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USAID/TANZANIA BIODIVERSITY AND TROPICAL FORESTRY (FAA 118/119) ASSESSMENT

APRIL 2019

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USAID/TANZANIA

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ACRONYMS

AfDB	African Development Bank
ADS	Automated System
BMU	Beach Management Unit
CBFM	Community Based Forest Management
CIFOR	Center for International Forestry Research
CCRO	Certificate of Customary Right of Occupancy
Chadema	Chama cha Demokrasia
CCM	Chama Cha Mapinduzi
CSO	Civil Society Organization
CSA	Climate Smart Agriculture
CFMA	Coastal Fisheries Management Area
CIMU	Conservation Information and Monitoring Unit
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CWT	Counter Wildlife Trafficking
CDCS	Country Development Cooperation Strategy
DSFA	Deep-Sea Fishing Authority
DRC	Democratic Republic of Congo
DFNR	Department of Forests and Non-Renewable Resources Zanzibar
DOS-INL	US Department of State's Bureau of International Narcotics and Law Enforcement Affairs
DOI-ITAP	US Department of the Interior's International Technical Assistance Program
DPG	Development Partners Group
DPG-E	Development Partners Group on Environment, Natural Resources and Climate Change
DFR	District Forest Reserve
DoE	Division of Environment
EAMCP	East Africa Mangrove Carbon Project
EENT	Endangered Ecosystems - Northern Tanzania
EIA	Environmental Impact Assessments
ETOA	Environmental Threats and Opportunities Assessment
EEZ	Exclusive Economic Zone

FAA	Foreign Assistance Act
FBD	Forestry and Beekeeping Division
FP	Family Planning
FSC	Forest Stewardship Council
FTF	Feed the Future
GCA	Game Controlled Area
GRs	Game Reserves
GIS	Geographic Information System
GEF	Global Environment Facility
GMU	Gombe-Masito-Ugalla
GoT	Government of Tanzania
GCF	Green Climate Fund
GDP	Gross domestic product
IP	Implementing partner
IPM	Integrated Pest Management
IR	Intermediate Results
ITCZ	Intertropical Convergence Zone
IUCN	International Union for Conservation of Nature
IUU	Illegal, unreported, and unregulated
JGI	Jane Goodall Institute
JFM	Joint forestry management
KBA	Key Biodiversity Areas
LUPC	Land Use Planning Commission
LPG	Liquid petroleum gas
LCWT	Landscape Conservation in Western Tanzania
LGA	Local Government Authority
LTA	Land Tenure Assistance
MCH	Maternal and Child Health
MMA	Marine managed area
MPRU	Marine Parks and Reserves Unit
MPA	Marine Protected Area
MnM	Mboga na Matunda
MAST	Mobile Applications to Secure Tenure
MoHCDGEC	Ministry of Health, Community Development Gender, Elderly and Children
MNRT	Ministry of Natural Resources and Tourism

MEA	Multilateral Environmental Agreement
NBSAP	National Biodiversity Strategy and Action Plan
NBS	National Bureau of Statistics
NCA	Ngorongoro Conservation Area
NEMC	National Environment Management Council
NAFORMA	National Forest Resources Monitoring and Assessment of Tanzania Mainland
NRM	Natural Resource Management
NA	Necessary Action
NGO	Non-governmental organization
OPIC	Overseas Private Investment Corporation (soon to become the International Development Finance Corporation, or IDFC)
PAPA	Participating Agency Program Agreement
PFM	Participatory Forest Management
PRM	Participatory Rangeland Management
PES	Payment for Ecosystem Services
PREPARED	Planning for Resilience in East Africa through Policy, Adaptation, Research, and Economic Development
PHE	Population, health, environment
PA	Power Africa
PEPFAR	President's Emergency Plan for AIDS Relief
PMI	President's Malaria Initiative
PO-RALG	President's Office - Regional Administration and Local Government
PAD	Project Appraisal Document
PROTECT	Promoting Tanzania's Environment, Conservation, and Tourism Project
PPP	Public-Private Partnership
REDD+	Reducing emissions from deforestation and forest degradation
RAS	Regional Administrative Secretary
REFIT	Renewable energy feed-in tariff
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SHARPP	Southern Highlands and Ruaha-Katavi Protection Program
SOKNOT	Southern Kenya-Northern Tanzania
STEP	Southern Tanzania Elephant Program
SOW	Scope of work
SWAMP	Sustainable Wetland Adaptation and Mitigation Program
TFF	Tanzania Forest Fund

TFS	Tanzania Forest Service
NEP	Tanzania Mainland National Environmental Policy
TANAPA	Tanzania National Parks
TAWA	Tanzania Wildlife Authority
TAWIRI	Tanzanian Wildlife Research Institute
TNC	The Nature Conservancy
TRUST	Technical Register for Social Tenure
URCT	Ujamaa Community Resource Team
UN	United Nations
UNODC	UN Office on Drugs and Crime
URT	United Republic of Tanzania
USAID	United States Agency for International Development
USFS	USDA Forest Service
USFWS	United States Fish and Wildlife Service
USG	United States Government
UWASA	Urban Water Supply and Sewerage Authority
VPO	Vice President's Office
VLFR	Village Land Forest Reserves
VLUP	Village land use plan
WARIDI	Water Resources Integration Development Initiative
WUA	Water User Association
WOPE	Whole-of-project evaluation
WCA	Wildlife Conservation Act
WCS	Wildlife Conservation Society
WD	Wildlife Division
WMA	Wildlife Management Area
TRAPS	Wildlife Trafficking, Response, Assessment and Priority Setting
WBG	World Bank Group
WWF	World Wildlife Fund

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EXECUTIVE SUMMARY

INTRODUCTION

This Assessment analyzes tropical forests and biodiversity throughout Tanzania and supports the USAID/Tanzania Mission in informing the strategic planning and prioritization for the next Country Development Cooperation Strategy (CDCS) for the period 2019-2024. This Assessment complies with Sections 118 and 119 of the Foreign Assistance Act (FAA) of 1961, as amended, and Agency guidance on country strategy development under the Automated Directives System (ADS) 201. Specifically, this Assessment identifies the following, as required by FAA Sections 118 and 119:

- (1) The actions necessary in that country to achieve conservation and sustainable management of tropical forests and biodiversity, and
- (2) The extent to which the actions proposed for support by the Agency meet the needs thus identified.

The Assessment covers country context and biophysical setting (Section 2); status of biodiversity and tropical forests (Section 3); the legal and institutional framework in country related to biodiversity and tropical forests (Section 4); and the value and economic potential of biodiversity and tropical forests (Section 5). It then analyzes direct threats and their drivers (i.e., root causes) (Section 6) as the means to identifying actions necessary for biodiversity and tropical forestry conservation (Section 7). The Assessment discusses the extent to which USAID programming contributes to those actions necessary (Section 8) and offers guiding principles and targeted recommendations for future USAID programming to best support conservation of biodiversity and tropical forests (Section 9).

Field work and stakeholder interviews for this assessment were conducted primarily in November 2018, in and around Arusha, Dar es Salaam, Iringa, Kigoma, Mafia Island, Mbeya, Rufiji River Basin, Tanga, and Zanzibar.

STATUS OF TROPICAL FORESTS & BIODIVERSITY

Tanzania is an ecologically and biologically diverse country, with over 55,000 confirmed species (and in the top 15 countries globally for the highest number of endemic and threatened species) and approximately 840 national protected areas. It is also home to two of the 36 global Biodiversity Hotspots (the Eastern Afromontane and Coastal Forests of Eastern Africa) and 149 distinct Key Biodiversity Areas (KBAs). The country is characterized by a high degree of variability in temperatures, rainfall, elevations and soil types, resulting in seven distinct agro-climatic zones (the coast, arid climate zones, semi-arid climate zones, plateaus, southern and western highlands, northern highlands, and alluvial plains). Tanzania is also home to several subtypes of tropical forests including Zanzibar-Inhambane Coastal Forests, East African Montane, and Mangrove forests.

Current indicators suggest a downward trend in both the number of species as well as the population sizes of individual species in Tanzania (e.g., large mammal populations have significantly declined in most Tanzanian savanna areas over the past 20-30 years). This trend is driven by a variety of factors including habitat loss and degradation, climate change, and overexploitation, which have caused the number of threatened species to nearly triple from 2004 to 2013. Furthermore, protected areas and forests are under pressure from an array of threats, including agricultural expansion, infrastructure development,

resource extraction, habitat fragmentation, settlement encroachment, poaching and trafficking, unsustainable fishing practices, and climate change.

Biodiversity contributes to more than three quarters of the national Gross Domestic Product (GDP) and supports the livelihoods of most Tanzanians. However, loss of biodiversity and the resulting ecosystem services biodiversity provides are estimated to cause Tanzania's GDP to shrink by at least 5% annually. The link between food security (which is affected by environmental conditions) and economic growth is also well-established; UNICEF estimates that vitamin and mineral deficiencies may cause Tanzania to lose \$20 billion in GDP by 2025 if nutrition does not improve. In contrast, improving food security and nutritional status could lead to \$4.7 billion in gains by 2025.

THREATS & DRIVERS

Results of a literature review, interviews, and site visits reveal significant threats to biodiversity and forests in Tanzania. USAID's Biodiversity Policy defines a threat as "a process that explicitly causes degradation or loss of biodiversity." The Assessment Team identified the most significant threats as follows:

- land use change from internal migration,
- agricultural expansion,
- livestock grazing and expansion,
- unsustainable wood fuel production (firewood, timber, and charcoal),
- poaching and wildlife trafficking, and
- bushmeat hunting and unsustainable fishing.

Settlement expansion, selective hunting, international trafficking of wildlife products of targeted species, and timber extraction also have significant negative impacts on biodiversity conservation and tropical forests. Other critical threats include commercial and artisanal logging, mining, oil extraction, and commercial and artisanal fishing that use unsustainable or illegal practices. Changing climatic conditions further threaten habitat and species health, particularly with risk of increase in heavy rains in northeastern Tanzania, increased frequency and intensity of drought in southern and southwestern Tanzania, and increased ocean temperatures.

A driver is the ultimate factor -- usually social, economic, political, institutional, or cultural -- that enables or otherwise adds to the occurrence or persistence of one or more threats. There are many drivers of the threats identified above, but the most significant and influential drivers in the country are as follows:

- weak governance and limited institutional effectiveness,
- population growth and internal migration,
- a lack of viable and affordable non-wood fuel and other energy sources,
- domestic and international markets for timber and other biodiversity products,
- inadequate data collection and management to inform decision-making,
- lack of access to and awareness of sustainable livelihoods, and
- limited technical capacity for value addition in key sustainable livelihood sectors.

Table ES I provides the set of primary drivers and their associated threats as identified by the assessment. Population growth is closely correlated with many drivers, particularly with markets for timber and biodiversity products (e.g., charcoal, wildlife, and marine species). The expected doubling of the population in Tanzania over the next 30 years and the effects of climate change are expected to intensify these drivers.

TABLE ES I. DRIVERS OF THREATS TO TROPICAL FORESTS AND BIODIVERSITY

DRIVERS	THREATS
Weak governance and limited institutional effectiveness	Deforestation and habitat degradation; wildlife poaching and trafficking; livestock encroachment and overgrazing; firewood and charcoal production; agricultural expansion; illegal and unsustainable fishing practices; major infrastructure development and resource extraction.
Population growth and internal migration	Charcoal and wood fuel production; agricultural expansion; major infrastructure development and resource extraction; wildlife trafficking and poaching; human-wildlife conflict; Illegal and unsustainable fishing practices; livestock encroachment and overgrazing.
A lack of viable and affordable non-wood fuel and other energy sources	Deforestation and habitat degradation; charcoal and wood fuel production; infrastructure development and resource extraction; timber extraction; land use change.
Domestic and international markets for timber and other biodiversity products	Wildlife poaching and trafficking; timber extraction; introduction of invasive plants and animals; infrastructure development and resource extraction; illegal and unsustainable fishing practices.
Inadequate data collection and management to inform decision-making	Deforestation and habitat degradation; wildlife poaching and trafficking; illegal or unsustainable fishing practices; agricultural expansion and poor management practices (see Annex G: Biodiversity and Tropical Forestry Data and Information Gaps in Tanzania).
Lack of access to and awareness of sustainable livelihoods	Wildlife poaching and trafficking; charcoal and wood fuel production; timber extraction; illegal and unsustainable fishing practices; deforestation and habitat degradation; land use change.
Limited technical capacity for value addition in key sustainable livelihood sectors	Deforestation and habitat degradation; agricultural expansion and poor farming practices; land use change; charcoal and wood fuel production; wildlife poaching and trafficking; livestock encroachment and overgrazing; illegal or unsustainable fishing practices.

ACTIONS NECESSARY TO SUPPORT BIODIVERSITY AND TROPICAL FORESTS IN TANZANIA

This Assessment evaluated the threats and drivers to identify key actions necessary to conserve biodiversity in the region, as developed through stakeholder consultations, field visits, and desk research. Table ES 2 lists these actions necessary and identifies the drivers that each would address. More detail on these actions necessary is provided in Section 7.

TABLE ES 2. ACTIONS NECESSARY TO CONSERVE BIODIVERSITY AND TROPICAL FORESTS

ACTION	DRIVERS ADDRESSED
TIER 1: HIGHEST PRIORITY	
<p>Action 1: Support development and implementation of integrated and coordinated village-, ward-, district-, and regional/zonal-level land use and resource management plans</p>	<ul style="list-style-type: none"> • Limited technical capacity for value addition in key sustainable livelihood sectors value chains • Weak governance and limited institutional effectiveness • Population growth and internal migration
<p>Action 2: Support targeted food security, family planning, and economic growth initiatives aligned with priority (marine and terrestrial) biodiversity and forestry conservation geographies and targets</p>	<ul style="list-style-type: none"> • Limited technical capacity for value addition in key sustainable livelihood sectors • Lack of access to and awareness of sustainable livelihoods • Inadequate data collection and management to inform decision-making
<p>Action 3: Coordinate prioritization and improve implementation of tropical forestry and biodiversity protection and management</p>	<ul style="list-style-type: none"> • Limited technical capacity for value addition in key sustainable livelihood sectors • Inadequate data collection and management to inform decision-making • Weak governance and limited institutional effectiveness
<p>Action 4: Increase access to and affordability of alternatives to biomass energy in urban areas</p>	<ul style="list-style-type: none"> • A lack of viable and affordable non-wood fuel and other energy sources • Population growth and internal migration • Weak governance and limited institutional effectiveness
<p>Action 5: Promote counter wildlife trafficking (CWT) and anti-poaching initiatives; combat illegal, unreported, and unregulated (IUU) fisheries</p>	<ul style="list-style-type: none"> • Domestic and international markets for timber and other biodiversity products • Weak governance and limited institutional effectiveness
TIER 2: HIGH PRIORITY ACTIONS	
<p>Action 6: Collection of key biodiversity and forestry data to fill existing data gaps and inform future conservation-related interventions</p>	<ul style="list-style-type: none"> • Limited technical capacity for value addition in key sustainable livelihood sectors • Inadequate data collection and management to inform decision-making • Weak governance and limited institutional effectiveness
<p>Action 7: Strengthen commitment to transparent governance and anti-corruption</p>	<ul style="list-style-type: none"> • Limited technical capacity for value addition in key sustainable livelihood sectors • Lack of access to and awareness of sustainable livelihoods • Domestic and international markets for timber and other biodiversity products • Weak governance and limited institutional effectiveness

TABLE ES 2. ACTIONS NECESSARY TO CONSERVE BIODIVERSITY AND TROPICAL FORESTS

ACTION	DRIVERS ADDRESSED
TIER 3: ADDITIONAL NECESSARY ACTIONS	
<p>Action 8: Support development, revision, harmonization, or research to inform strengthened regulatory and legal framework impacting natural resource management</p>	<ul style="list-style-type: none"> • Weak governance and limited institutional effectiveness • Limited technical capacity for value addition in key sustainable livelihood sectors • Lack of access to and awareness of sustainable livelihoods • Domestic and international markets for timber and other biodiversity products

GUIDING PRINCIPLES AND HIGH PRIORITY RECOMMENDATIONS FOR USAID/TANZANIA

The Assessment Team developed the following seven (7) Guiding Principles to inform the Mission’s strategic planning process with regards to incorporation of biodiversity and tropical forestry conservation and management in future Mission programming. These principles are meant to inform Mission program development, technical assistance, and capacity building to help protect biodiversity and forests in Tanzania. Following these principles, we also offer high priority recommendations to guide Mission programs and interventions in each technical programming area, or as cross-sectoral, integrated opportunities.

Guiding Principles for USAID Programming

1. **Improve integration of biodiversity considerations into other USAID/Tanzania programming areas** (e.g., Democracy and Governance, Health, Education. See recommendations below). This could include creation of integrated Development Objectives (DOs) and Intermediate Results (IRs) that include biodiversity and CWT. Consultations with Mission staff made clear there are viable, pragmatic ways to integrate biodiversity considerations into all programming areas.
2. **Collocate USAID/Tanzania biodiversity programming with other sector programming (e.g., family planning programs)**. For example, promote natural resource-based enterprises, public-private partnerships, nature-based ecotourism, and community-based natural resource management that rely on localized, participatory resource management models including Beach Management Units (BMUs), Participatory Forest Management (PFM), Wildlife Management Areas (WMAs), and formal tenure acquisition via individual or communal Certificate of Customary Right of Occupancy (CCROs).
3. **Broaden biodiversity programming** to address illegal timber, marine surveillance and wildlife trade, and the exotic pet trade.
4. **Continue focus on connectivity of important corridors for wildlife movement and genetic flow between protected and biologically diverse areas;**
 - Prioritize connective corridors with GoT
 - Focus on Albertine Rift + Eastern Arc
 - Add programming for the Coastal Forests of Eastern Africa and mangrove systems
5. **Focus on energy alternatives in programming areas under USAID control**. For example, work with Tanzanian decision makers to pursue bio-mass and hydro-electric energy alternatives to

increase the access to and availability of affordable and sustainable electricity in rural and urban areas.

