected system is exposed to over time.)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Changes in timing of seasons | <input checked="" type="checkbox"/> Increased incidence/changing distribution of disease |
| <input checked="" type="checkbox"/> Increased rainfall | <input type="checkbox"/> Pests |
| <input checked="" type="checkbox"/> Decreased rainfall | <input checked="" type="checkbox"/> Soil erosion |
| <input checked="" type="checkbox"/> Drought | <input type="checkbox"/> Soil Quality |
| <input type="checkbox"/> Desertification | <input checked="" type="checkbox"/> Coastal erosion |
| <input checked="" type="checkbox"/> Flooding | <input checked="" type="checkbox"/> Coastal inundation |
| <input type="checkbox"/> Freshwater flooding | <input checked="" type="checkbox"/> Coastal saltwater intrusion |
| <input type="checkbox"/> Storm surge | <input type="checkbox"/> Water quality |
| <input checked="" type="checkbox"/> Loss of water source | <input type="checkbox"/> Wildfire |
| <input checked="" type="checkbox"/> Heat waves/Hotter days | <input type="checkbox"/> None |
| <input type="checkbox"/> Cold spells/Frost | <input type="checkbox"/> Other: |
| <input type="checkbox"/> Wildfires | <input type="checkbox"/> Uncertain or do not know |
| <input type="checkbox"/> Changes in wind | |
| <input type="checkbox"/> Wind damage | |
| <input checked="" type="checkbox"/> Soil erosion | |
| <input checked="" type="checkbox"/> Coastal erosion | |
| <input type="checkbox"/> Mudslides/Landslides | |
| <input type="checkbox"/> Ice/Permafrost melt | |
| <input checked="" type="checkbox"/> Sea level rise | |
| <input type="checkbox"/> Increased aridity | |
| <input type="checkbox"/> Loss of other ecosystem goods | |
| <input type="checkbox"/> Food and timber productivity | |
| <input type="checkbox"/> Avalanche | |
| <input type="checkbox"/> Biomass cover | |
| <input type="checkbox"/> Ocean acidification | |

For Zanzibar, the main climate related risks as identified in studies are related to sea level rise resulting in increased coastal erosion, risks of flooding as well as salt water intrusion. Also, changing rainfall patterns may be associated with decreased replenishment of groundwater resources as well as impacts on rainfed agriculture (although there seems to be little evident of this yet).

For Tanzania, studies and models have indicated a general increase in temperature, especially in the hot/dry season, accompanied by an intensification of rainfall variation between the dry and wet season, resulting in increased flooding in the wet season and decreased hydrological flows in the dry season. This, in turn, will impact on both ecological systems (e.g. wetlands, rivers, floodplains) as well as agricultural potential.

5. Which of the following impacts have been observed in the project area(s) that you believe may be caused or exacerbated by the climate-related hazards you noted in question 3&4? (These indicate how the affected system is vulnerable to climate-related hazards.)

a. Community/human impacts due to observed climate-related hazards

- ☒ Decline or loss of crop yields
- ☒ New or increased number of pests
- ☐ Decline in livestock health (death, disease, weight loss, decline in the production of milk and/or number of offspring)
- ☒ Increased instances of disease
- ☒ Damage to property, equipment, infrastructure (e.g. caused by floods/storms)
- ☐ Increased instances of wildlife entering farms/settlements for water, to prey on livestock, or to eat/damage crops
- ☒ Increased instances of hunger, famine, poor nutrition, and/or respiratory problems
- ☐ Scarcity of pasture for livestock grazing
- ☒ Decreased availability of freshwater
- ☒ Decreased quality or contamination of freshwater
- ☐ Scarcity or loss of firewood access
- ☐ Loss or reduction of wild plants/animals used for consumption
- ☐ Loss or reduction of wild plants/animals used for medicinal purposes

- ☐ Loss of fish availability (fish swimming to lower depths/further out from shore to escape heat, making them more difficult to catch) **should this be in biodiversity?
- ☐ Increase in invasive species
- ☐ Decrease in pollinators
- ☐ Increased yields
- ☒ Opportunity to plant different types of crops
- ☐ Other: _____
- ☐ Uncertain or do not know

Higher temperatures as well as changes in rainfall disrupt crop growing cycles and can lead to decreased yields. Inconsistent rainfall patterns have led to flood events and droughts that destroy crop yields and productivity, contribute to soil erosion and affect water quality and quantity.