6. **In threatened biodiversity areas support further collection and use of baseline data** – e.g., forestry stock and trade, aquatic ecosystem health, species counts, livestock movement – to inform future USAID, GoT and other donor conservation-related interventions and sustainable development programs.
7. **Support anti-corruption efforts.** For example, leverage ongoing GoT anti-corruption efforts to pursue leadership role with NGOs and other donors to strengthen good governance, accountability, and transparency measures regarding natural resource management and biodiversity conservation.

Table ES3 shows selected “High Priority” recommendations organized by technical areas of focus, with highest priority actions identified for the Mission’s Economic Growth (Agriculture and Food Security, Power Africa, and Natural Resource Management and Biodiversity), Global Health, and Cross-Sectoral programming. While the assessment team did not identify any high priority recommendations for Democracy, Rights, and Governance and Education programming in consideration of earmarks and political constraints, the team did identify opportunities for all of the Mission’s technical programming areas; the additional recommendations are provided in Section 9.2.

TABLE ES 3. HIGH PRIORITY RECOMMENDATIONS AND OPPORTUNITIES FOR USAID PROGRAMMING

ECONOMIC GROWTH – AGRICULTURE AND FOOD SECURITY

1. Geographically align future food security and biodiversity-funded NRM programs such that technical assistance in the appropriate livelihoods will be integrated with land use and resource management planning as part of an NRM program.
2. Ensure robust application of USAID’s Environmental Assessment procedures for food security and agriculture programming – including site-specific environmental assessment for road construction/rehabilitation projects, irrigation, or similar infrastructure development projects with the potential to disrupt wildlife habitat or behavior (e.g., bisecting migratory corridors) or exacerbate human/wildlife conflict. Such applications must ensure proper consideration of:
 - Road projects considering wildlife migration routes and introducing wildlife over/under passes as part of the planned mitigation measures for roads that are in key areas of connectivity.
 - Overall water resource demands from irrigation projects and impacts on available water for humans and wildlife in the area.
 - Potential cumulative impacts of certain infrastructure development, such as changing population and traffic, and impacts that could present to sensitive wildlife and/or habitat.

ECONOMIC GROWTH – POWER AFRICA/ ENERGY DEVELOPMENT

3. Support research (e.g., develop white papers) in following areas:
 - Promoting viable energy alternatives that will be less damaging to biodiversity than existing options (e.g., wood fuel and charcoal; hydropower).
 - Exploring renewable energy feed-in tariff (REFIT) or energy (e.g., LPG) subsidy programs that could improve non-biomass energy use in urban areas (either through adoption of LPG systems or increased connectivity and use of grid electricity).

TABLE ES 3. HIGH PRIORITY RECOMMENDATIONS AND OPPORTUNITIES FOR USAID PROGRAMMING

ECONOMIC GROWTH – NRM, BIODIVERSITY (NON-CWT EARMARK)

4. Introduce dedicated programming focused on conservation of biodiversity and tropical forests in coastal landscapes, targeting the Coastal Forests of Eastern Africa Biodiversity Hotspot and marine ecosystems.
5. To enhance community management of natural resources, continue to facilitate connections among sustainable resource-focused private enterprises, communities engaged in village- and landscape-level land use planning, and NGOs. This should include piloting new PPP models that effectively combine participatory community engagement, community derivation of benefits, and sustainable natural resource use/management as well as supporting existing models in-country that can be expanded. *Examples include: Community-managed natural forests in southeastern Tanzania; Voluntary REDD+ schemes; Eco-tourism; WMAs (in limited cases); and PES schemes.*
6. To address issues of poverty and lack of livelihoods that make people dependent on natural resource extraction, build vocational and entrepreneurship skills with a greater focus on youth and women. In particular, future economic and leadership opportunities for women – tied into family planning and science-based training – could improve conservation and biodiversity outcomes.
 - Training on entrepreneurship and agribusiness can occur, especially near urban centers where demand is high for vegetables.
 - Explore establishing vocational centers for youth in each of the major towns, which could be done in partnership with local organizations or churches.
7. Conduct a Political Economy Analysis evaluating the extent of agro-pastoralist expansion into western and southern Tanzania. Use this analysis to evaluate what types of economic and political initiatives may be viable to address this driver of habitat degradation and fragmentation. This analysis should also evaluate underlying population dynamics that may be driving this expansion.

ECONOMIC GROWTH – NRM, BIODIVERSITY (CWT EARMARK)

8. Continue working with relevant GoT agencies, other donors, and IPs to support CWT initiatives through capacity building and training for law enforcement, rangers, and village game scouts.
9. Expand collaboration with organizations involved in CWT and anti-poaching to address illegal trafficking involving marine waters, illegal fisheries, and timber trade.

GLOBAL HEALTH (FAMILY PLANNING)

10. Introduce integrated family planning programming in high population growth areas that also have high biodiversity value.

CROSS-SECTORAL

11. Create a Mission-wide formalized contract or project with a mandate for cross-sectoral integration and coordination, including catalyzing private sector engagement.
 - Include in the contract or project a mandate that contracts and grants in agriculture and food security, environment, family planning, PMI, and DRG programs should include integration components. This mandate will also maximize cross-sectoral linkages of programs and expedite dissemination of best practices for enhancing conservation efforts throughout the country.
12. Introduce integrated biodiversity and food security (e.g., FTF) programs located in areas proximate to sensitive or threatened ecosystems and facing challenges pertaining to food access or undernutrition.
 - Mission attention in/around Lake Rukwa may afford opportunities here, but intersection of food

TABLE ES 3. HIGH PRIORITY RECOMMENDATIONS AND OPPORTUNITIES FOR USAID PROGRAMMING

security and ecosystem sensitivity should be considered along Albertine Rift, Eastern Arc mountains, and coastal/marine ecosystems (including Zanzibar, Pemba, Mafia Islands).

- For such programming to achieve desired results pertaining to conservation of biodiversity, programming must target core drivers in strategic manner (e.g., improved agricultural or grazeland management practices to reduce agricultural expansion or livestock encroachment in sensitive corridors, buffer zones, or dispersal areas, or working with BMUs to improve inland fisheries management while increasing livelihoods and diversifying/fortifying food security).
-

I. INTRODUCTION

I.1 PURPOSE & SCOPE

The USAID/Tanzania Mission (the Mission) is required by Sections 118/119 of the Foreign Assistance Act (FAA), to prepare an analysis of the state of Tanzanian biodiversity and tropical forests (‘the Assessment’). Specifically, FAA Sections 118 Tropical Forests and Section 119 Endangered Species, as amended, require that country development strategies, statements, or other country plans prepared by USAID include an analysis as follows:

“FAA Section 118 (e) Country Analysis Requirements. Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of:

- (1) The actions necessary in that country to achieve conservation and sustainable management of tropical forests, and
- (2) The extent to which the actions proposed for support by the Agency meet the needs thus identified.

FAA Section 119 (d) Country Analysis Requirements. Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of:

- (1) The actions necessary in that country to conserve biological diversity, and
- (2) The extent to which the actions proposed for support by the Agency meet the needs thus identified.

The Assessment ensures compliance with FAA 118/119 and provides recommendations to inform the Mission’s 2019-2024 Country Development Cooperation Strategy (CDCS). The Assessment includes an evaluation of the status of Tanzanian biodiversity and tropical forests, an analysis of the legal and institutional frameworks affecting conservation, an economic valuation of ecosystems, a comprehensive appraisal of threats to biodiversity and the underlying drivers thereof, a summary of necessary actions to protect biodiversity and tropical forests, linkages to current USAID programs, and recommendations for strategic opportunities moving forward.

In developing recommendations, the Assessment identifies key changes in the status of institutional management of conservation, use of natural resources, and biodiversity that must be considered at a programmatic level. This Assessment builds off the 2012 Environmental Threats and Opportunities Assessment (ETOA), which sought to 1) summarize the state of biological diversity and changes to key ecosystems; 2) identify the threats to the environment and biodiversity and their causes; 3) discuss the necessary steps from political, economic and social context for the protection of Tanzanian biodiversity; and 4) assess any potential issues with proposed USAID planning and identify potential opportunities for Mission Tanzania to contribute to the needed actions through its programming.¹

¹ Byers, Bruce, et al. Tanzania’s Environmental Threats and Opportunities Analysis (ETOA). USAID/Tanzania, 2012.

I.2 BRIEF DESCRIPTION OF THE USAID PROGRAM

The overarching goal of the current USAID/Tanzania CDCS (October 2014-October 2019) is to support Tanzania in achieving “socio-economic transformation toward middle income status by 2025.”

The Mission pursues this through programming in the following technical offices:

- **Education:** USAID/Tanzania’s Education programming has, historically, been earmarked specifically for primary aged literacy. With the most recent (FY18) budget, the congressional earmark was modestly expanded to also include primary school mathematics and the retention of girls in secondary school. USAID/Tanzania receives approximately \$15 million per year for its Education programming.
- **Democracy, Rights, and Governance (DRG):** The Mission’s DRG programming, approximately \$7.25 million for FY 2018, focuses on accountable democratic governance and strengthening platforms for civic participation. This includes improving government service delivery, with particular focus in the health sector; media effectiveness through engagement and capacity building with civil society organizations; data collection and evaluation pertaining to human rights conditions and challenges; and work on elections and political processes, working to build capacity of civil society such that it can support reforms in the electoral process.
- **Health:** The health portfolio is by far the Mission’s largest programming area, receiving between \$225-\$250 million annually. The majority of that funding (75-80%) goes towards HIV/AIDS-focused initiatives via the President’s Emergency Plan for AIDS Relief (PEPFAR) initiative. The Mission’s health programming also includes the President’s Malaria Initiative (PMI), Family Planning (FP), and Maternal and Child Health (MCH).
- **Economic Growth:** The Mission’s Economic Growth portfolio consists of several components, including Agriculture and Food Security as part of the Feed-the-Future (FTF) program (\$25 million); biodiversity (~\$10 million, of which \$3-4 million is allocated for CWT); Energy programming, implemented under Power Africa (PA); and Water, Sanitation and Hygiene (WASH) programming.

Technical programming under the CDCS is implemented in pursuit of three Development Objectives (DOs): DO 1: Tanzania Women and Youth Empowered; DO 2: Inclusive Broad-Based Economic Growth Sustained; and DO 3 Effective Democratic Governance Improved.

DO 1: TANZANIAN WOMEN AND YOUTH EMPOWERED

DO 1 consists of three Intermediate Results (IRs): IR 1.1: Gender Equality Increased; IR 1.2: Health Status Improved; and IR 1.3: Lifelong Learning Skills. Under DO 1, USAID sought to address systemic gender inequalities in Tanzania, particularly focusing on unequal distribution of rights, access to and use of quality health services, and access to and enrollment in educational and skill-building opportunities. The Mission’s educational and health (e.g., HIV/AIDS, MCH) programming are core focus areas for fulfillment of these objectives.

DO 2: INCLUSIVE BROAD-BASED ECONOMIC GROWTH SUSTAINED

DO 2 consists of four Intermediate Results (IRs): IR 2.1: Binding Constraints to Private Sector Investment Reduced; IR 2.2: Agricultural Productivity and Profitability Increased in Targeted Value Chains; IR 2.3: Stewardship of Natural Resources Improved; and IR 2.4 Unmet Need for Family Planning

Reduced. The Mission’s FTF, PA, and NRM programming primarily targeted DO2. For example, NRM programming included an increase in partnerships with the private sector, and FTF programming addressed agricultural growth and sustainable water and land resource use.

DO 3: EFFECTIVE DEMOCRATIC GOVERNANCE IMPROVED

DO 3 consists of two Intermediate Results (IRs): IR 3.1: Citizen Engagement Made More Effective; and IR 3.2 Government Delivery of Services Improved. Poor governance and corruption have been identified as significant impediments to economic growth in Tanzania. DO 3 seeks to make government more accountable by fostering greater citizen oversight of public expenditures and service delivery. The Mission’s DRG programming largely falls under DO 3. The Mission’s NRM program aimed to build on experience working with civil society organizations and community-based organizations in Tanzania to contribute to results under DO 3.

1.3 METHODOLOGY

The Assessment consisted of five phases: Phase 1: Work Planning; Phase 2: Desk-based research, preliminary writing, DC-based consultations, and logistical arrangements for in-country site visits and consultations; Phase 3: In-country consultations and site visits; Phase 4: Post-field work DC- and Tanzania-based consultations; and Phase 5: Report writing.

Analytical Methods used for this Assessment

1. Desk-based review of relevant scientific literature, published reports, and media accounts;
2. Stakeholder consultation with US- (predominantly Washington, DC) and Tanzania-based key informants from civil society, non-governmental organizations (NGOs), United States Government (USG), Government of Tanzania (GoT), multilateral donors, and the private sector;
3. Limited in-country site visits;
4. Geographic Information System (GIS) analysis; and
5. Insight and professional best judgement from the six core members of the assessment team.

TABLE I. FIVE PHASES OF ASSESSMENT

PHASE	DESCRIPTION
PHASE 1: WORK PLANNING	Work plan development, completed a week after the beginning of the contractual period of performance, laid out the work to be completed over the course of the assessment.
PHASE 2: DESK-BASED RESEARCH	Pre-fieldwork research and planning, including a thorough desk-based review by the assessment team, ² DC-based stakeholder consultations, and the beginning of report writing. During this period, the team had in-person (in DC) and remote consultations with representatives from USAID’s Forestry and Biodiversity office, the United States Department of Agricultural (USDA) Forest Service (USFS), the United States Fish and

² The assessment team was comprised of the following core team members: Mr. Michael Minkoff (Team Lead), Mr. Joshua Habib (Deputy Team Lead), Dr. Richard Kangalawe (Natural Resource Management [NRM] Expert), Dr. Daudi Msangameno (Marine Ecologist), Mr. Geoffrey Mwanjela (Forestry and Natural Resource Governance Specialist), Dr. Hussein Sosovele (Stakeholder Engagement and Legal, Regulatory, and Institutional Setting Specialist). Biographical sketches of the assessment team can be found in Annex A. This core team was assisted by home office staff and selected technical experts who assisted in report research, writing, geographical information, and additional desk support as needed throughout the course of the preparation of the Assessment.

TABLE I. FIVE PHASES OF ASSESSMENT

PHASE	DESCRIPTION
	Wildlife Service (USFWS), and other key stakeholders (see Annex A for a full listing of stakeholders consulted for this assessment). Reviewed reports during this phase included Tanzania’s 2005-2012 ETOA, the current USAID Tanzania CDCS, the United Republic of Tanzania’s 2017 Environmental Statistics Report, the National Biodiversity Strategy and Action Plan (NBSAP; 2015), the National Forest Resources Monitoring and Assessment (NAFORMA; 2015), and the National Environment Statistics Report (2018) to complete the Phase One literature review.
PHASE 3: IN-COUNTRY CONSULTATIONS AND SITE VISITS	The assessment team conducted in-country consultations and site visits from 05 to 20 November 2018. In-country consultations included Mission staff, USAID implementing partners (IPs), NGOs, private sector entities, and individuals familiar with implementing projects on environmental biodiversity and tropical forest conservation in Tanzania. Consultations and site visits were conducted in Arusha, Dar es Salaam, Dodoma, Iringa, Kigoma, Mafia Island, Mbeya, Morogoro, Tanga, and Zanzibar. Initial report drafting, research, and review of available literature continued throughout the in-field portion of the analysis. Prior to departure, the assessment team held an exit briefing with Mission management, the program office, and technical teams to provide them with an overview of the analysis and preliminary report findings.
PHASE 4: POST-FIELD WORK CONSULTATIONS	The assessment team conducted final Washington, DC- and Tanzania-based consultations, based on remaining information gaps as determined by the team over the course of in-country consultations and ongoing desk research, and informed by the USAID exit briefing.
PHASE 5: REPORT WRITING	The Draft Assessment was written according to USAID’s 118/119 Assessment Best Practices Guide from 2017 (Best Practices Guide), and based on the accumulated literature, GIS analysis, and stakeholder consultations. The Final Assessment incorporated feedback and addressed comments received from Mission review over an initial 2-week comment period and follow-on final review.

2. COUNTRY CONTEXT AND BIOPHYSICAL SETTING

2.1 COUNTRY CONTEXT

Tanganyika (Mainland Tanzania) officially gained independence from Great Britain in December of 1961. In April of 1964, Tanganyika and an independent Zanzibar united to form the United Republic of Tanzania (URT), under which Zanzibar still maintains significant local autonomy.

Tanzania is both the most populous and the least densely populated East African country,³ presently home to approximately 58 million people, from more than 125 distinct ethnic groups. The largest group, the Sukuma, historically represented roughly 13-15% of Tanzania's population, with the remaining groups representing 5% or less individually.^{4,5} Despite high levels of religious and ethnic diversity, Tanzania has maintained considerable political stability and low levels of ethnic tension, with a weakening of ethnic identities over time.⁶ Religious identities, by contrast, have grown stronger; roughly 61% of Tanzanians identify as Christian, 35% identify as Muslim, and 4% identify as agnostic or follow an indigenous religion.⁷ Muslim communities are largely concentrated in coastal areas, and 99% of the population of Zanzibar identifies as Muslim.⁸

In recent years, Tanzania has sustained steady economic growth, driven in part by the five strategic priorities established under the GoT Development Vision 2025: 1) continued economic growth, 2) employment opportunities, 3) quality access to education, 4) good governance, and 5) peace and stability. The current President, John Magufuli, has stated that he is committed to pursuing growth through industrial development and curbing corruption that has been impacting many aspects of in-country governance,⁹ including management of biodiversity and forest resources. Nationally the economic growth rate has stabilized at roughly 7%, with industry seeing the highest rate of real GDP growth (12.1% growth in 2017), followed by services (7.2% growth in 2017).¹⁰



Figure 1 Map of Tanzania

³ "People and Society: Tanzania." CIA. Accessed December 27, 2018. <https://www.cia.gov/library/publications/the-world-factbook/geos/tz.html>.

⁴ The University of Pennsylvania African Studies Center. *East African Living Encyclopedia*, (1997), s.v. "Tanzania – Ethnic Groups." Pennsylvania.

⁵ "Premarital Fertility and Ethnicity in Africa." USAID. DHS Comparative Reports 13. December 2006. Accessed February 24, 2019. <https://dhsprogram.com/pubs/pdf/CRI3/CRI3.pdf>

⁶ Ibid.

⁷ "Global Religious Futures: Tanzania." Pew-Templeton Project. Accessed December 27, 2018. http://globalreligiousfutures.org/countries/tanzania/#/?affiliations_religion_id=0&affiliations_year=2010®ion_name=All%20Countries&restrictions_year=2016

⁸ United States Department of State Bureau of Democracy, Human Rights, and Labor. *Tanzania 2015 International Religious Freedom Report*. USDOS, 2015.

⁹ U.S. Department of State. "U.S. Relations with Tanzania." Accessed January 10, 2019. <https://www.state.gov/r/pa/ei/bgn/2843.htm>

¹⁰ The World Bank Group. *Tanzania Macro-Poverty Outlook*. WBG, 2018. <http://pubdocs.worldbank.org/en/325071492188174978/mpo-tza.pdf>.

Despite economic growth, poverty rates remain high with roughly 70% of Tanzanians living on less than \$2.00 a day.¹¹ Yet some trends are positive, with rates of basic needs poverty (the minimum resources needed for physical wellbeing) decreasing between 2006 and 2012 from 34.3% to 28.2%,¹² and rates of extreme poverty (living on less than \$1.90 per day) declining from 11.7% to 9.7% over the same period.¹³ Decreasing poverty rates have led to improved human development outcomes and living conditions,¹⁴ with Tanzania scoring 0.538 on the Human Development Index in 2017, up from 0.395 in 2000.¹⁵ Much of the poverty reduction seen over the last decade has been driven by economic growth experienced in large urban centers such as Dar es Salaam.¹⁶

In addition to economic gains, Tanzania has also been experiencing steady population growth, with an estimated 3.1% growth rate over the past five years and the population nearly quintupling from 1957 to 2012 (from 8.8 million to 44.9 million). Tanzania's National Bureau of Statistics (NBS) projects that the national annual growth rate will continue to average approximately three percent for Tanzania's mainland through 2035, which would lead to a further 65% increase in overall population. The increase in population is heavily driven by decreases in: child mortality, new HIV infections, and related deaths; increases in life expectancy; and refugees from, predominantly, Burundi and the Democratic Republic of Congo (Tanzanian refugee camps in the northwestern regions of the country housed approximately 743,000 people in 2017).

As elaborated in Section 6.2.2, Tanzania's population growth is a primary driver of threats to biodiversity and tropical forestry such as habitat degradation, fragmentation, and loss (Section 6.1.1); overexploitation of resources (Section 6.1.2); and pollution (Section 6.1.4). Population growth increases demand for land and natural resources, already at a premium with agriculture, livestock management, forestry, and fishing together contributing to more than 65% of GDP and accounting for 60% of total export earnings and 80% of total employment. As elaborated further in Section 7, effective and sustainable management of the country's rich natural resource base is thus one of the imperatives for achieving continued economic and political stability in Tanzania.¹⁷

2.2 BIOPHYSICAL SETTING

Tanzania lies between latitudes 1°S and 12°S and longitudes 30°E and 40°E with a total area of 945,234 km².¹⁸ Of the total area, inland waterways make up roughly 59,197 km², with the Tanzania mainland,

¹¹ The World Bank Group. Tanzania Mainland Poverty Assessment: A New Picture of Growth for Tanzania Emerges. Dar es Salaam, WBG, May 7, 2015.

¹² Ibid.

¹³ Ibid.

¹⁴ "Tanzania: Growth and Trade." USAID. Accessed December 27, 2018. <https://www.usaid.gov/tanzania/economic-growth-and-trade>.

The World Bank Group. Tanzania Mainland Poverty Assessment: A New Picture of Growth for Tanzania Emerges. Dar es Salaam, WBG, May 7, 2015.

¹⁵ The Human Development Index provides a summary of developmental progress measured from 0 to 1 based on life expectancy, access to education, and standard of living. The United Nations Development Program. Human Development Indices and Indicators: 2018 Statistical Update: Tanzania. (Briefing Note). UNDP, 2018.

¹⁶ "Tanzania: Growth and Trade." USAID. Accessed December 27, 2018. <https://www.usaid.gov/tanzania/economic-growth-and-trade>.

¹⁷ The United Republic of Tanzania. Fifth National Report on the Implementation of the Convention on Biological Diversity. Dar es Salaam, URT, March 2015.

¹⁸ Nkwabi, Ally, et al. *Global Biodiversity, Volume 3, Selected Countries in Africa*. "Chapter 11: An Overview of Biodiversity in Tanzania and Conservation Efforts." Arusha: TAWIRI, December 2018.

Zanzibar and Mafia Islands making up the remaining 886,037 km².¹⁹ Tanzania's marine area is a 241,129 km² Exclusive Economic Zone (EEZ) that extends from its coastal shoreline 322 km into the Indian Ocean.²⁰ To the north, Tanzania is bordered by Kenya and Uganda; to the west, Rwanda, Burundi and the Democratic Republic of Congo (DRC); and to the south Zambia, Malawi, and Mozambique. Tanzania's elevation varies from 0 to 5,895 meters above sea level, with Mt. Kilimanjaro its highest point.²¹

The country is characterized by a high degree of variability in temperatures, rainfall averages, elevations and soil types, resulting in seven distinct agro-climatic zones including the coastal zone, arid lands, semi-arid lands, southern and western highlands, northern highlands, and alluvial plains.²² Major landscapes include coastal plains, which extend from the Kenyan to the Mozambican border; central and western plateaus; the Eastern Arc Mountains; the Southern highlands; the Albertine Rift; rivers, including Kagera, Mara, Ruaha, Rufiji, Pangani, Ruvuma, and Malagarasi; and lake basins, with Lake Victoria, Lake Tanganyika, and Lake Nyasa comprising Tanzania's major lakes.^{23,24}

Nationally, average temperatures are highest in February, at 26.6°C in the southwestern highlands and 33.1°C in northeastern highlands,²⁵ and coldest in July, at 5.3°C in the southwestern highlands and 18.3°C in coastal areas.²⁶ Average annual temperature increased by about 1°C between 1960 and 2012, likely due to climate change; the threat changing climate poses to Tanzania's biodiversity is elaborated in Section 6.1.3. Patterns of precipitation are largely affected by the Intertropical Convergence Zone (ITCZ), which brings annual rains at separate times to different regions of Tanzania.²⁷ Seasonal rainfall in northern Tanzania is bimodal, affecting the Lake Victoria Basin, northeastern highlands and northern coastal areas. The long rains usually begin mid-March and continue through May and are followed by the short rains which begin mid-October and normally last until the beginning of December.²⁸ Seasonal rains in southern, western and central Tanzania only occur once a year.²⁹ The yearly rainy season in these parts of Tanzania generally begins in November and continues through the end of April. Average annual rainfall varies but averages between 550 mm in central Tanzania to 2,500 mm to the north, with most of the country averaging below 1000 mm annually.³⁰ A roughly 4.5 mm decrease in monthly mean rainfall from 2012 to 2016 may be an indication of changing annual rainfall patterns.³¹

¹⁹ The Vice President's Office, URT. *National Biodiversity Strategy and Action Plan 2015-2020*. Dar es Salaam, URT, October 2015.

²⁰ The Institute for the Oceans and Fisheries, UBC. "Catches by Taxon in the waters of Tanzania." *The Sea Around Us*. UBC. Accessed December 27, 2018.

²¹ The Vice President's Office, URT. *National Biodiversity Strategy and Action Plan 2015-2020*. Dar es Salaam, URT, October 2015.

²² *Ibid.*

²³ *Ibid.*

²⁴ The United Republic of Tanzania. *National Environmental Statistics Report (NESR), 2017 Tanzania Mainland*. Dar es Salaam, URT, June 2018.

²⁵ *Ibid.*

²⁶ *Ibid.*

²⁷ *Ibid.*

²⁸ *Ibid.*

²⁹ Byers, Bruce, et al. *Tanzania's Environmental Threats and Opportunities Analysis (ETOA)*. USAID/Tanzania, 2012.

³⁰ *Ibid.*

³¹ The United Republic of Tanzania. *National Environmental Statistics Report (NESR), 2017 Tanzania Mainland*. Dar es Salaam, URT, June 2018.

3. TANZANIA'S BIODIVERSITY & TROPICAL FORESTS

3.1 STATUS OF TANZANIA'S BIODIVERSITY: OVERVIEW AND DISCUSSION BY ECOSYSTEM

Tanzania is an incredibly ecologically and biologically diverse country, home to two of the 36 global Biodiversity Hotspots (the Eastern Afromontane and Coastal Forests of Eastern Africa),^{32,33} 149 distinct Key Biodiversity Areas (KBAs),^{34,35} and 16 distinct ecoregions.³⁶ The country's diverse topographical and climatic conditions, combined with distinct—and at times isolated—ecological and biological conditions support high rates of species endemism; Tanzania is home to as many as 3,000 reported endemic species, the largest numbers of which are vascular plant species (at least 1,500).³⁷

A recent survey of available literature and resources undertaken by the Tanzania Wildlife Research Institute (TAWIRI) found Tanzania has at least 55,266 known and confirmed species and is ranked in the top 15 countries globally for the highest number of endemic and threatened species, 12th globally for the greatest number of bird species,³⁸ and home to one-third of total plant species and 20% of large mammal species in Africa.³⁹ The current total number of faunal species in Tanzania is at least 44,610; this is elaborated in Table 2 below, reproduced from TAWIRI's *Global Biodiversity, Volume 3*, chapter 11, which shows the current number of Orders, Families, Genera, and number of faunal species in Tanzania and globally.

GROUP	ORDER	FAMILIES	GENERA	NUMBER OF SPECIES IN TANZANIA	WORLDWIDE SPECIES	PERCENT WORLDWIDE
Actinopterygii	41	90	520	2,250	32,156	7.0
Amphibia	2	15	31	197	6,802	2.9

³² Myers, Norman, Russell A. Mittermeier, Cristina G. Mittermeier, Gustavo AB Da Fonseca, and Jennifer Kent. "Biodiversity hotspots for conservation priorities." *Nature* 403, no. 6772 (2000): 853.

³³ Critical Ecosystem Partnership Fund (CEPF) Biodiversity Hotspots are areas that meet the following two criteria: 1) Must contain at least 1,500 species of endemic vascular plants found nowhere else on Earth; and 2) must have lost at least 70 percent of its primary native vegetation.

³⁴ KBAs as areas that meet one or more of the following 11 criteria: A1 Threatened Species; A2 Threatened Ecosystem Types; B1 Individual geographically restricted species; B2 Co-occurring geographically restricted species; Geographically restricted assemblages; B4 Geographically restricted ecosystem types; C Ecological Integrity; D1 Demographic aggregations; D2 Ecological refugia; E Irreplaceability through quantitative analysis.

³⁵ BirdLife International (2019) The World Database of Key Biodiversity Areas. Developed by the Key Biodiversity Areas Partnership: BirdLife International, IUCN, Amphibian Survival Alliance, Conservation International, Critical Ecosystem Partnership Fund, Global Environment Facility, Global Wildlife Conservation, NatureServe, Royal Society for the Protection of Birds, World Wildlife Fund and Wildlife Conservation Society. Downloaded from <http://www.keybiodiversityareas.org> on 06/01/2019.

³⁶ Ecoregions2017@Resolve (<https://ecoregions2017.appspot.com/>)

³⁷ These figures come from: 1) The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015, and 2) Nkwabi, Ally, et al. *Global Biodiversity, Volume 3, Selected Countries in Africa*. "Chapter 11: An Overview of Biodiversity in Tanzania and Conservation Efforts." Arusha: TAWIRI, December 2018.

³⁸ Nkwabi, Ally, et al. *Global Biodiversity, Volume 3, Selected Countries in Africa*. "Chapter 11: An Overview of Biodiversity in Tanzania and Conservation Efforts." Arusha: TAWIRI, December 2018.

³⁹ Ibid.

TABLE 2. KNOWN NUMBER OF FAUNA SPECIES IN TANZANIA

GROUP	ORDER	FAMILIES	GENERA	NUMBER OF SPECIES IN TANZANIA	WORLDWIDE SPECIES	PERCENT WORLDWIDE
Birds	30	107	317	1,152	9,026	12.7
Mammalia	17	50	148	372	5,416	6.9
Reptilia	3	26	114	366	9,232	4.0
Insecta	8	347	4,996	39,644	1,020,169	3.9
Echinoderm				144	6,600	2.2
Porifera				120	5,000	2.4
Cnidaria				365	10,107	3.6
Total				44,610	1,104,508	4.1

Note: The above includes both Endemic and Threatened Species

Source: Nkwabi, Ally, et al. *Global Biodiversity, Volume 3, Selected Countries in Africa*. “Chapter 11: An Overview of Biodiversity in Tanzania and Conservation Efforts.” Arusha: TAWIRI, December 2018.

Indicators suggest that there is a general downward trend in both the number of species as well as the populations of individual species in Tanzania.⁴⁰ As elaborated in Sections 6.1 and 6.2, this trend is driven by a variety of factors including habitat loss and degradation, climate change, and overexploitation, which have caused the number of threatened species to triple from around 2004 to 2013.⁴¹ With more than 900 threatened species, several of which are endangered, Tanzania ranks 15th globally among nations with high numbers of endangered species.⁴² Proportionally, mammals and cycads (palmlike woody plants that reproduce by means of an exposed seed) are the most threatened endemic species and amphibian species are the most threatened species overall.⁴³

TABLE 3. STATUS OF FLORA AND FAUNA IN TANZANIA

FAUNA							
GROUP	TOTAL SPECIES	CRITICALLY ENDANGERED (CR)	ENDANGERED (EN)	EXTINCT (EX)	LEAST CONCERN (LC)	NEAR THREATENED (NT)	VULNERABLE (VU)
Mammals	372 ⁴⁴	5	16	-	175	18	14
Birds	1152	6	18	-	968	36	28
Reptiles	366	5	17	-	78	6	12
Amphibians	191	21	29	1	111	3	11
Marine Fish	993	0	3	0	574	23	33
Freshwater Fish	1257	54	20	1	460	6	70
Terrestrial Invertebrates	30859	18	14	0	323	5	19

⁴⁰ The 5th National Report on the Convention on Biodiversity states that there is a lack of reliable information and data to be able to fully track the status of species diversity over time. However, existing data indicates declining trends for a significant number of species. Referenced indicators include: 1) a tripling in the number of threatened species in the country over the last decade and, 2) a reported decline in genetic diversity of wild and cultivated species of plants and animals.

⁴¹ Ibid.

⁴² The Vice President’s Office, URT. *National Biodiversity Strategy and Action Plan 2015-2020*. Dar es Salaam, URT, October 2015.

⁴³ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

⁴⁴ This figure reflects species count of large mammals.

TABLE 3. STATUS OF FLORA AND FAUNA IN TANZANIA

Marine Invertebrates	8270	1	4	0	216	89	51
Freshwater Invertebrates	785	0	8	0	168	13	10
FLORA							
CLASS	TOTAL SPECIES	CR	EN	LC	NT	VU	
Anthocerotopsida	**	*	*	*	*	*	
Bryopsida	**	*	1	*	*	*	
Cycadopsida	5	2	*	*	2	*	
Equisetopsida	75	*	*	*	*	*	
Liliopsida	2088	17	46	273	11	31	
Jungermanniopsida	**	*	1	*	*	*	
Isoetopsida	**	*	*	*	*	*	
Gnetopsida	**	*	*	*	*	*	
Ginkgoopsida	**	*	*	*	*	*	
Floriophycene	**	*	*	*	*	*	
Equisetopsida	**	*	*	*	*	*	
Lycopodiopsida	37	*	*	*	*	*	
Magnohopsida	6751	33	182	161	67	267	
Marattiopsida	**	*	*	*	*	*	
Marchantiopsida	**	*	*	*	*	*	
Pinopsida	7	*	2	*	1	*	
Polypodiopsida	356	3	12	*	*	3	
Psilotopsida	1	*	*	*	*	*	
Takakiopsida	**	*	*	*	*	*	
Ulvophyceae	**	*	*	*	*	*	

* Data not available

**Species data was not provided in the unpublished List of East African Plants utilized by Nkwabi, et al, in compiling the data used in this table Source: Nkwabi, Ally, et al. *Global Biodiversity, Volume 3, Selected Countries in Africa*. "Chapter 11: An Overview of Biodiversity in Tanzania and Conservation Efforts." Arusha: TAWIRI, December 2018.

The remainder of this section provides brief discussion on species diversity and status in major terrestrial ecosystems in Tanzania: Savanna-Grasslands and Shrublands; Miombo Woodlands and Itigi-Sumbu Thicket; Inland Water Resources; and Marine Resources. Maps showing the coverage and detailing the underlying biomes comprising these ecosystems are provided in Annex H.