Climate models predict that numerous agricultural crops will have smaller yields in the coming years. According to one study, by 2050 rice yields will be reduced by an average of 7.6%. In addition, increased temperatures are correlated with more pests and crop diseases, which further affects the agricultural practices in both landscapes.

Impacts from sea level rise affect Unguja through loss of coastal wetlands, coastal erosion and saltwater intrusion (with saltwater entering the freshwater supply of the island).

b. Impacts on biodiversity that could be attributed to observed climate-related hazards

- ☒ Fragmentation of habitat, creating restricted movement for wildlife
- ☒ Habitat loss due to deforestation or other land clearing/conservation activities
- ☒ Habitat degradation from human encroachment, increased human activity and extraction of resources in natural areas including reserves and parks (protected areas)
- ☐ Range shift (wildlife moving into an area they previously did not occupy or out of an area they previously occupied)
- ☐ Increase or emergence of new diseases affecting plant/animal species
- ☐ Mortality/decline in abundance of plants/animal species caused by heat
- ☐ Mortality/decline in abundance of plants/animal species caused by floods
- ☒ Changes in life cycle events of plants/animal species (phenotypic change?)
- ☐ Increase in invasive plant/animal species

- ☐ A general decline in population or disappearance of a species in an area
- ☐ Other: _____
- ☐ Uncertain or do not know

Areas typically used for grazing are being flooded, causing farmers and livestock owners to relocate to upland grazing pastures that may lead to soil erosion and land degradation. Natural ecosystem services have already been disrupted due to agricultural expansion and relocation that is exacerbated by flooding.

During the dry season farming areas are being used for livestock grazing when they should be managed sustainably and allow for regrowth and soil regeneration instead.

There are temperature thresholds for agricultural crops at which point the crops become less productive. The varying temperatures may also disrupt regular crop growing cycles. New diseases and increased pests have emerged due to temperature and seasonal changes.

c. Additional business sector impacts due to observed climate-related hazards

- ☒ Decline in agricultural production
- ☐ Decline in energy generation
- ☐ Decline in fisheries production
- ☐ Decline in forestry
- ☒ Damage to infrastructure
- ☐ Disruptions in manufacturing
- ☐ Disruptions in supply chains
- ☐ Disruptions in operations
- ☒ Social conflict
- ☐ Market change
- ☐ Workforce migration
- ☐ Regulations due to scarcity of resources or other impacts
- ☐ Credit risk
- ☐ Raw material price increases
- ☐ Increased cost of inputs

- ☐ Operational price increases
- ☐ Labor availability impacted
- ☐ Increase in insurance prices
- ☐ Reinsurance impacts
- ☐ Other: _____
- ☐ Uncertain or do not know

The agricultural sector is suffering as a result of climate change impacts, but there are also social conflicts over access to land and water resources between farmers and livestock keepers in particular, that may aggravate due to climate change related effects .

6. How are communities responding to these impacts due to observed climate-related hazards?

(These are the **adaptation responses** to climate-related hazards that can pose additional risk to the affected system.)

a. Agriculture

- ☒ Adopting alternative crop practices (crop type, ground contouring, conservation agriculture, farming in new areas, planting earlier/later than usual)
- ☒ Increasing application or changing the type of pesticides used
- ☒ Increasing application or changing the type of fertilizer used
- ☒ Adopting alternative livestock practices (livestock type, new grazing area, grazing in certain areas earlier or later than usual)
- ☐ Practicing agroforestry (planting trees on farms to prevent erosion/provide shade)
- ☒ Using irrigation practices (where there previously was one, or increased use)
- ☐ Other: _____
- ☐ Uncertain or do not know

b. Alternative or supplementary income

- ☐ Selling assets (property, belongings, livestock)
- ☐ Changing livelihoods towards small business practices (selling charcoal, crafts, etc.)
- ☐ Hunting animals as a source of income or food
- ☐ Relying on fishing as a source of income or food
- ☐ Logging