3.1.1 SAVANNA-GRASSLANDS AND SHRUBLANDS

Tanzania's iconic savanna-grasslands and shrublands famously support some of the most diverse and high-density communities of large mammals in the world,⁴⁵ perhaps best exemplified by the 'Great Migration' in the Serengeti-Ngorongoro-Mara Ecosystem involving an annual mass movement of

⁴⁵ IUCN Red List. "Spatial Data & Mapping Resources." IUCN. Accessed December 27, 2018. <https://www.iucnredlist.org/resources/spatial-data-download>.

approximately 2 million wildebeest, zebra and Thomson gazelle. As a result, carnivore densities are amongst the highest of anywhere else in Africa,⁴⁶ and include globally important populations of vulnerable carnivores such as cheetah, lions, and the African wild dog.⁴⁷ In southern Tanzania, the Selous Game Reserve and the Ruaha landscape support the two largest lion populations in the country, and Tanzania as a whole supports more than 40 percent of remaining lions and more than 25 percent of their range.⁴⁸ Ruaha further supports one of the few large cheetah populations in East Africa and the third largest populations of African wild dogs remaining in the world.⁴⁹

However, aside from wildlife in the Greater Serengeti Ecosystem and elephants and wildebeest in Tarangire,⁵⁰ large mammal populations have significantly declined in most Tanzanian savanna areas over the past 20-30 years,⁵¹ driven by bushmeat hunting, poaching, population growth, agricultural expansion, and human-wildlife conflict. For example, in Serengeti, roughly 100,000 wildebeest are poached each year,⁵² but the population has remained near 1.3 million for the past 20 years. Precise trends in large mammal populations are difficult to detect in most areas because of infrequent surveys. Savanna-grasslands also support exceptionally high bird and reptile diversity, including some endemism.⁵³ Other major taxonomic groups are relatively species-poor in Tanzania's savanna-grasslands compared to other tropical biomes.⁵⁴ The two bushland ecoregions are largely dominated by *Acacia* and *Commiphora* trees as the name suggests, as well as *Crotalaria spp.* and the grasses such as *Themeda triandra*, *Setaria spp.*, *Panicum spp.*, *Aristida spp.*, *Andropogon spp.*, and *Eragrostis spp.*⁵⁵

3.1.2 INLAND WATER RESOURCES

Tanzania's freshwater ecosystems include natural and manmade lakes, rivers, and wetlands. The country's lakes, both saline and freshwater, occupy roughly six percent of Tanzania's land area with the large lakes found along Tanzania's international borders and to the north. Freshwater lakes include Tanganyika, Victoria, Nyasa, Rukwa, and Chala. There are three additional large saline lakes creating a chain along the Rift Valley: Lake Natron, Lake Manyara and Lake Eyasi.

Tanzania's nine major river basins feed into an extensive network of seasonal and perennial rivers. Larger rivers include Rufiji, Kilombero, Ruaha, Wami, Ruvuma, Mara, Kagera, Malagarasi, and Pangani.

⁴⁶ Hatton, Ian A. et al. "The predator-prey power law: Biomass scaling across terrestrial and aquatic biomes." *Science*. September 4, 2015.

⁴⁷ The African wild dog was recently reintroduced to the Serengeti from Loliondo; however they had been considered extinct from Northern Tanzania prior to 2000 before reappearing in and around Loliondo in the early 2000's.

⁴⁸ Ruaha Carnivore Project. "Why Large Carnivores?" Accessed February 24, 2019. <http://www.ruahacarnivoreproject.com/home/carnivore-decline/>

⁴⁹ Dickman, Amy, and Evelyn Kent. "Case Study: Big Cats in the Ruaha Landscape." *National Geographic*. December 8, 2011. Accessed February 24, 2019.

⁵⁰ Morrison, Thomas A., et al. "Tarangire revisited: Consequences of declining connectivity in a tropical ungulate population." *Biological Conservation* 197 (May 2016): 53-60.

⁵¹ Stoner, Chantel et al. "Changes in large herbivore populations across large areas of Tanzania." *African Journal of Ecology* 45, (2007): 202-215.

⁵² Rentsch, Dennis and Craig Packer. "The effect of bushmeat consumption on migratory wildlife in the Serengeti ecosystem, Tanzania." *Oryx* 49 (2015): 287-294.

⁵³ Sinclair, Anthony R.E et al. eds. *Serengeti IV: Sustaining biodiversity in a coupled human-natural system*. Chicago: The University of Chicago Press, 2015.

⁵⁴ Ibid.

⁵⁵ Rowen, Mary. "Southern Acacia-Commiphora bushlands and thickets." WWF. Accessed December 27, 2018. <https://www.worldwildlife.org/ecoregions/at0716#>.

The Rufiji is the largest of the river systems in Tanzania, with a catchment area of 177,429 km² and approximately 600 km long.⁵⁶

Tanzania’s lakes contain numerous endemic species, with more than 890 described species of fish, of which 620 are endemic.⁵⁷ Lake Tanganyika, as an example, is one of the deepest freshwater lakes in the world and home to extensive biodiversity, with over 400 recorded endemic species of fish.⁵⁸ Many of these species provide food and support livelihoods in the communities that border freshwater ecosystems.⁵⁹ Lake Rukwa is considered a KBA, primarily for its importance to migratory bird species of conservation concern, though data are dated (from the 1950s) and the current status is unknown.⁶⁰ With the exception of the rivers in protected Montane Forests and Ramsar Wetland areas, few rivers in Tanzania are subject to any targeted protection.⁶¹

Found most frequently along major river systems, wetlands (including floodplain lakes and swamps) occupy 88,300 km², roughly 10% of the mainland.⁶² Critical ecosystems for species biodiversity, wetlands host an estimated 650 animal species.⁶³ Four of Tanzania’s expansive wetland ecosystems have been designated as Wetlands of International Importance under the Ramsar Convention on Wetlands (see Table 4 below). The endorheic Yaida swamps and the alkaline lakes of Bahi, Burigi, Natron, Manyara, and Tarangire are additional wetlands of importance.

TABLE 4. BIODIVERSITY OF TANZANIA’S RAMSAR WETLANDS	
KEY SPECIES (ENDEMIC AND NON-ENDEMIC)	WETLAND SPECIFIC INFORMATION
Malagarasi/Muyovozi (32,500 km²)	
<u>Mammals</u> ⁶⁴ : Buffalo (<i>Synerus caffer</i>), Sitatunga (<i>Tragelaphus spekii</i>), African Elephant (<i>Loxodonta Africana</i> , VU), African Wild Dog (<i>Lycan pictus</i> , EN)	A KBA, seven of the 20 fish species found in the Malagarasi River are threatened species. ⁶⁵ Five main rivers feed into this wetland: Malagarasi, Moyowosi, Kigosi, Gombe and Ugalla.
<u>Reptiles</u> : Nile crocodile (<i>Crocodilus niloticus</i>)	
<u>Birds</u> : Shoebill (<i>Balaeniceps rex</i> , VU), Great Snipe (<i>Gallinago media</i> , NT)	
Lake Natron Basin (2,250 km²)	
<u>Mammals</u> : Elephant, Buffalo, Hyena, Lion, Fringe-eared Oryx (<i>Oryx gazella cullotis</i>), the Lesser Kudu (<i>Ammelaphus imberbis</i>), the Gerenuk (<i>Litocranius walleri</i>)	Lake Natron is a shallow soda-lake (max 50cm) on the floor of the Eastern Rift Valley. The surface area fluctuates significantly between wet and dry seasons. The saline water with chloride
<u>Fish</u> : <i>Oreochromis alcalicus graham</i>	

⁵⁶ Trettin, Carl, Zhaohua Dai, Stanley J. Zarnoch, Mwita Mangora, Marco Njana, Jared Otieno, Wenwu Tang, Wenpeng Fang, Temilola Fatoyinbo, Seung Kuk Lee, David Lagomasino, Marc Simard. “Assessment of Carbon Stocks in the Rufiji River Delta, Tanzania.” *East African Mangrove Carbon Project*, October 15, 2016.

⁵⁷ BirdLife International. *Eastern Afromontane Biodiversity Hotspot*. Nairobi: BirdLife International--Critical Ecosystem Partnership Fund, January 24, 2012.

⁵⁸ Ibid.

⁵⁹ Ibid.

⁶⁰ BirdLife International (2019) Important Bird Areas factsheet: Lake Rukwa. Downloaded from <http://www.birdlife.org> on 10/01/2019.

⁶¹ The Vice President’s Office, URT. *National Biodiversity Strategy and Action Plan 2015-2020*. Dar es Salaam, URT, October 2015.

⁶² Ibid.

⁶³ Ibid.

⁶⁴ BirdLife International. “Important Bird Areas factsheet: Moyowosi - Kigosi Game Reserves.” 2019. <http://datazone.birdlife.org/site/factsheet/moyowosi--kigosi-game-reserves-iba-tanzania/text>.

⁶⁵ BirdLife International. “New partnership to safeguard Malagarasi River System.” May 2016. <https://www.birdlife.org/africa/news/new-partnership-safeguard-malagarasi-river-system>

TABLE 4. BIODIVERSITY OF TANZANIA'S RAMSAR WETLANDS

KEY SPECIES (ENDEMIC AND NON-ENDEMIC)	WETLAND SPECIFIC INFORMATION
<p>Birds:⁶⁶ Grey-crested helmet-shrike (<i>Prionops poliophus</i>), Lesser Flamingo (<i>Phoenicopus minor</i>, NT), Chestnut-banded Plover (<i>Charadrius pallidus</i>, NT), Cape Teal (<i>Anas capensis</i>), Marsh Sandpiper (<i>Tringa stagnatilis</i>), Little Stint (<i>Calidris minuta</i>)</p> <p>Plants: <i>Spirulina</i></p>	<p>concentrations is unsuitable for human and livestock consumption.</p> <p>Singular regular breeding site in East Africa for ¾ of the worlds Lesser Flamingos.</p>
<p>Kilombero Valley Floodplain (7,950 km²)</p>	
<p>Mammals: Puku Antelope (<i>Kobus vardonii</i>, NT), African Elephant (<i>Loxodonta africana</i>), Hipopotomus, African Buffalo (<i>Syncerus caffer</i>)</p> <p>Fish: <i>Citharinus congicus</i> and <i>Alestes stuhlmanni</i>⁶⁷</p> <p>Amphibians:⁶⁸ Kihansi toad (<i>Nectophrynoides asperginis</i>), Merera toad (<i>Amietophrynus reesi</i>, endemic)</p> <p>Reptiles: Nile crocodile (<i>Crocodilus niloticus</i>)</p> <p>Birds:⁶⁹ More than 300 species of birds including: Udzungwa Red Colobus (<i>Piliocolobus gordonorum</i>, EN), African skimmer (<i>Rhynchops flavirostris</i>, NT), Southern Banded Snake-eagle (<i>Circaetus fasciolatus</i>, NT), Madagascar Pond-heron (<i>Ardeola idea</i>, EN), African open-bill (<i>Anastomus lamelligerus</i>), Stierling's Woodpecker (<i>Dendropicops stierlingi</i>, NT), Kilombero Weaver (<i>Ploceus burnieri</i>, endemic, VU) and two undescribed species of cisticolas (endemic)</p>	<p>Dramatic declines in the dry season counts of large mammals (esp. elephants); From approximately 5,000 in 1985 to zero in 2015.</p> <p>Similar declines in puku; historically 50,000 to 60,000 permanent Puku now show in only limited numbers.</p> <p>An important spawning ground and nursery for fish for the whole Rufiji Basin.⁷⁰ Supports 23 species, and 2 endemic subspecies of fish. Home to approximately 350 species of plants, nine of which are known endemic species.</p>
<p>Rufiji-Mafia-Kilwa Wetlands (5,970 km²)</p>	
<p>Mammals: Dugong (<i>Dugong dugon</i>, VU)</p> <p>Fish: African cat fish, <i>Haemulidae</i>, red snapper, King fish, <i>Serranidae</i>, Prawns</p> <p>Birds: Curlew Sandpiper (<i>Calidris ferruginea</i>, NT), Terek Sandpiper (<i>Xenus cinereus</i>), Crab-plover (<i>Dromas ardeola</i>), <i>Sterna nilotica</i>, Saunders's Tern (<i>Sternula saundersi</i>), Lesser Crested Tern (<i>Thalasseus bengalensis</i>)</p>	<p>The mangroves are a roosting site and feeding ground for thousands of migrant waterbirds.⁷¹ Changes in rainfall and river flow patterns in the 1980s led to an inflow of fresh water, making the Rufiji more attractive for agriculture.⁷²</p>

3.1.3 MARINE RESOURCES

Tanzania's marine ecosystems are home to ecologically and economically important species. Coral reefs, areas of high biodiversity and keystone ecosystems for ocean species, are found along approximately two-thirds (600 km) of the coast, constituting 11% of the territorial sea. Tanzania's most extensive reefs

⁶⁶ BirdLife International. Environmental Advocacy at Work: Lessons Learnt from the Campaign to save Lake Natron from the Plans to Build a Soda Ash Factory. 2012.

https://www.birdlife.org/sites/default/files/attachments/Lake_Natron_Case_Study_Final.pdf

⁶⁷ Two species of fish dependent on Kilombero for spawning. Source: Wilson, Ed, et. al. *Kilombero Valley, United Republic of Tanzania. Ramsar Advisory Mission Report*. Ramsar Site No. 1173. April 2017.

⁶⁸ Goldberg, Karen. "Africa: Angola, Botswana, Democratic Republic of Congo, Malawi, Mozambique, Tanzania, Zambia." WWF. Accessed January 8, 2019. <https://www.worldwildlife.org/ecoregions/at0907>.

⁶⁹ BirdLife International. "Important Bird Areas factsheet: Kilombero Valley." 2019.

<http://datazone.birdlife.org/site/factsheet/kilombero-valley-iba-tanzania>

⁷⁰ Ibid.

⁷¹ BirdLife International. "Important Bird Areas factsheet: Rufiji Delta." 2019. <http://datazone.birdlife.org/site/factsheet/rufiji-delta-iba-tanzania/details>

⁷² Wetlands International. "Rufiji Delta: A hub for mangroves." 2018. <https://africa.wetlands.org/en/news/rufiji-delta-a-hub-for-mangroves/>

are located off the coast of Tanga, Pemba, Unguja, Mafia, Kilwa, and Mtwara.⁷³ Similarly, Tanzania's seagrass offers important feeding, breeding habitats, and refugia for several species of commercially important fish and other marine animals, including marine turtles and dugongs, though dugong populations in Tanzania are on the brink of extinction.⁷⁴ Similarly, little information exists on the coverage of macroalgae (seaweeds). Attaching to rocky shores, seaweed grows well in cooler coastal waters, especially in the months of May to August.

Tanzania's marine resources are home to extensive species diversity, including numerous marine species of contemporary conservation importance. However, the presence of some such species is declining; the dugong (*Dugong dugon*), abundant until the 1960s/1970s, now survive in only very small, non-viable numbers in the southern Rufiji Delta. Anecdotal evidence suggests that almost all shark and ray species (*Elasmobranchii*) have declined substantially over recent decades; their exact status remains a significant biodiversity information gap, including the lack of a systematic list of extant species and their distribution. The Largetooth Sawfish (*Pristis pristis*, critically endangered), was recently confirmed still present in Tanzania waters in the Rufiji Delta.⁷⁵ The whale shark (*Rhincodon typus*, endangered), occurs in a regionally important seasonal aggregation of close to 200 individuals at Mafia Island, and the population appears to be increasing in recent years;⁷⁶ whale sharks may be the only elasmobranch in Tanzania not directly targeted by fishing, unlike elsewhere.

Tanzania's coral reefs are home to an estimated 280 species of hard coral, 8,000 species of invertebrates, 1,000 species of fish, five species of marine turtles, 428 species of seaweed, and 44 species of marine birds.^{77,78} The highest record of Tanzania's hard coral diversity at any one location stands at 265 (in both Mafia and Mtwara), representing 63 genera and 15 families.⁷⁹ Additionally, ten species of seagrasses are known to occur in the Tanzanian coastal waters: *Thalassia hemprichii*, *Halodule uninervis*, *Halodule wrightii*, *Cymodocea rotundata*, *Cymodocea serrulata*, *Thalassodendron ciliatum*, *Enhalus acoroides*, *Syringodium isoetifolium*, *Halophila stipulacea*, and *Halophila ovalis*. Individual species density and the extent of bed area coverage are not well-known. Commercial seaweed species found in marine ecosystems in Tanzanian waters include *Kappaphycus alvarezii*, *K. striatum*, and *Eucheuma denticulatum*.

Green turtles (*Chelonia mydas*, endangered) are the most common in Tanzanian marine waters, including nesting and foraging. Although numbers have declined historically, nesting success appears to have stabilized in recent years.⁸⁰ Other turtles in Tanzania include the Hawksbill (*Eretmochelys imbricate*), which also nest and forage in Tanzanian waters but in smaller numbers than the Green Turtle. Other turtles in deeper waters (i.e., the West Indian Ocean) include the Olive Ridley, Loggerhead, and Leatherback species.

⁷³ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

⁷⁴ Sea Sense. "Dugongs." <http://www.seasense.org/endangered-marine-species/dugongs/>.

⁷⁵ Braulik & Kasuga [in prep]

⁷⁶ Rohner C. A., Pierce S. J., Berumen M. L., et al. "Environmental factors influencing whale shark occurrence and movements at Mafia Island, Tanzania." WWF Report. 2013.

⁷⁷ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

⁷⁸ Obura, David. "The diversity and biogeography of Western Indian Ocean reef-building Corals." *PLoS ONE* 7, no. 9 (September 2012).

⁷⁹ Obura, David. *Biodiversity surveys of the coral reefs of the Mnazi Bay Ruvuma Estuary Marine Park, Tanzania*. Nairobi: IUCN, 2004.

⁸⁰ Email communication with Jason Rubens, East Africa marine ecologist, February 22, 2019.

A systematic assessment of cetaceans in Tanzanian nearshore waters was undertaken recently, revealing seven dolphin and three whale species.⁸¹ One species is globally endangered, the Indian Ocean humpback dolphin (*Sousa plumbea*), while five others are classified as data deficient. Other marine species of conservation concern include Humphead Wrasse (*Cheilinus undulatus*, endangered and CITES Appendix II listed).

3.2 FOREST TYPE, STATUS, AND ASSOCIATED BIODIVERSITY

Tanzania is home to a variety of subtypes of tropical forests including Miombo Woodlands and Itigi-Sumbu Thicket, Zanzibar-Inhambane Coastal Forests, East African Montane, and Mangrove forests. Tropical forest and woodland ecosystems occupy about 55% of the total land area of Tanzania (480,000 km²); 93% is covered by woodlands and about 3% is covered by coastal forests and montane forests.⁸²

As of 2014, Tanzania had lost approximately 38% of its forest cover. Projections suggest that given the current rate of deforestation (400,000 ha of woodlands and tropical forests annually), and predicted increases in demographic and economic pressures, Tanzania's forest cover may be completely depleted within 50 years.⁸³ The Government of Tanzania completed its first comprehensive inventory of the status of its forests in the National Forest Resources Monitoring and Assessment (NAFORMA) project, in May 2015, to more effectively monitor forests status and trends.

3.2.1 MIOMBO WOODLANDS & ITIGI-SUMBU THICKET

Dry miombo and Central Zambezian wet miombo woodlands cover more than 20 million hectares of land, or about 40% of Tanzania's land area.^{84,85} Dry miombo woodlands stretch from the southern edge of Lake Victoria to the border with Mozambique. The Central Zambezian wet miombo forests line the western edge of Tanzania, from its border with Burundi to the border with Malawi. The Itigi-Sumbu thicket, just to the south of Singida, is a small ecologically distinct ecoregion in central Tanzania. The thicket is composed of primarily deciduous vegetation so dense it is difficult for scientists to study.⁸⁶

The dry miombo landscape is dominated by trees in the *Brachystegia*, *Julbernardia* and *Isoberlinia* genera, and perennial tropical grasses.⁸⁷ Wet miombo systems have similar vegetation with the addition of some evergreen trees in wetter areas.⁸⁸ Several of Tanzania's protected areas are predominantly Miombo

⁸¹ Braulik, Gill et al. "Cetacean rapid assessment: An approach to fill knowledge gaps and target conservation across large data deficient areas." *Aquatic Conservation: Marine Freshwater Ecosystems*. 2017. Accessed February 24, 2019 https://www.researchgate.net/publication/319018690_Cetacean_rapid_assessment_An_approach_to_fill_knowledge_gaps_and_target_conservation_across_large_data_deficient_areas

⁸² The United Republic of Tanzania. *National Environmental Statistics Report (NESR), 2017 Tanzania Mainland*. Dar es Salaam, URT, June 2018.

⁸³ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

⁸⁴ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

⁸⁵ Bingham, Mike and Lyndon Estes. "Itigi-Sumbu thicket." WWF. Accessed December 27, 2018. <https://www.worldwildlife.org/ecoregions/at0708>.

⁸⁶ Ibid.

⁸⁷ The United Republic of Tanzania. *National Environmental Statistics Report (NESR), 2017 Tanzania Mainland*. Dar es Salaam, URT, June 2018.

⁸⁸ The School of Geoscience, University of Edinburgh. "A Very Brief Introduction to Miombo Woodlands." University of Edinburgh. Accessed December 27, 2018. <https://www.geos.ed.ac.uk/homes/cryan/miombo>.

woodlands, including Gombe Stream and Ruaha National Parks and the Selous Game Reserve. Both woodland ecoregions are home to important wildlife species such as large populations of African elephants, giraffes, buffalo, the endangered African wild dog, and other large mammals also found in the neighboring Savanna-grasslands. The Itigi-Sumbu thicket contains roughly 100 species of spineless, woody shrubs including *Baphia burttii*, *B. massaiensis*, *Bussea massaiensis*, *Burttia prunoides*, *Combretum celastroides*, and others.⁸⁹ Little ground cover, with the exception of *Panicum heterostachyum*, a grass, and several small herbs, grows because of the high density of the canopy.⁹⁰ Little information on the variety of animal species that live in the Itigi-Sumbu thicket is available; however, the uniqueness of the vegetation makes the presence of endemic species highly likely.⁹¹ It was once an important habitat for Black Rhinos, who have since been eradicated from this ecoregion as a result of poaching. There are three near-endemic species of reptile documented in the region, the Urungu beaked snake (*Rhinotyphlops gracilis*), four-fingered skink (*Sepsina tetradactyla*), and Johnston's/Malawi long-tail lizard (*Latastia Johnstoni*).⁹² This ecoregion faces significant threats, given that it occurs in only two countries in the world in small, largely unprotected areas. An estimate from 2001 put the remaining Itigi-Sumbu thicket at 50% of its original coverage area in Tanzania, and at that time none of the ecosystem was under national or local conservation.⁹³

3.2.2 NORTHERN & SOUTHERN ZANZIBAR-INHAMBANE COASTAL FORESTS

The Northern and Southern Zanzibar-Inhambane Coastal Forests comprise Tanzania's portion of the Coastal Forests of Eastern Africa Biodiversity Hotspot, spanning the length of the Tanzania's coast as well as Pemba, Zanzibar, and Mafia Islands.⁹⁴ These forested ecoregions include a variety of closed canopy forests such as dry, scrub, and *Brachystegia* forests; riverine, groundwater, and swamp forests; and coastal/afromontane transition forests.

Tanzania's coastal forests support some of Tanzania's most densely concentrated populations of endemic species, the number of which have changed little over the past decade.⁹⁵ Newly identified plant species include the *Monodora carolinae* and *Aidia abeidii* in the Northern Coastal Forests and the *Monodora hastipetala* in the Southern Coastal Forests.⁹⁶ Changes to previously identified species of plants include the rediscovery of the *Erythrina schliebenii* (thought extinct) and the *Karomia gigas* (critically endangered).⁹⁷

⁸⁹ Ibid.

⁹⁰ Ibid.

⁹¹ Ibid.

⁹² Ibid.

⁹³ Kideghesho, J.R. 2001. The status of wildlife habitats in Tanzania and its implications to biodiversity. *Tanzania Wildlife* 21: 9-17.

⁹⁴ Ecoregions2017[©]Resolve (<https://ecoregions2017.appspot.com/>)

⁹⁵ Mugo, Kimunya, ed. *The Eastern Africa coastal Forests Ecoregion. Strategic Framework for Conservation 2005-2025*. Nairobi: WWF, August 2006.

⁹⁶ Ibid.

⁹⁷ Burgess, Neil D. et al. "Two decades of change in state, pressure and conservation responses in the coastal forest biodiversity hotspot of Tanzania." *Oryx* 51, no. 1 (2017): 77-86.

TABLE 5. SPECIES ENDEMISM IN TANZANIA'S COASTAL FORESTS⁹⁸

GROUP	ENDEMIC	NEAR ENDEMIC
Mammal	5	14
Bird	5	22
Reptiles	3	13
Amphibians	6	--

There are 325 endemic vascular plant taxa and 349 near endemic taxa, 18 of which have been classified by the International Union for Conservation of Nature (IUCN) as Critically Endangered and 261 of which have been assigned some degree of vulnerability.⁹⁹ Total endemic fauna increased by three in the past decade due to the reassessment of the Zanzibar red colobus (*Procolobus kirkii*), and two new amphibians, the *Kassina jozani* and *Galagoides rondoensis*.¹⁰⁰ Upwards of 90% of East African endemic genera are forest and thicket dependent and restricted to small habitat areas, making these species extremely vulnerable to ecosystem degradation.¹⁰¹ Of five endemic species, two are currently listed as critically endangered by the IUCN: the Aders' duiker, *Cephalophus adersi*, rondo galago, and *Galagoides rondoensis*.¹⁰² Higher quality timber trees in the coastal forests have been degraded, and species including *Milicia excelsa*, *Brachylaena huillensis*, and *Khaya anthotheca* have been added to the IUCN near threatened and vulnerable species lists.¹⁰³

3.2.3 EASTERN AFROMONTANE FORESTS

Tanzania's Eastern Afromontane forests comprise about 25% of this global Biodiversity Hotspot and include three ecologically similar ecoregions: The Eastern African Montane Forests, Eastern Arc Mountains, and the Albertine Rift valley montane forest.

This Biodiversity Hotspot continues to support the discovery of new species of birds, mammals and amphibians, with many discovered in the last decade.¹⁰⁴ Several of the newly identified bird species display Asian characteristics;¹⁰⁵ the Udzungwa forest-partridge (*Xenoperdix udzungwensis*, Endangered), discovered in 1994, is one such species.¹⁰⁶ Of the 3,473 plant species found in the Eastern Arc Forest, 453 species and 40 genera are endemic.¹⁰⁷ There are 21 endemic species of avian and three endemic genera (*Xenoperdix*, *Sceptomycter*, and *Modulatrix*), as well as 12 endemic mammal species, of which four are also endemic to the Southern Rift Montane Forest-Grasslands (See Table 7). There are also 32 species of reptile, 50 species of amphibian, and 80 species of butterfly endemic to the Eastern Arc Mountains (see Table 6).

⁹⁸ Burgess, Neil D. et al. "Two decades of change in state, pressure and conservation responses in the coastal forest biodiversity hotspot of Tanzania." *Oryx* 51, no. 1 (2017): 77-86.

⁹⁹ Ibid.

¹⁰⁰ Ibid.

¹⁰¹ Mugo, Kimunya, ed. *The Eastern Africa coastal Forests Ecoregion. Strategic Framework for Conservation 2005-2025*. Nairobi: WWF, August 2006.

¹⁰² The IUCN Red List of Threatened Species. *The International Union for the Conservation of Natural Resources Family of Sites*. Accessed December 27, 2018. <https://www.iucnredlist.org/>.

¹⁰³ Burgess, Neil D. et al. "Two decades of change in state, pressure and conservation responses in the coastal forest biodiversity hotspot of Tanzania." *Oryx* 51, no. 1 (2017): 77-86.

¹⁰⁴ Byers, Bruce, et al. *Tanzania's Environmental Threats and Opportunities Analysis (ETOA)*. USAID/Tanzania, 2012.

¹⁰⁵ Ibid.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid.

TABLE 6. ENDEMIC AND IMPORTANT FAUNA IN EASTERN ARC MOUNTAINS

GROUP	ENDEMIC SPECIES	SPECIES OF NOTE
MAMMALS	12	Two new species of dwarf galago and the grey-faced elephant shrew (<i>Rhynchocyon udzungwensis</i> , Vulnerable) were discovered in the last decade. ¹⁰⁸ Two of the six endemic species of shrew, the Desperate Shrew (<i>Crocidura desperata</i>) and the <i>Congosorex phillipsorum</i> are endangered and critically endangered respectively and are restricted to small sections of the Udzungwa and Rungwe Mountains. ¹⁰⁹ Additional mammals of note include the Abbott’s duiker (<i>Cephalophus spadix</i> , Endangered) and the eastern tree hyrax (<i>Dendrohyrax validus</i> , Vulnerable).
REPTILES	32	The majority of endemic reptiles include chameleons in the genera chamaeleo, rhampholeon and kinyonga
BIRDS	21	Uluguru bush-shrike (<i>Malaconotus alius</i> , critically endangered) only found in one Nature reserve in Uluguru Mountains. ¹¹⁰
AMPHIBIANS	50	The majority of endemic species of amphibians include those from the genera <i>Hyperolius</i> and <i>Leptopelis</i> (two genera of tree frogs), <i>Nectophrynoides</i> , caecilians, and the family <i>Microhylidae</i> . ¹¹¹ There are at least a dozen new amphibian species from the EAM that have not yet been classified.

TABLE 7. MAMMALS ENDEMIC TO TANZANIA’S EASTERN ARC MONTANE FORESTS AND SOUTHERN RIFT MONTANE FOREST-GRASSLANDS.¹¹²

NAME	IUCN RED LIST STATUS
Kipunji monkey	Critically Endangered
Sanje Mangabey	Endangered
Udzungwa Red Colobus	Endangered
Mountain Dwarf Galago	Nearly Threatened

The Albertine Rift Montane Forests occupy the land in around the Greater Mahale Landscape in Western Tanzania, along the Burundian coast and bordering the northern section of Lake Tanganyika. Along with the Eastern Rift, the Albertine Rift has some of the highest rates of biodiversity and species endemism in East Africa. A transnational ecoregion, the Albertine Rift at large is home to 15% of mainland Africa’s plant species, 300 of which are endemic, and 1,074 species of birds, some of which are restricted range species (not all of which can be found in Tanzania).¹¹³

Key species in these forests include small populations of chimpanzees (*Pan troglodytes schweinfurthii*, Endangered); about 177 species (14%) of Africa’s reptile species, including 18 endemics; 143 species of amphibians, including 38 endemics and three monotypic endemic genera: Parker’s tree toad (*Laurentophryne parkeri*), the Itombwe golden frog (*Chrysobatrachus cupreonitens*), and African painted frog (*Callixalus pictus*, Vulnerable).¹¹⁴

¹⁰⁸ Ibid.

¹⁰⁹ Ibid.

¹¹⁰ Ibid.

¹¹¹ Ibid.

¹¹² Ibid.

¹¹³ BirdLife International. *Eastern Afromontane Biodiversity Hotspot*. Nairobi: BirdLife International--Critical Ecosystem Partnership Fund, January 24, 2012.

¹¹⁴ Ibid.

3.2.4 SOUTHERN RIFT & EASTERN MONTANE SAVANNA FOREST MIX

Tanzania's Southern Highlands serve as habitat for Africa's most recently discovered species of monkey, the kipunji (*Rungwecebus kipunji*, Critically Endangered), which was first reported by scientists in 2003 at Mount Rungwe in the Southern Highlands, and simultaneously in the Udzungwa Mountains. The kipunji is one of the most highly threatened primates.¹¹⁵ There is an urgent need to strengthen the management of the few protected areas where kipunji are found and to address the threats affecting these protected areas.¹¹⁶ Threats include logging, charcoal production, bushmeat hunting and unmanaged resource extraction.¹¹⁷ Mount Rungwe also supports other endangered species, such as Abbott's duiker (*Cephalophus spadix*).

3.2.5 MANGROVE FORESTS

Mangrove forests are the smallest forest ecoregion, occupying approximately 80,000 ha on the mainland¹¹⁸ (less than 0.5% of the forested area of mainland Tanzania¹¹⁹ ¹²⁰) and about 18,000 ha on Zanzibar.¹²¹ These ecologically and economically important forests are all under the protection of conservation areas and can be found in all coastal districts of Tanzania in varying sizes.¹²² The largest and most structurally developed mangrove forests can be found near major estuaries, including Pangani, Wami, Ruvu, Rufiji, and Ruvuma.¹²³ Information on national mangrove forest coverage is limited, however, the data available indicates that over the past 30 years Tanzania has lost more than 28,000 ha of coverage.^{124,125}

¹¹⁵ Davenport, T.R.B. and T. Jones. 2008. *Rungwecebus kipunji*. The IUCN Red List of Threatened Species 2008: e.T136791A4340286. <http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T136791A4340286.en>. Downloaded on 28 December 2018.

¹¹⁶ Birdlife International. *Eastern Afromontane Biodiversity Hotspot*. Nairobi: BirdLife International--Critical Ecosystem Partnership Fund, January 24, 2012.

¹¹⁷ Davenport, T.R.B. and T. Jones. 2008. *Rungwecebus kipunji*. The IUCN Red List of Threatened Species 2008: e.T136791A4340286. <http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T136791A4340286.en>. Downloaded on 28 December 2018.

¹¹⁸ Temilola E. Fatoyinbo & Marc Simard (2013): Height and biomass of mangroves in Africa from ICESat/GLAS and SRTM, *International Journal of Remote Sensing*, 34:2, 668-681.

¹¹⁹ "That area estimate was derived from the national mangrove inventory conducted in 1989-1991 for developing a National Mangrove Management Plan and has been an officially recognized estimate by Tanzania Forest Services (TFS) Agency. However, analyses of remote sensing data by Wang and others (2003) estimated mangrove cover of approximately 108,000 ha excluding those on Mafia Island." Source: "Assessment of Carbon Stocks in the Rufiji River Delta, Tanzania." *East African Mangrove Carbon Project*, October 15, 2016.

¹²⁰ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

¹²¹ Francis, Julius and Ian Bryceson, "Chapter 4: Tanzanian Coastal and Marine Resources: Some Examples Illustrating Questions of Sustainable Use." *Lessons Learned: Case Studies in Sustainable Use*. Dar es Salaam: 2000.

¹²² Byers, Bruce, et al. Tanzania's Environmental Threats and Opportunities Analysis (ETOA). USAID/Tanzania, 2012.

¹²³ Trettin, Carl, Zhaohua Dai, Stanley J. Zarnoch, Mwita Mangora, Marco Njana, Jared Otieno, Wenwu Tang, Wenpeng Fang, Temilola Fatoyinbo, Seung Kuk Lee, David Lagomasino, Marc Simard. "Assessment of Carbon Stocks in the Rufiji River Delta, Tanzania." *East African Mangrove Carbon Project*, October 15, 2016.

¹²⁴ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

¹²⁵ Temilola E. Fatoyinbo & Marc Simard (2013): Height and biomass of mangroves in Africa from ICESat/GLAS and SRTM, *International Journal of Remote Sensing*, 34:2, 668-681. This study was a large-scale, low resolution assessment for mangrove coverage over the whole of Africa, so no ground-truthing occurred in Tanzania. As such, there is a margin of error.

One of the four designated Ramsar sites in Tanzania (as discussed in Section 3.1.3) the Rufiji Delta is one of the largest contiguous mangrove forests in East Africa. Covering approximately 45,500 ha of land,¹²⁶ the delta contains eight of the ten mangrove species thus far identified in Tanzania (*Rhizophora mucronata*, *Ceriops tagal*, *Bruguiera gymnorrhiza*, *Xylocarpus granatum*, *Avicennia marina*, *Sonneratia alba*, and *Heritiera littoralis*, *Lumnitzera racemosa*), as well as one as yet unidentified.^{127,128} In addition to the diversity of mangrove species found on the saline mudflats of the Rufiji, other species of plants commonly found in Tanzanian mangrove forests include *Guettarda speciosa*, *Hibiscus tiliaceus*, the fern *Achrostichum aureum*, and *Derris trifoliata*, a climbing liana.¹²⁹ Mangroves provide habitats for breeding, spawning and juvenile fish, and are extremely important for their ability to support fish species repopulation, as well as to sequester carbon and protect coastlines. The Rufiji delta is a critical fishery in Tanzania, supporting about 80% of the wild shrimping industry (mangroves serve as nursery areas for shrimp, prawns and fish).^{130 131}

3.3 PROTECTION OF TROPICAL FORESTS AND BIODIVERSITY

3.3.1 PROTECTED AREAS MANAGEMENT

As party to the Convention on Biological Diversity, Tanzania has committed to ambitious national targets for conservation by 2020, in line with the Aichi Biodiversity Targets (i.e., 20 biodiversity-related targets set by the Convention on Biological Diversity).¹³² Thus far, Tanzania has successfully achieved coverage of 35-40%¹³³ of terrestrial areas and 3-13%¹³⁴ of marine areas. There are currently four Ramsar Wetlands of International Importance, four United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites, and three UNESCO Man and the Biosphere Programme (MAB) Biosphere Reserves designated. Of these, 11 areas under international conventions, six overlap with nationally protected areas, and five do not (these include all four Ramsar Wetlands and one of the UNESCO-MAB Biosphere Reserves).¹³⁵ See Table 8 and Table 9 below for an overview of terrestrial and marine protected areas in Tanzania, respectively; Table 10 provides a breakdown of protected areas

¹²⁶ “Semesi (1992) reported about 53,000 ha from the 1989-1991 inventory, which dropped slightly to 48,030 ha estimated from remote sensing in 2000 by Wang and others (2003). More recently, Nindi and others (2014) reported a further drop to approximately 45,500 ha.” Source: “Assessment of Carbon Stocks in the Rufiji River Delta, Tanzania.” *East African Mangrove Carbon Project*, October 15, 2016.