- ☒ Land clearing/expansion of agriculture
 - ☐ Relying on aid from an NGO or government for resources
 - ☐ Foraging in natural areas (i.e. forests) to gather food/raw materials or doing so more intensively
 - ☐ Construction of infrastructure (dams, wells, fencing)
 - ☒ Other: _____
 - ☐ Uncertain or do not know
- c. Resource access
- ☐ Traveling further or to new locations to access water
 - ☐ Traveling further or to new locations to access firewood
 - ☐ Traveling further or to new locations to access NTFPs
 - ☐ Traveling further or to new locations to access game/food
 - ☐ Traveling further or to new locations to access land and soil
 - ☒ Migrating to new areas
 - ☐ Other: _____
 - ☐ Uncertain or do not know
- d. Ecosystem and human-wildlife interactions
- ☐ Practicing restoration or protection of key landscape/ecosystem services (water catchment, restoration of riverbanks to maintain flood mitigation benefits)
 - ☐ Killing of wildlife for defensive or retaliatory reasons (posing a threat to life or property)
 - ☐ Other: _____

☒ Uncertain or do not know

Agriculture:

- Some communities have attempted to plant climate-resilient crops such as Acacia in order to stabilize the water catchment and reserve water. At present, 89% of all fresh water in Tanzania is used for agriculture.
- The increase in pests and diseases has caused communities to look for alternative solutions and utilize pesticides more frequently- this leads to health problems in the communities.
- Some people are using natural pesticides as a method to combat diseases and pests
- Some communities have constructed wells

Alternative or supplementary income

- Initializing agribusinesses (such as banana, cassava, melon etc.)
- Families are seeking alternative income generating activities as the longer hours of farming are affecting their health.
- Some families have begun to reduce the number of meals they can eat per day.

Resource access

- Some individuals have begun to migrate in response to poor crop yields, climate change disasters and food scarcity.
- Livestock keepers are seeking access to land (for grazing) and water, migrating into areas reserved for conservation or reserved for farming.

7. **How is the business sector responding to these impacts due to observed climate-related hazards?**

(These are the **adaptation responses** to climate-related hazards that can pose additional risk to the affected system.)

- ☐ Adding on-site utilities and energy sources
- ☐ Shifting supply base
- ☐ Increasing risk awareness
- ☐ Relocating physical assets and operations
- ☐ Increasing insurance coverage
- ☐ Development of disaster recovery plans
- ☐ Shifting patterns of production and sourcing
- ☐ Auditing suppliers' activities and plans
- ☐ Risk assessment and management shifts
- ☐ Financing adaptation activities
- ☐ Technology development, transfer, and application
- ☐ Efficiencies

- ☐ Policy engagement
- ☐ Investment in green and grey infrastructure to protect assets
- ☐ Other: climate smart agriculture
- ☒ Uncertain or do not know

As there are no major private sector actors involved in agricultural production, there is not an organized effort in the business sector to respond to climate-related hazards. However, outside partners have invested heavily in expanding the rice production capacity of Tanzania, with some concerted efforts to integrate climate-smart practices.

8. Which of the identified climate-related hazards, impacts, and responses identified in questions 3-7 will have the most implications on the 1) operations and/or 2) sustaining long-term outcomes of your project? If so, how?

The above climate hazards (varying seasons, rainfall, drought, flooding, higher temperatures) may affect the long-term outcomes of the project, reducing crop yields, reducing the water supply, and impacting the livelihoods of the communities in both landscapes.

9. What are your primary sources of information on these changes and/or risks? Please include titles of sources and/or direct links.

- ☐ Peer-reviewed literature or other academic research
- ☒ Grey or white literature (i.e. reports from researchers or other NGOs)
- ☒ Government reports
- ☒ Observations from the field
- ☒ Interviews
 - ☐ Personal
 - ☒ Community/expert interviews
- ☐ Multi-stakeholder workshop
- ☒ IPCC reports
- ☒ World Bank Climate Change Knowledge Portal

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- URT. 2015a. Tanzania Climate-smart Agriculture Programme. Ministry of Agriculture Food Security and Cooperatives, United Republic of Tanzania (URT).
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- https://www.researchgate.net/publication/229048997_Climate_variability_and_crop_production_in_Tanzania
- Global Climate Partnership (2012). The Economics of Climate Change in Zanzibar,

How will your project address these identified climate-related risks to ensure project success?

10. What technical and institutional capacity, and information, will be needed to address climate vulnerability and enhance project and place-based resilience?