¹²⁷ Assessment of Carbon Stocks in the Rufiji River Delta, Tanzania. *East African Mangrove Carbon Project*, October 15, 2016.

¹²⁸ Stringer, Christina E.; Krauss, Ken W.; Latimer, James S., eds. 2016. “Designing a mangrove research and demonstration forest in the rufiji delta, tanzania.” *Headwaters to estuaries: advances in watershed science and management—Proceedings of the Fifth Interagency Conference on Research in the Watersheds*. March 2-5, 2015, North Charleston, South Carolina. e-Gen. Tech. Rep. SRS-211. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 190-192.

¹²⁹ Trettin, Carl, Zhaohua Dai, Stanley J. Zarnoch, Mwita Mangora, Marco Njana, Jared Otieno, Wenwu Tang, Wenpeng Fang, Temilola Fatoyinbo, Seung Kuk Lee, David Lagomasino, Marc Simard. “Assessment of Carbon Stocks in the Rufiji River Delta, Tanzania.” *East African Mangrove Carbon Project*, October 15, 2016.

¹³⁰ Ibid.

¹³¹ Francis, Julius and Ian Bryceson, “Chapter 4: Tanzanian Coastal and Marine Resources: Some Examples Illustrating Questions of Sustainable Use.” *Lessons Learned: Case Studies in Sustainable Use*. Dar es Salaam: 2000.

¹³² *Governance of Protected and Conserved Areas in Tanzania*. Workshop Report. IUCN. 21-22 March 2017.

¹³³ Lower end of range from *Governance of Protected and Conserved Areas in Tanzania*. Workshop Report. IUCN. 21-22 March 2017. And higher end of range from The United Republic of Tanzania. Fifth National Report on the Implementation of the Convention on Biological Diversity. Dar es Salaam, URT, March 2015.

¹³⁴ Protected planet reports a lower percentage of Marine Conservation in part because they report Tanzania’s total marine area is 243,130 km², whereas the 5th Annual report on the Convention for Biodiversity reports Tanzania’s total marine area is 32,000 km²; 3% pulled from “United Republic of Tanzania, Africa.” *Protected Planet*. Accessed December 27, 2018. And 13.5% pulled from *Governance of Protected and Conserved Areas in Tanzania*. Workshop Report. IUCN. 21-22 March 2017.

¹³⁵ Ibid.

in Tanzania by IUCN category; and Annex H provides a map and full table of all protected areas in Tanzania.

TABLE 8. CATEGORIES AND COVERAGE OF TERRESTRIAL PROTECTED AREAS IN TANZANIA

Category	Number	Area (km ²)	Total Area (% of TZ)
Ramsar Sites	4	48,684	5.6%
Wildlife Management Areas	13	23,298	3.1%
World Heritage Sites	4	68,411	7.3%
Conservation Areas	4	8,756	<0.1 %
Forest Reserves	692	142,727	9.8%
Forest Reserve & Game Controlled Areas	1	1,021	0.1%
Game Controlled Areas	19	61,368	7.6%
Game Reserves	19	92,809	10.0%
National Parks	17	48,477	5.2%
Nature Reserves	6	2,026	0.2%
Total Terrestrial	779	361,594	38.2%

TABLE 9. CATEGORIES AND COVERAGE OF MARINE PROTECTED AREAS IN TANZANIA

Category	Number	Area (km ²)	Total Area (% of TZ)
Marine Parks	2	1472	0.1%
Marine Reserves	2	29	<0.1%
Ramsar Sites	1	5969	2.5%
Total Marine	5	7329	3.0%

TABLE 10. CATEGORIES AND COVERAGE OF PROTECTED AREAS BY IUCN CATEGORY IN TANZANIA

IUCN Category	Number	Area (km ²)	Total Area (% of TZ)
Ib	8	631	0.1%
II	13	43,457	4.6%
III	1	2	<0.1 %
IV	53	122,215	12.9%
VI	19	2,285	0.2%
Not Reported	685	262,080	27.7%
Not Applicable	4	68,411	7.2%
Total	783	368,923	38.9%

Protected areas in Tanzania face numerous threats, particularly from poaching, bushmeat hunting, and forest degradation and deforestation due to illegal timber extraction and charcoal production. Poaching occurs in every protected area, but to varying extents. In some protected areas, poaching has severely threatened species. Recent efforts to militarize and professionalize anti-poaching activities in Tanzanian protected area may have contributed to a decline in illegal hunting,¹³⁶ and northern protected areas have not been affected by ivory poaching at the levels experienced in southern areas such as Selous and

¹³⁶ Kideghesho, Jafari R. "The Elephant Poaching Crisis in Tanzania: A Need to Reverse the Trend and the Way Forward." *Tropical Conservation Science* 9 (2016): 369-388.

Ruaha over the last several decades.¹³⁷ Protected forests face significant threat from overexploitation for charcoal and timber trades; much of Tanzania’s coastal forests, which are located in forest protected reserves managed by the central government or local authorities,¹³⁸ receive varying levels of monitoring and conservation enforcement, resulting in disparate degrees of protection.¹³⁹ For example, the Pugu Forest Reserve and Kazimzumbwi Forest Reserves have seen, respectively, a 25.3% and 31.3% reduction in closed forest cover between 1995-2010,¹⁴⁰ though some studies suggest rates of deforestation within forest reserves are modestly lower than outside of reserves, at 0.4% and 0.6% annually, respectively, from 2000-2007.¹⁴¹

More than 30,000 km² of wildlife protected areas (about 8% of the total wildlife protected areas), 4.15 million ha of forest (about 9% of the forest area) and 2,500 km² of marine waters have been set aside for management by local communities.¹⁴² The forest reserves created between 1995 and 2014 are an example of the shift away from nationally managed protected areas. The number of coastal forests protected in the last 20 years has increased by 22% (from 1,012,905 to 1,233,646 ha) with 141 new forest reserves coming under village management.¹⁴³

Still, opportunities remain for Tanzania to make progress toward both national targets and the Aichi Targets. Improved protection for identified Important Bird Areas (30% of which remain unprotected), coverage for areas surrounding marine protected areas, greater participation and involvement of communities in the governance of locally managed protected areas, as well as embracing a greater variety of protected area governance types, are among the primary areas identified for improvement.¹⁴⁴

TABLE 11. TOTAL MARINE AND TERRESTRIAL PROTECTION IN TANZANIA AND AICHI TARGETS

Category	Number	Area (km ²)	Total Area (% of EEZ / % OF TZ)	2020 Achi Target
Marine Areas	8	7,329	3.0%	10%
Terrestrial Areas	775	361,594	38.2%	17%
Total	783	368,923	41.2%	27%

3.3.2 MANAGEMENT OF TROPICAL FORESTS AND BIODIVERSITY OUTSIDE OF PROTECTED AREAS

There has recently been an increased focus on participatory resource management schemes (rather than protected areas management by the national government), with the aim of improving livelihood opportunities among communities for the management of their own natural resources.¹⁴⁵ GoT

¹³⁷ Thouless, C. et al. *African elephant status report 2016: an update from the African Elephant Database*. Gland, Switzerland, IUCN/SSC Africa Elephant Specialist Group: 2016.

¹³⁸ USAID/Tanzania Economic Growth Office. “Natural Resources Management Project, Project Appraisal Document.” March 24, 2014.

¹³⁹ Burgess, Neil D. et al. “Two decades of change in state, pressure and conservation responses in the coastal forest biodiversity hotspot of Tanzania.” *Oryx* 51, no. 1 (2017): 77-86.

¹⁴⁰ BirdLife International. *Biodiversity Status and Trends Report for the Eastern Arc Mountains and Coastal Forests of Kenya and Tanzania Region, 2012*. Nairobi: BirdLife International–Africa Partnership Secretariat, 2013.

¹⁴¹ Ibid.

¹⁴² The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

¹⁴³ Burgess, Neil D. et al. “Two decades of change in state, pressure and conservation responses in the coastal forest biodiversity hotspot of Tanzania.” *Oryx* 51, no. 1 (2017): 77-86.

¹⁴⁴ Governance of Protected and Conserved Areas in Tanzania. Workshop Report. IUCN. 21-22 March 2017.

¹⁴⁵ Ibid.

introduction and support of WMAs is perhaps most emblematic of this movement; as elaborated in Section 4.2.2, the introduction of WMAs sought to enable communities to better derive benefit from wildlife management and conservation on their land, thereby increasing incentive for and effectiveness of community-based conservation. However, in practice WMAs have failed to demonstrate the desired results;¹⁴⁶ of the 38 WMAs in existence, most are not formally registered, and only 4 are economically viable. The remainder suffer from poor design and implementation of benefit-sharing schemes, weakly defined, corrupt, and mismanaged hunting bloc management, and lack of business management skills among some WMA managers.¹⁴⁷

As noted in Section 3.3.1, interest remains strong in strengthening wildlife management outside of protected areas and embracing a broader set of community-based resource governance models to improve conservation. The recent establishment of the Tanzania Wildlife Authority (TAWA), which began operation in 2016, may assist by providing a designated entity to oversee community-based wildlife management, and overall responsibility for wildlife outside of protected areas. However, as a new entity with expansive land area under its mandate, human and financial resources are significant constraints on capacity. Other efforts, such as the USAID Promoting Tanzania's Environment, Conservation, and Tourism (PROTECT) project's support to the amendment and development of key regulations to strengthen governing of WMAs and connective corridors between protected areas further demonstrate GoT interest in and commitment to enhancing protection of wildlife beyond the borders of protected areas.

Such efforts are increasingly necessary, as undisturbed natural habitat outside protected areas is being converted rapidly for agriculture and degraded by encroachment and grazing of livestock, with agropastoralists from near Lake Victoria principal drivers of this change (see Section 6.1.1 for further discussion).¹⁴⁸ In some regions, wildlife corridors and forest connectivity between protected area complexes is increasingly threatened.¹⁴⁹ Regardless, the GoT has resisted calls to allow fencing along protected area boundaries (in contrast to Kenya and Southern Africa),¹⁵⁰ so wildlife roam relatively freely across management boundaries and co-occur in areas occupied by pastoralists and agropastoralists. These movements, thought to be critical to the long-term viability of wide-ranging mammal populations (particularly during severe droughts),¹⁵¹ undoubtedly increase human-wildlife conflict due to crop-raiding (e.g., by elephants), livestock depredation, and human injury or death. Furthermore, transmission of disease between wildlife and livestock is a major cause of production loss in livestock and has caused periodic declines in wildlife populations.¹⁵² In the face of increasing population growth (Section 6.2.2), weak and ineffective governance (Section 6.2.1) and domestic and international demand for timber and biodiversity products (Section 6.2.4), biodiversity and tropical forests outside of protected areas are heavily threatened by degradation and land use change (Section 6.1.1) and resource overexploitation (Section 6.1.2).

¹⁴⁶ Consultations with bilateral donor staff, implementing partner staff, and multiple large international NGOs.

¹⁴⁷ Consultation with bilateral donor implementing partner staff.

¹⁴⁸ Debonnet, Guy and Stephen Nindi. Technical Study on Land Use and Tenure Options and Status of Wildlife Corridors in Tanzania. Prepared under the PROTECT contract. April 2017.

¹⁴⁹ Ibid.

¹⁵⁰ Packer, Craig et al. "Conserving large carnivores: dollars and fence." *Ecology Letters* 16 (2013): 635-641.

¹⁵¹ Voeten, M.M. et al. "Possible causes of decreasing migratory ungulate populations in an East African savannah after restrictions in their seasonal movements." *African Journal of Ecology* 48 (2010): 169-179.

¹⁵² Cleveland, Sarah et al. "Serological and demographic evidence for domestic dogs as a source of canine distemper virus infection for Serengeti wildlife." *Veterinary Microbiology* 72 (2000): 217-227.

4. LEGAL FRAMEWORK & INSTITUTIONAL STRUCTURE AFFECTING CONSERVATION/ NATURAL RESOURCE MANAGEMENT

4.1 LEGAL AND POLICY SETTING

Tanzania’s legal and policy framework defines how the environment and natural resources should be managed. Tanzanian mainland and Zanzibar have separate legislation for management of these resources, as defined by the Constitution, however, commitments to Multilateral Environmental Agreements (MEAs) must be ratified by both the National Assembly of Tanzania Mainland and the House of Representatives of Zanzibar.

The Tanzania Mainland National Environmental Policy (NEP) of 1997 recognizes that development is sustainable if it takes place within nature’s tolerance limits, both in the short and long term.¹⁵³ The Tanzania Mainland NEP, along with the Environmental Management Act (EMA), establishes much of the institutional framework for oversight and mainstreaming of environmental considerations into decision-making, including mainstreaming environmental considerations into decision-making processes. The NEP for Zanzibar of 2014 protects and manages the country’s environmental assets, including biodiversity, such that the country can sustain development while retaining Zanzibar’s endowment of rich environmental resources for future generations.

Sections 4.1.1-4.1.3 provide a brief overview on the key policies and acts governing wildlife, forest, and marine and freshwater resource management. Annex E provides a fuller set of key NRM policies.

4.1.1 POLICIES AND ACTS GOVERNING WILDLIFE MANAGEMENT

Tanzania’s wildlife management is guided by the National Wildlife Policy of 1998, amended in 2007, which calls for the establishment, maintenance, and development of Protected Areas and a broader Protected Area network to enhance biodiversity, and emphasizes community-based management of wildlife by granting communities management rights over WMAs outside of protected areas. The National Wildlife Policy is buttressed by the National Parks Act of 2003, which prohibits hunting, injuring, or otherwise harming or disturbing animals and nests, and the Wildlife Conservation Act of 2009, which provides provisions for conservation, management, and sustainable utilization of wildlife. The Wildlife Conservation Act has been amended numerous times in the past 10 years, most recently in 2018, to further bolster governance around community-based management of wildlife resources, including WMAs, and to account for ongoing evolution in Tanzania’s centralized wildlife management governance (elaborated in Section 4.2, below, and Annex I). Additionally, in 2018, USAID worked with Ministry of Natural Resources and Tourism (MNRT) on development of new wildlife corridor regulations, which allow—through participatory engagement between protected area authorities, affected communities, and NGOs—for the formal designation of areas adjacent to protected areas as buffer zones, wildlife dispersal areas, wildlife migration routes, or connective wildlife corridors; while these designations do not take away land tenure from communities with customary rights, they do restrict the allowable activities on that land.

¹⁵³ “Chapter I National Environmental Policy Act - Policy and Responsibilities, Section 5.” National Environmental Policy, 1997.

4.1.2 POLICIES AND ACTS GOVERNING FORESTRY

The 1998 National Forest Policy seeks to increase the forest sector's contribution to sustainable development and guide sustainable use of forest resources. In line with this policy, the National Forest Act of 2002 supports establishment of participatory forest management in both state land (via Joint Forest Management) and village land (Collaborative Forest Management). As of May 2018, an updated National Forest Policy is under revision to address the following identified gaps: lack of clarity regarding tenure of privately owned and village forest reserves; inadequate measures to address landscape restoration; and inadequate emphasis on forest assessments, monitoring, and valuations. The policy also calls for non-timber forest products (e.g., gums, resins, bark, tannin, aromatics, latex, natural dyes) to be incorporated into forest inventories and resource assessment for forest management. Further, the policy will promote the commercialization of non-timber forest products through research, training, product development, and marketing.

4.1.3 POLICIES AND ACTS GOVERNING MARINE AND FRESHWATER RESOURCES

Tanzania's freshwater resources are governed by the 2002 National Water Policy and the 2009 Water Resources Management Act, both of which lay a foundation for sustainable development and management of the country's freshwater. There is no one specific policy pertaining to wetlands. Instead, wetlands are mentioned in a variety of laws, including those pertaining to agriculture, livestock, transportation, wildlife, fishery, water, land, forestry, investment, settlement, and mining. There is little protection for wetlands that do not fall within the areas of national parks, game reserves, or forest reserves. Several regulations and policies outline the country's approach to fisheries management—notably the 2003 National Fisheries Act, the 2009 Fisheries Regulations and the 2015 National Fisheries Policy, which together outline measures for sustainable fishing, aquaculture, and marine conservation. Marine parks and reserves are provided for in the 1994 Marine Parks and Reserves Act. The Act allows the Minister to declare any area within Tanzania's control a marine reserve. Marine protected areas in Zanzibar are designated under the Fisheries Act, 2010 and related Regulations.

With regards to wetlands management, while the 1997 National Environmental Policy specifically references the need to improve the management and conservation of wetlands to-date the Wildlife Policy has been the most successful in providing for and addressing the wetlands issues in relation to conservation and management for sustainable development. By contrast, the 1997 Land Policy, characterized wetlands as wastelands not considered useful for social economic development. Ultimately, even 18 years since ratification of the RAMSAR Convention, there remains no formal comprehensive wetland policy to support Tanzania's adherence.¹⁵⁴

4.2 INSTITUTIONAL SETTING

4.2.1 GOVERNMENT OF TANZANIA INSTITUTIONS

The URT government is responsible for matters relevant to both Tanzania Mainland and Zanzibar, which include defense and security, foreign affairs, currency, customs, immigration, taxes and finance. Zanzibar,

¹⁵⁴ Materu, Silvia Francis, et. al. "A critical review of policies and legislation protecting Tanzanian wetlands" Ecosystem Health and Sustainability. December 2018. Accessed February 24, 2019. <https://www.tandfonline.com/doi/full/10.1080/20964129.2018.1549510>

as a semi-autonomous entity, also has distinct ministries for non-union matters, which include environment, health, education, water, fisheries, and land. Mainland Tanzania and Zanzibar authorities generally collaborate closely on matters with transboundary implications (e.g., fisheries, health, education). The Environmental Management Act (EMA) establishes much of the institutional framework for oversight and mainstreaming of environmental considerations into decision-making. This includes the formal establishment of the Vice President’s Office (VPO) – Union Affairs and the Environment and the Division of Environment (DoE) in the VPO. The VPO works closely with the President’s Office Regional Administration and Local Government (PO-RALG), which includes Regional Administration Secretariats (RASs), and Local Governance Authorities (LGAs).