- ☒ Technical capacity to address identified climate vulnerabilities and design resilience enhancement measures
- ☐ Institutional capacity to address identified climate vulnerabilities and design resilience enhancement measures
- ☐ Information on financial implications of the proposed climate vulnerability management options
- ☒ Mechanisms for evaluation of the success mechanisms to reduce vulnerability and improve resilience (Monitoring, Evaluation and Learning strategy - implementing and evaluating the selected climate vulnerability management options over the project lifetime and evaluating the projected impact uncertainties beyond that period)

Additional information will be needed to address climate vulnerability in all project activities. Technical capacities will be built to support long-term success of project outcomes.

11. Any additional comments/next steps?

Under Component 1, the project will incorporate climate considerations into village-level and landscape-level plans for Kilombero and Unguja landscapes (Component 1). This will ensure that areas designated for rice production will continue to be viable. Site selection criteria for all components will take into account climate change projections.

Under Component 2, the project will integrate climate-smart agricultural principles into all activities related to the rice value chain. This includes trainings and investments in more sustainable and climate-smart rice practices.

Under Component 3, restoration of lands will rely on (1) site selection that accounts for climate change projections and (2) the investments will ensure a climate-smart approach to ensure long-term sustainability and success (e.g. climate-resilient species for restoration)

TOR: Project Coordinator / Sustainable Food Systems Specialist

Background

The Project Coordinator / Sustainable Food Systems Specialist will supervise staff in a Project Management Unit (PMU), coordinate with project partners and provide day-to-day management of the project. He/she will furthermore provide targeted technical support to the design and implementation of project activities under components 1, 2 and 3. Approximately 20% time will be dedicated to coordinating the Project Management Unit, with the majority of time dedicated to technical delivery of project activities (80%), both the centrally managed outputs as well as through on-the-ground technical assistance to the landscape teams.

Responsibilities*1. Project Management:*

- Day-to-day management, monitoring and evaluation of project activities and results as outlined in the ProDoc, Grant Agreement, and Annual Work Plan and Budget to achieve the project objective and targets in the Results Framework
- Manage the workflow for the Project Steering Committee (PSC), which will be led by the Project Lead
- In collaboration with all project sub-grantees and partners, develop the Annual Work Plan and Budget (AWPB) for each project year, for approval by the PSC and no-objection from the WWF GEF Agency
- Provide high level oversight and monitoring of procurement and expenditure in line with the AWPB
- Review progress of work plan and monitoring plan
- Lead planning and organization for reflection workshop to identify lessons learned and propose potential changes for adaptive management to ensure project results and indicator targets are reached
- Responsible for organization of Inception workshop and other project-level workshops/meetings
- Represent the project and provide support for project supervisions and internal and external reviews/evaluations
- Hold monthly virtual and/or physical meetings with the partners involved in the implementation of project activities per component

2. Staff management:

- Supervise the PMU staff including MELKM Program Officer, Financial Manager, and any directly recruited staff or consultants

2. Technical assistance:

- Technically lead and advise on the implementation of the centrally managed components of the project, in particular:
 - Development of a policy paper on improved land tenure and water governance systems to support implementation of the land and water use plans (outputs 1.1.4);

- Capacity building on Integrated Landscape Management (Output 1.1.5);
- Development of a sustainable value chain development plan for the rice production sector (output 2.1.1);
- Development of guidelines, standards, and training packages for public and private sector value chain actors in the rice sector (output 2.1.2);
- Undertaking an opportunity analysis for private sector investments in sustainable rice production value chains (output 2.3.1);
- Negotiation and establishment of a collaborative agreement and platform for engagement between public, private and civil society actors on sustainable rice value chain development (output 2.3.2); and
- The development and review of potential fiscal/financial schemes to incentivize investment for restoration in degraded lands (output 3.1.3)
- Advise the project partners and landscape coordination units in regard to the technical design and implementation of activities under components 1, 2 and 3
- Prepare related TORs to recruit consultants to ensure technical deliverables and experience requirements are included, and in the development of sub-contracts to project partners
- Undertake regular field missions to monitor project implementation and to provide technical advice and support to the landscape teams and project partners

3. Reporting:

- Formulate semi-annual Project Progress Reports and ensure timely delivery to the WWF GEF Agency
- Oversee the preparation and disbursement of sub-grants
- Oversee development of quarterly financial reports and ensure timely delivery to the WWF GEF Agency
- Ensure co-finance reporting on a yearly basis

4. Quality Assurance:

- Provide quality assurance for project activities, including in sub-grants
- Review reports and other products from consultants, staff, and sub-grantees, and ensure quality
- Ensure implementation in line with the GEF and WWF standards and policies

5. Partnerships:

- Coordinate with co-financed projects and liaise with project partners to ensure co-financing commitments are realized
- Attract additional partners and co-financing
- Ensure smooth coordination and communication among all project partners, and with the Program partners
- Manage stakeholder engagement throughout the project duration
- Represent the project, as needed, at various meetings and workshops

Qualifications and Requirements

- 8 years technical working experience, including at least 4 years of project management experience

- Post-graduate degree in a discipline relevant to Sustainable Food Systems
- Technical experience and knowledge in the thematic areas of the project (i.e. integrated landscape management, sustainable agricultural production and value chains and landscape restoration)
- Experience in managing similar, complex, multi-stakeholder projects
- Experience in leading a team of staff and coordinating sub-grant partners
- Ability to interact with senior business, government, and NGO staff
- Adaptive management skills
- Knowledge of WWF Project and Programme Management Standards preferred
- Experience in delivering technical and financial reporting to donor agencies on large projects
- Experience with GEF Projects and GEF knowledge an advantage

TOR: Finance and Operations Manager

Job Family: Program Operations/ Coordinator

Reports to: Project Coordinator / Sustainable Food Systems Specialist

Major Function

Under the direction of the GEF Project Coordinator / Sustainable Food Systems Specialist , manages all financial and operational aspects of the Project including project budgeting, contracting, sub-recipient monitoring and evaluations, financial tracking and reporting, and administrative functions. Provides financial and administrative assistance to, and oversight of, program staff and grantees to ensure that budgets and agreements are handled in accordance with WWF policies, procedures, systems, and donor requirements.

Key Responsibilities

- Prepares, administers, and maintains the GEF project budget, ensuring that data is accurate and current. Reviews and monitors status of the budget, against the annual budget and the annual project workplan. Ensures spending levels are appropriate and coding is correct. Identifies problems and recommends corrective action, assists in the revision of budgets and communicates issues to the Project Coordinator / Sustainable Food Systems Specialist . Ensures GEF Requirements are met including the budget structure contained in the ProDoc Budget, and that all expenses are associated with the incremental costs.
- Reviews all documentation received from proposed sub-recipients per the WWF pre-award process, performs sub-recipient risk analysis and develops a risk mitigation plan for the project.
- Coordinates and prepares financial reports for submission to the WWF GEF Agency, ensuring GEF requirements are met.
- Supports, prepares and monitors grant and consultant agreements ensuring compliance with agreement terms. Ensures agreements and payments are processed timely and in accordance with WWF policy and procedures. Prepares paper work for approval, secures signatures, and distributes documents to appropriate parties.
- Reviews and analyzes sub-recipient's financial reports to ensure compliance by sub-recipients with WWF-US and GEF Agency reporting requirements including project partner co-financing. Notifies grantees of any problems or discrepancies and provides technical assistance to grantees in resolving problematic issues.

- Supports WWF GEF Agency Annual supervision missions by providing requested documentation and other assistance as needed.
- Assists independent mid-term and final evaluations by providing all requested financial information. Provides feedback where relevant on evaluation reports and ensures that corrective actions based on the mid-term evaluation recommendations are taken when related to financial issues.
- Maintains information and files pertaining to all financial and administrative aspects of the project including agreements. Regularly monitors on-going compliance with WWF reporting requirements and individual project deadlines. Ensures all project reports are acknowledged and routed to appropriate individuals for review.
- Provides support to the project management and coordination of day-to-day administrative operations and special projects. Identifies, coordinates and expedites the communication of information and issues both interdepartmentally and intra departmentally, as well as externally with su-recipients, the Project Steering Committee, the WWF GEF Agency and independent evaluators as necessary.
- Performs other duties as assigned.