Beyond VPO and PO-RALG, numerous sectoral Ministries oversee technical areas pertinent to environmental management and conservation of biodiversity and tropical forestry, specifically. These include: Ministry of Agriculture; Ministry of Livestock and Fisheries; Ministry of Natural Resources and Tourism (MNRT); Ministry of Works, Transport, and Communication; Ministry of Finance and Planning; Ministry of Minerals; Ministry of Energy; Ministry of Land, Housing, and Human Settlement Development; Ministry of Industries, Trade, and Investment; and Ministry of Water and Irrigation. Annex I provides additional detail about VPO, PO-RALG, and these relevant sectoral ministries.

The environmental sector is often deprioritized during national fiscal budgeting, in part a result of limited financial resources. Protected areas authorities such as Tanzania National Parks Authority (TANAPA) and the Marine Parks Authority, as well as sector ministries like the MNRT and Ministry of Livestock and Fisheries, exercise options for generating revenue for biodiversity conservation through taxes, charges or fees on ecotourism; tropical timber exports or imports; airline travel; hunting concessions; harvesting contracts; and visits to protected areas, zoos, and botanical gardens. The country also hosts a number of funds that can support conservation. One such fund is the Tanzania Forest Fund (TFF), a public fund established by the Forest Act of 2002 and operationalized in July 2010, meant to provide long-term reliable and sustainable financial support to forest conservation and sustainable forest management. TFF provides small (~\$2,000), medium (~\$4,000) and large (~\$22,000) grants in the form of money, technical assistance, and equipment. Similarly, the Tanzania Wildlife Protection Fund, under MNRT-WD, is a national fund focused on the protection of wildlife and affords opportunity for earning revenue from biological resources through the sale of bio-prospecting rights to international companies in sectors such as pharmaceuticals, cosmetics, and agriculture.

4.2.2 LAND TENURE, PLANNING, AND LAND USE MANAGEMENT ARRANGEMENTS

The following laws and policies establish the framework for land tenure arrangements, access, and rights to land resources, as well as for community level tenure and land use management in Tanzania: the Local Government Act of 1982; National Land Policy of 1995¹⁵⁵; the Land Act and Village Land Act (No 4 and 5) of 1999, which establishes that all land belongs to the state; the Land Regulations of 2001; the Land Acquisition Act of 1997 and the Land Use Planning Act of 2007. Local government in Tanzania is comprised of villages, which are administered at a district level by Local Governance Authorities

¹⁵⁵ The National Land Policy 2016 draft is under review; the assessment team sought, but was unable to obtain, a copy of the draft policy.

(LGAs).¹⁵⁶ The Village Assembly (all adult members of a given village) have voting rights to elect village and district council members.¹⁵⁷ District Councilors, in turn, represent wards of two-to-four villages. Under the Local Government Act, the Village Council is formally recognized, with the ability to develop and implement its own by-laws subject to District Council approval.¹⁵⁸ The roles of these entities are further elaborated in Annex E.

Community level tenure systems are fairly new in Tanzania, evolving over the past 20 years. In 2013 the National Land Use Planning Commission (LUPC) prepared a guidance resource on land use planning, which provides a simplified, five-step process to develop District Land Use Framework Plans, and a six-step process to prepare village land use plans (VLUPs). The six-step VLUP process is intended to support fulfillment of the requirements of the 2007 Land Use Planning Act (steps 1-4) and enhance derivation of benefits from that land through improved implementation of the plans (step 5), and enhanced sectoral management within the plan (e.g., forestry, grazing, agriculture; step 6).

Increasingly, community-based participatory resource management is being promoted as the approach to enhance conservation efforts.¹⁵⁹ Given the challenges with WMAs described in Section 3.3.2, efforts are being made to explore and test new models that would offer more community tenure benefits. For example, the Ujamaa Community Resource Team (UCRT), with support from USAID, has been supporting the application of communal Certificates of Customary Rights of Occupancy (CCROs), VLUPs, and easements in the form of grazing land management in common pool resources tools.¹⁶⁰ As noted in USAID's Whole of Project Evaluation (WOPE), informal mechanisms such as identification cards and entry gates have shown great success in regulating access to and use of grazing areas in northern Tanzania.¹⁶¹

Participatory Forest Management (PFM) was introduced into Tanzanian law with the passing of the Forest Act of 2002, and provides a legal basis for communities, groups or individuals across mainland Tanzania to own, manage or co-manage forests under a wide range of conditions.¹⁶² The law recognizes two different types of PFM: Community Based Forest Management (CBFM) and Joint Forest Management (JFM). CBFM enables local communities to declare and gazette village land or private forest reserves.¹⁶³ In Joint Forestry Management (JFM), communities sign joint forest management agreements with government and other forest owners.¹⁶⁴ JFM arrangements occur on land that is owned and

¹⁵⁶ Williams, Andrew. Community Natural Resources Management in Tanzania. On Behalf of the Africa Biodiversity Collaborative Group and USAID. 1 December 2017.

¹⁵⁷ Ibid.

¹⁵⁸ Ibid.

¹⁵⁹ Ibid.

¹⁶⁰ Consultation with local NGO, November 2017.

¹⁶¹ USAID and ECODIT LLC. "Tanzania Whole-of-Project Evaluation (WOPE) of the Natural Resources Management Project: Final Evaluation Report." 22 November 2017.

¹⁶² Forestry and Beekeeping Division: Ministry of Natural Resources and Tourism. *Participatory Forest Management in Tanzania: Facts and Figures*. July 2006.

¹⁶³ Ibid.

¹⁶⁴ Tanzania Forest Conservation Group. *Joint Forest Management: Lessons Learned from the Adding Value to the Arc Project: Forests and Livelihoods in the South Nguru Mountains*.

managed by either central or local government and involve sharing the costs and benefits between communities and government in an agreed upon manner.¹⁶⁵

Ultimately, community level tenure systems—WMAs, Village Land Forest Reserves (VLFRs), Beach Management Units (BMUs), Water User Associations (WUAs), CCROs and easements — face numerous challenges that limit their potential to transform rural communities, including governance constraints, inadequate human and financial capacities, insufficient coordination with key decision makers or poorly designed arrangements for benefit-sharing. In some models in the country, community forestry has been successful, with communities deriving growing levels of benefits from sustainable forest management (e.g., via VLFRs). However, in the longer-term, community forestry faces significant challenges from degradation and conversion to agriculture (the threat of agricultural expansion is further elaborated in Section 6.1.1).¹⁶⁶

TABLE 12. COMMUNITY-BASED NATURAL RESOURCE MANAGEMENT (CBNRM) AND LAND TENURE IN TANZANIA	
CBNRM OR LAND TENURE STRUCTURE	DESCRIPTION
Wildlife Management Areas (WMAs)	Established via the formation of a community-based organization to independently operate and manage the WMA, also requiring the development of VLUPs to establish boundaries. WMAs seek to enable communities living adjacent to protected areas or wildlife corridors to benefit from conservation and management of the wildlife resources through issuance of user and tenure rights.
Beach Management Units (BMUs)	Provide fishing communities with access and rights to fisheries resources and to manage landing sites and regulate fishing seasons. BMUs collaborate with national and district authorities, and village governments, to help conserve and manage the use of marine coastal natural resources. In collaboration with village councils, BMUs also develop by-laws and engage in monitoring and surveillance to reduce the incidence of illegal fishing and environmental degradation within their managed area. ¹⁶⁷
Village Land Forest Reserves (VLFRs)	VLFRs are formally designated forest areas at the village level; they afford communities a way to manage their forest resources and derive benefits. Examples of how VLFRs can benefit local communities include cooperatively managed timber harvest, sustainable charcoal production, and climate mitigation payments under REDD+. Experiences in the Kilwa district in Lindi show that significant revenues can be earned by communities through sustainable harvest of high-value timber species, certified using international standards. ¹⁶⁸
Water Users Associations (WUAs)	Water resources management institutions that assist with water allocation, permits and fee collection; resource conservation; local water planning and management; and conflict management related to the joint use of a water resource. ¹⁶⁹

¹⁶⁵ Forestry and Beekeeping Division: Ministry of Natural Resources and Tourism. Participatory Forest Management in Tanzania: Facts and Figures. July 2006.

¹⁶⁶ Williams, Andrew. Community Natural Resources Management in Tanzania. On Behalf of the Africa Biodiversity Collaborative Group and USAID. 1 December 2017.

¹⁶⁷ Gonza, Hosea. *An Overview of the Fisheries Sub Sector: Achievements, Challenges, and Priorities for Financial Year 2014/15*. United Republic of Tanzania: The Ministry of Livestock and Fisheries Development. 16 October 2014.

¹⁶⁸ Burgess, N. Et al. (2016). Two Decades of Change in State, Pressure and Conservation Responses in the Coastal Forests Biodiversity Hotspot of Tanzania.

¹⁶⁹ The United Republic of Tanzania, Ministry of Water. Water Sector Status Report. 2012.

TABLE 12. COMMUNITY-BASED NATURAL RESOURCE MANAGEMENT (CBNRM) AND LAND TENURE IN TANZANIA

Certificates of Customary Rights of Occupancy (CCROs)

The CCROs are based on customary rights of occupancy that is provided under the Village Land Act No. 5 of 1999 which guarantees rights of occupancy to an individual or communities to access and use land resources based on their customary and historical use of the same. The CCROs establish legal tenure rights and can thus be used to settle land conflicts, incentivize implementation of land use plans, and as collateral to access finance.

4.2.3 THE ROLE OF NGOS IN BIODIVERSITY AND TROPICAL FORESTRY CONSERVATION AND MANAGEMENT

For nearly three decades, NGOs have played a central role in shaping, enabling, and supporting mechanisms in Tanzania for sustainably managing natural resources. NGOs provide technical and financial support to the government in the creation and management of protected areas, advocate for policy changes, support local communities to gain (or reclaim) rights over natural resources, and, in some cases, challenge the status quo on governmental management or control of resources. NGOs serve as critical agents of social and environmental service delivery, as collaborators with the private sector, and as a conduit of funds to other organizations.¹⁷⁰ NGOs have supported institutional reforms that have led the decentralization of power to local governments and local communities in ownership, management, and accrual of fisheries and wildlife resources.

There are a number of large international and local NGOs that operate across the country on natural resource issues. Annex F includes a table of these key NGOs, as well as one describing new NGO programs anticipated to begin in 2019.

4.2.4 DONOR COMMUNITY

The aid community in Tanzania is comprised of both bilateral and multilateral donors, including the African Development Bank (AfDB), Canada, Denmark, the European Union, Finland, Germany, Holland, Ireland, Japan, Norway, Sweden, Switzerland, UN Agencies, United Kingdom, United States, and the World Bank Group (WBG).¹⁷¹ Tanzania also receives support from international agencies such as the Global Environment Facility (GEF) and the Green Climate Fund (GCF). In 2004, donors in Tanzania established the Development Partners Group (DPG) to support coordination of funding they provide and to strengthen their relationship with the government. The DPG's membership is open and currently made of 17 bilateral and 5 multilateral agencies, including UNDP which operates as the DPG permanent secretary. Conservation and environmental management activities are coordinated by the DPG on

¹⁷⁰ Maliasili Initiatives. *Strengthening African Civil Society Organizations for Improved Natural Resource Governance & Conservation*. July 2015.

¹⁷¹ In 2016 the Millenium Challenge Corporation (MCC) of the United States suspended its partnership with the GoT, citing the nullification of election results in Zanzibar and a failure to ensure freedom of expression via the Cybercrimes Act. <https://www.mcc.gov/news-and-events/release/stmt-032816-tanzania-partnership-suspended>.

Environment, Natural Resources and Climate Change (DPG-E), likewise established in 2004.^{172,173} Annex F details the current DPG-E funding landscape and geographical spread.

Donor support presently receives mixed reception from GoT at national and local levels. While there is generally appreciation at local level, especially with regards to projects implemented by locally-based NGOs,¹⁷⁴ the reception at the ministerial level and at other government agencies is mixed. There is competition for access to funding between the government and NGOs,¹⁷⁵ and a push by GoT for donors to fund more “hard” infrastructure projects (e.g., ports, railway, energy) rather than initiatives targeted at capacity building.¹⁷⁶

¹⁷² The current members include Embassies of Belgium, Canada, Denmark, Finland, France, Germany (incl. KfW and GIZ), Norway, Sweden, Switzerland, the United States; and Representatives from the African Development Bank, the UK Department for International Development, European Union, the Food and Agriculture Organization of the UN, International Fund for Agricultural Development, UNDP, UNEP, UNESCO, UN Office on Drugs and Crime, USAID, and World Bank. The group is co-chaired by the World Bank and UNDP.

¹⁷³ The objectives of the DPG-E are to: 1) conduct a structured policy dialogue with the GoT and other stakeholders in related policy areas, 2) ensure coordination/harmonization of DPs projects and programs, and 3) promote joint advocacy and communication (versus GoT, DPG main group and other stakeholders).

¹⁷⁴ Consultation with GoT representatives, November 2018

¹⁷⁵ Consultation with GoT representatives, November 2018.

¹⁷⁶ Consultation with bilateral donor staff, November 2018.

5. VALUATION AND ECONOMIC POTENTIAL

5.1 VALUE OF BIODIVERSITY

Ecosystem services are those values provided to society by the function and processes that take place within nature. Ecosystem services can be classified into three categories: the provisioning of directly utilized resources (environmental goods); non-material cultural services; and regulating services, which provide critical benefits through reliable ecosystem processes. Supporting services underlie the three former categories through extremely long time horizons and broad scale processes, such as soil creation and nutrient cycling (see Figure 2).

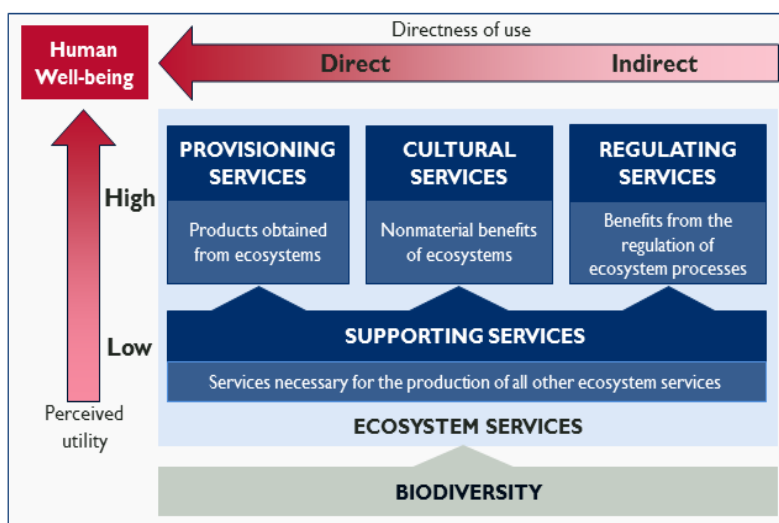


Figure 2 Ecosystem Services

Biodiversity is critical to the provision and long-term maintenance of these ecosystem services.^{177,178} High-biodiversity areas provide over half of the ecosystem services on which the global poor depend, and conservation of those areas has an outsized effect: conserving only a quarter of the world's high-biodiversity areas could provide 56-57% of the total potential ecosystem goods and service benefits.¹⁷⁹

The Tanzanian government has called the country's biodiversity "the common heritage for present and future generations," but cautions that the national trends in biodiversity "depict a situation of concern."¹⁸⁰ Three quarters of the national GDP is tied to activities that depend on biodiversity, and these activities support the livelihoods of the majority of Tanzanians.¹⁸¹ Loss of biodiversity and the resulting ecosystem services that biodiversity provides is estimated to shrink Tanzania's GDP by at least 5% annually.¹⁸²

5.2 ECOSYSTEM GOODS AND SERVICES

Each of the three types of ecosystem services provide benefits the economy of Tanzania. Provisioning services include the products directly obtained from ecosystems, cultural services speak to the

¹⁷⁷ Balvanera, Patricia et al. "Chapter 4: The links between Biodiversity and Ecosystem Services." *Routledge Handbook of Ecosystem Services*. 1st Ed., pp 45-49. January 2016.

¹⁷⁸ Harrison, Paula et al. "Linkages between biodiversity attributes and ecosystem services: A systematic review." *Ecosystem Services* 9 (September 2014): 191-203.

¹⁷⁹ Turner, Will et al., "Global Biodiversity Conservation and the Alleviation of Poverty," *BioScience* 62, no. 1 (2012): 85-92. doi:10.1525/bio.2012.62.1.13

¹⁸⁰ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

¹⁸¹ Ibid.

¹⁸² Ibid.

nonmaterial benefits of ecosystems, and regulating services refer to the benefits provided by the regulation of ecosystem processes.