TOR: Monitoring, Evaluation, Learning & Knowledge Management Program Officer

Under the guidance and supervision of the 'Project Coordinator / Sustainable Food Systems Specialist, the Monitoring, Evaluation, Learning & Knowledge Management (MELKM) Program Officer will be responsible for tracking and reporting project implementation against project work plans, and reporting progress towards outcome indicator targets. The MELKN Officer will be responsible for the collection and analysis of different data in relation to the project activities, outputs, and outcomes; maintaining the M&E results frameworks of the projects; and assisting the Program Officer in preparing quarterly, semi-annual, and annual reports on project progress. Through the collection and analysis of high quality and timely data inputs, he/she will responsible for ensuring that the projects maintain their strategic vision and that their activities result in the achievement of their intended outputs and outcomes in a cost effective and timely manner, as well as contributing to project team discussions of potential opportunities for adaptive management.

Furthermore, the MELKM Officer will coordinate the engagement of the Tanzania FOLUR Project Team in the global FOLUR IP, including participation in networks, events, training programs and exchanges, and the collection and exchange of experiences and lessons learnt.

The MELKM Officer will work in close collaboration with the project teams and implementing partners and external data collecting and data sharing organizations, and will report to the 'Project Coordinator / Sustainable Food Systems Specialist.

Responsibilities

1. M&E:

- Design methodology for the collection of relevant data in close collaboration with all technical specialists;

- Work with field teams and implementation partners to ensure they are building and using effective monitoring systems aligned with approved logic models and work plans;
- Based on the M&E frameworks described above, design a database that helps maintain data collected over the course of project implementation and is transparent to all partners;
- Manage said database to ensure data is accurate and updated, with guidance to ensure consistency of measurement methodologies over time;
- Monitor application of project M&E plans, gather and analyze data, and produce quarterly, semiannual, and annual reports on project progress and impact in partnership with the Project Coordinator / Sustainable Food Systems Specialist;
- Provide a completed and up to date Results Framework and Work Plan Tracking for the WWF-GEF Project at the end of each project year;
- Contribute to the 6-month and 12-month Project Progress Reports for the WWF-GEF Project, including progress, reflections, adaptive management, M&E outcomes, and project ratings;
- Troubleshoot data collection challenges;
- Monitor for data inaccuracies or inconsistencies and seek clarifications when needed;
- Provide logistical and coordination support to facilitate project evaluations (by WWF-GEF Agency and external evaluators).

2. Knowledge Management and Learning:

- Proactively investigate and reflect on emerging data collection for adaptive management proposals;
- Provide input into an annual reflection workshop to inform adaptive management of the project;
- Collect and analyze additional data relevant to project from external sources;
- Coordinate the engagement of the Tanzania FOLUR Project Team in the global FOLUR IP, including participation in networks, events, training programs and exchanges, and the collection and exchange of experiences and lessons learnt;
- Lead on the development of lessons learnt and other types of learning materials originating from the project.

Qualifications

- A Bachelor's degree is required in environmental science or management, program evaluation, or a related field;
- Must have at least 4 years of relevant work experience. A Master's degree in the above mentioned fields will substitute for 2 years of experience;
- Ideally 2 of those years of experience will be in the design and implementation of M&E systems for development or conservation projects implemented by national/international NGOs/agencies/government;
- Must have proven ability to manage multiple projects and priorities;
- Strong analytical skills/expertise in analyzing data is required;
- Strong writing skills are required;
- Experience in research methods, designing and implementing tools and strategies for quantitative and qualitative data collection, analysis and production of reports is preferred;
- Experience using statistical software, such as R or Stata, is desired;
- Expertise using database software, such as Excel and Smartsheet, is preferred;
- Familiarity with PPMS (Program and Project Management Standards) and results-based management principles, tools, and techniques is preferred;

- Fluency in written and spoken xx is required;
- International, developing country field experience is preferred, especially in a monitoring and evaluation role in a development or conservation context.

TOR: Project Director – seconded by MNRT (not on GEF budget)

Responsibilities

- The project Director is ultimately responsible for the Project and will dedicate 10% of his/her time to leading the project.
- He/she will chair the Project Steering Committee and lead quarterly, virtual meetings.
- He/she will be responsible for making any significant adaptive management decisions as they relate to the strategy of the project, in close consultation with the Program Coordinator / Sustainable Food Systems. He/she will also be responsible for any significant troubleshooting that may be required during the course of the project addressing poor performance, budget variances, staff changes, etc.
- He/she will also represent the project externally where necessary and appropriate and where the Program Coordinator / Sustainable Food Systems may not be available.