5.2.1 PROVISIONING SERVICES

FOREST MATERIALS

Forests are important sources of ecosystem goods and services across Tanzania. The forestry sector accounted for \$751 million in 2012, making it larger in value than the country's entire export crops sector.¹⁸³ The forest sector's contribution to GDP (4.0%) is greater than that of mining and quarrying (3.3% combined).¹⁸⁴ Forest products also provide energy sources for nearly all households: 96% of households use firewood/charcoal as their exclusive energy source.¹⁸⁵ The growing urban population is driving demand for charcoal (current value of \$600 million/annually),¹⁸⁶ making charcoal production an increasingly major driver of deforestation in parts of the country.¹⁸⁷ Forest products are also used for construction materials, medicinal herbs, and food materials (such as wild fruits). These products account for approximately 40% of total household consumption in some communities adjacent to the montane forests of the Eastern Arc Mountains, the value of which is estimated to be \$150 million annually to the surrounding communities.¹⁸⁸

Mangrove forests are the dominant coastal ecosystem of Tanzania. Mangrove forests provide construction materials for buildings, fish traps, and traditional watercraft such as the dhow.¹⁸⁹ Materials from mangrove forests are also used in the commercial production of salt and lime and play an important role in fish processing. Additionally, mangrove forests in the Ruvu and Wami Deltas are an important source of charcoal.¹⁹⁰ Approximately 150,000 people earn their livelihoods through the ecosystem goods and services provided by these forests.¹⁹¹

FISHERIES

Over four million (35%) of Tanzania's rural poor make their livelihood in the fisheries sector.^{192,193} The fisheries in Lake Victoria, which account for approximately 85% of Tanzania's national fisheries production, are worth approximately \$400 million.¹⁹⁴ Besides its contribution to the country's GDP (2.2% in 2013),¹⁹⁵ the fisheries sector also provides a crucial source of nutrition to the population. Fish

¹⁸³ Green Advocates International, Inc. "Scoping Study of the Forestry Sector for the Purpose of Including the Industry in Revenue Disclosure through the Tanzania Extractive Industries Transparency Initiative." TEITI. December 2014.

¹⁸⁴ Ibid.

¹⁸⁵ Ministry of Natural Resources and Tourism, URT. *National Forest Resources Monitoring and Assessment of Tanzania Mainland (NAFORMA)*. Dar es Salaam: URT, May 2015.

¹⁸⁶ Green Advocates International, Inc. "Scoping Study of the Forestry Sector for the Purpose of Including the Industry in Revenue Disclosure through the Tanzania Extractive Industries Transparency Initiative." TEITI. December 2014.

¹⁸⁷ Lokina, Razack, Elizabeth Robinson, and Jesper Stage. "Economics of forest products in Tanzania." *Working Papers of the Finnish Forest Research Institute* 98 (2018): 87–92.

¹⁸⁸ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

¹⁸⁹ Ibid.

¹⁹⁰ Ibid.

¹⁹¹ Ibid.

¹⁹² USAID. *The Importance of Wild Fisheries for Local Food Security: Tanzania*. 2018.

¹⁹³ Ministry of Livestock and Fisheries Development, URT. *Fisheries Sector Development Programme*. Dar es Salaam: URT, December 2010.

¹⁹⁴ Anderson, Jim. *Options to Reduce IUU Fishing in Kenya, Tanzania, Uganda and Zanzibar*. EU, August 2011.

¹⁹⁵ Ministry of Agriculture, Livestock and Fisheries, URT. Dar es Salaam: URT, September 2016.

provide approximately 22% of Tanzanians' animal protein consumption.¹⁹⁶ The link between adequate nutrition and economic growth is well-established: UNICEF estimates that vitamin and mineral deficiencies may cause Tanzania to lose \$20 billion in GDP by 2025 if nutrition does not improve.¹⁹⁷ In contrast, improving nutritional status could lead to \$4.7 billion in gains by 2025.¹⁹⁸

The Tanzanian government has recognized the potential of a sustainable fishing industry to alleviate nutritional deficits and boost the economy, and has initiated a Fisheries Sector Development Program, the goals of which include increasing the per annum growth of the fisheries sector from 4.5% to at least 7% and increasing the contribution of the sector to GDP to 5% per annum.¹⁹⁹ Care must be taken, however, to not overexploit already stressed marine fisheries as the sector expands.²⁰⁰

Marine resources are a critical source of both cash income and subsistence for coastal Tanzanians, and small scale fisheries represent roughly 95% of the total annual marine catch.²⁰¹ About 3% of the catch is brought in by industrial fishing and the remaining 2% is discarded.²⁰² Exported marine fisheries products include, in order of economic importance, octopus, prawns, lobster, sea cucumbers, shark fins (finning of sharks without using the entire carcass is illegal per the Deep Sea Fishing Act), and curio shell,²⁰³ though sea cucumbers capture and trade has been prohibited in recent years (revised Fisheries Acts and Regulations for the Mainland and Zanzibar are underway).

The NBSAP reports that coral reef systems support roughly 90% of artisanal marine fisheries due to their high biological diversity.²⁰⁴ That is likely a significant over-estimate given the presence of important artisanal prawn, small pelagic (sardine and anchovy), and larger pelagic (tuna and tuna-like) fisheries which are not directly reef-associated. Reef fisheries are likely closer to 50-60% of artisanal landings. Estimates put annual sustainable yield at about 13.6 metric tons of fish per km² of coralline areas in less than 30 m of water.²⁰⁵

Coastal communities, particularly in Zanzibar, culture seaweed primarily as an export commodity for carrageenan production, but also to a small extent for consumption. The activity has a value of approximately \$2 million. Production fluctuates in response to global demand and market price and is also vulnerable to environmental factors, in particular rising and high sea temperature events which contribute to disease outbreaks and lower growth rates.

¹⁹⁶ USAID. The Importance of Wild Fisheries for Local Food Security: Tanzania. 2018

¹⁹⁷ "Tanzania" UNICEF. Accessed on December 28, 2018. <https://www.unicef.org/tanzania/nutrition.html>.

¹⁹⁸ Ibid.

¹⁹⁹ Ministry of Livestock and Fisheries Development, URT. *Fisheries Sector Development Programme*. Dar es Salaam: URT, December 2010.

²⁰⁰ Ministry of Agriculture, Livestock and Fisheries, URT. Dar es Salaam. September 2016.

²⁰¹ Bultel, Elise et al. "An update of the reconstructed marine fisheries catches of Tanzania with taxonomic breakdown." *Fisheries catch reconstructions in the Western Indian Ocean, 1950–2010*. Frederic Le Manach and D. Pauly, eds. Pp. 151–161. February 2015. Fisheries Centre Research Reports 23(2). Fisheries Centre, University of British Columbia

²⁰² Ibid.

²⁰³ Ibid.

²⁰⁴ The Vice President's Office, URT. *National Biodiversity Strategy and Action Plan 2015-2020*. Dar es Salaam, URT, October 2015.

²⁰⁵ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

DRINKING WATER

Two catchment forest reserves—in the Uluguru Mountains and in the Morogoro and Pwani regions—are the main sources of water for Dar es Salaam.²⁰⁶ The Ruvu River, whose watershed is the Uluguru Mountains, provides drinking water to 10-25% of Tanzanians.²⁰⁷ Though the economic value of the provision of water has not been comprehensively estimated, a study conducted through the USAID-funded Planning for Resilience in East Africa through Policy, Adaptation, Research, and Economic Development (PREPARED) Project estimates the provisioning services of the Mara Wetlands to be \$670,000 from water for livestock and \$560,000 for water for domestic use, annually.²⁰⁸

5.2.2 CULTURAL SERVICES

NATURE-BASED TOURISM

Tanzania's natural diversity, in the form of the big game of the savanna-grasslands, is the prime driver of its tourism industry. Tourism directly contributes to 3.8% of Tanzania's GDP (2017) and is forecast to rise at a rate of 7.2% annually to reach 4.3% of the GDP in 2028.²⁰⁹ Total contributions²¹⁰ to the country's GDP are greater: 9.0% in 2017 and estimated to grow to 10.1% of GDP in 2028, making the Tanzanian market the second fastest growing tourism and travel sector in the world (as total contribution to GDP).²¹¹

In 2012-2013, TANAPA generated \$65.6 million from tourist visits to Tanzania's national parks and the Ngorongoro Conservation Area Authority earned \$29.4 million, all from non-consumptive uses. The Tanzanian government annually earns \$73 million in revenue from trophy hunting and over \$233,000 from live trade animals.²¹² Between 2006 and 2012, \$1.1 million from hunting revenues were disbursed to 72 villages that have contributed their land to WMAs. Between 2002 and 2012, \$4.3 million went to 47 District Councils bordering hunting blocks (25% of total hunting revenues),²¹³ though there have been concerns about how tourism revenues are disbursed between the central and district governments.²¹⁴ It is estimated that the average total tourism benefits lost due to elephant poaching are \$540,000 per year (between 4-11% of the total receipts from all visitors to Tanzania's protected areas).²¹⁵

OTHER CULTURAL SERVICES

Cultural services provided by ecosystems in Tanzania besides nature-based tourism are important, though their economic value has not been well studied. Such services include spiritual and historic uses

²⁰⁶ USAID. *Lake Victoria Basin Ecosystem Profile Assessment Report*. Burlington, Vermont. USAID, 2018.

²⁰⁷ Natural Capital Project. *Valuing the Arc: Ecosystem Services in Tanzania*. March 2017.

²⁰⁸ East African Community: Lake Victoria Basin Commission. *Valuing Ecosystem Services of Mara Wetlands, Tanzania*. February 2018.

²⁰⁹ World Travel & Tourism Council. *Travel & Tourism: Economic Impact 2018, Tanzania*. London: WTTC, 2018.

²¹⁰ Total contribution is defined as direct contributions, capital investment, government spending in support of tourism activity, supply chain effects, and spending of those employed directly or indirectly by travel and tourism. Source: World Travel & Tourism Council. *Travel & Tourism: Economic Impact 2018, Tanzania*. London: WTTC, 2018.

²¹¹ Ibid.

²¹² The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

²¹³ Ibid.

²¹⁴ Nelson, F. 2012. "Blessing or curse? The political economy of tourism development in Tanzania." *Journal of Sustainable Tourism* 20 (2012): 359-375.

²¹⁵ Naidoo, Robin, Brendan Fisher, Andrea Manica and Andrew Balmford. "Estimating economic losses to tourism in Africa from the illegal killing of elephants." *Nature Communications* 7, no. 13379 (November 2016).

of plants, animals, and natural ecosystems, as well as the benefits that can be achieved through nature-based science and education.

5.2.3 REGULATING SERVICES

FOREST AND WATERSHED SERVICES

Forest ecosystems provide the important regulating services of water resources and catchments, water filtration, soil protection, and local climate regulation. No evaluation of the total value of water regulation to Tanzania has yet been completed. However, an assessment of the Tabora Region (8% of Tanzania's landmass) found the value of water regulation as an ecosystem service of that area alone to be \$909 million annually.²¹⁶ Another study found the water, hydropower, and non-timber forest products of the Eastern Arc Mountain to be valued at over \$175 million annually.²¹⁷

Mangrove forests additionally serve as nursery areas for fish and prawns, habitat for birds, coastal protection, and pollution abatement through their absorption of heavy metals.²¹⁸ The monetary value of these regulating services has yet to be quantified.

Tanzania's ecosystems also provide the important and varied regulating services of pollination, flood prevention, erosion control, and control of pest and pathogens. The value of these services to Tanzania's economy has not been quantified.

CARBON SEQUESTRATION AND STORAGE

Significant amounts of carbon are stored in Tanzania's lands. Above- and below-ground biomass is estimated to contain 1.06 billion tons of carbon and dead wood is estimated to contain 63 million tons.²¹⁹ Tanzania's woodlands store the most carbon, with nearly three quarters (73.5%) of total carbon stored in that land type (the analysis did not include soil organic carbon or carbon contained in litter).²²⁰ Few estimates have been done to quantify the monetary value of this carbon stock. However, a valuation of the Tabora Region found the carbon sequestered to have a value of \$12.8 billion.²²¹

²¹⁶ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

²¹⁷ Ibid.

²¹⁸ Ibid.

²¹⁹ Ministry of Natural Resources and Tourism, URT. *National Forest Resources Monitoring and Assessment of Tanzania Mainland (NAFORMA)*. Dar es Salaam: URT, May 2015.

²²⁰ Ibid.

²²¹ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

6. THREATS TO BIODIVERSITY AND TROPICAL FORESTRY IN TANZANIA

6.1 DIRECT THREATS TO BIODIVERSITY IN TANZANIA

Per the Best Practices Guide, a threat is “a human action or unsustainable use that immediately degrades biodiversity (e.g., unsustainable logging, overfishing or mineral extraction).” The following is a discussion of direct threats to biodiversity and forestry in Tanzania.

6.1.1 DEFORESTATION AND HABITAT DEGRADATION, FRAGMENTATION, AND LOSS

AGRICULTURAL EXPANSION AND POOR AGRICULTURAL MANAGEMENT PRACTICES

Land degradation, particularly the deterioration of soils due to harmful agricultural practices such as bush burning, poor irrigation systems, short fallow periods, and use of marginal lands for farming and grazing, causes serious challenges within agricultural environments and stresses conservation initiatives.²²² For instance, farming along the river valleys, popularly known as *vinyungu*, is commonly practiced during the dry season, exposing the river valley to soil erosion during the rainy season. This practice is common in most parts of the country, especially in the highland areas of the Kilimanjaro (Pare Mountains), Tanga (Usambara Mountains), and Morogoro (Uluguru Mountains) Regions.

The expansion of agriculture and grazing has contributed to fragmentation and loss of natural habitats and consequent biodiversity loss in Tanzania.²²³ Some species have already declined rapidly, while others will likely decline in coming years due to impacts caused by the loss of connectivity and access to refuge as climate change causes shifts in habitat. For example, in coastal areas, agricultural expansion (particularly for rice cultivation, which occurs mainly in the upper, inland areas where freshwater flooding is prevalent) contributed to a loss of 18% of the mangrove forest between 1980 and 2005.²²⁴ Clearing for agriculture (including commercial agriculture such as cashew plantations) has threatened Tanzania’s coastal forests.²²⁵

Further, the combination of poor agricultural management practices and expansion of agricultural practices are degrading inland ecosystems and surface water resources, such as rivers, lakes, dams, and wetlands, through overabstraction, sedimentation, and eutrophication.

²²² Ibid.

²²³ Newmark, William D. “Insularization of Tanzanian parks and the local extinction of large mammals.” *Conservation Biology* 10, no. 6 (2016): 1549-1556.

²²⁴ Francis, Julius and Ian Bryceson, “Chapter 4: Tanzanian Coastal and Marine Resources: Some Examples Illustrating Questions of Sustainable Use.” *Lessons Learned: Case Studies in Sustainable Use*. Dar es Salaam: 2000.

²²⁵ Mugo, Kimunya, ed. *The Eastern Africa coastal Forests Ecoregion. Strategic Framework for Conservation 2005-2025*. Nairobi: WWF, August 2006.

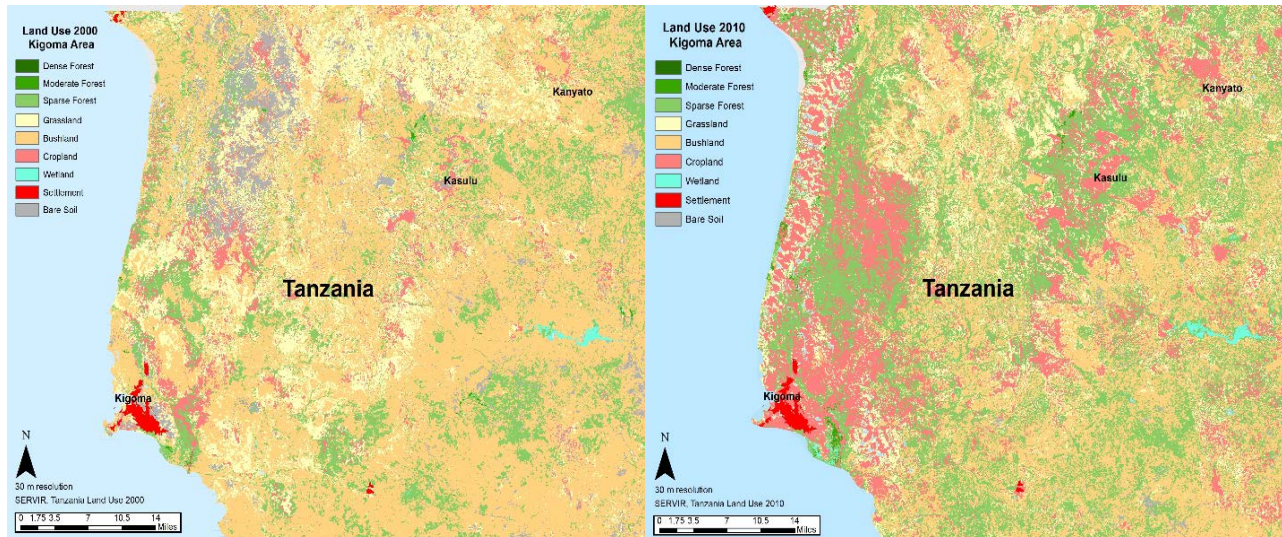


Figure 3 Land Use Change + Agricultural Expansion in Western Tanzania 2000-2010

LAND USE CHANGE AS A RESULT OF INTERNAL MIGRATION, EXPANSION OF EXISTING SETTLEMENTS AND ESTABLISHMENT OF NEW SETTLEMENTS

One of the major drivers of land use change has been internal migration spurred by population growth. Findings from both the assessment team’s consultations as well as recent studies suggest that internal migration by agropastoralists relocating from near Lake Victoria to western and southern Tanzania is resulting in significant land use change (the land use patterns in Figure 3 above and Figure 4 below represent changes influenced by this internal movement).^{226,227} As population growth continues (see Section 6.2.2 for additional discussion on population growth as a driver), these trends are expected to persist, particularly in urban areas such as Mwanza where many agropastoralists originate.

In line with the discussion on agricultural expansion, the majority of agropastoralists practice cash cropping—generally rice and maize—while simultaneously seeking grazing land for, at times, herds of cattle that numbers in the thousands.^{228,229} Over time, land clearing induced by the agropastoralist cash cropping combined with livestock grazing (the threat presented by livestock encroachment is further elaborated in Section 6.1.2) leads to increasingly degraded landscapes, particularly forest, wetlands, and rivers.²³⁰ This increased degradation is consistent with analyses of land cover trends, which suggest

²²⁶ Numerous stakeholders noted the significant challenge presented by internal migration of agropastoralists including Kigoma RAS, Mbeya RAS, WCS, JGI, FZS, PROTECT.

²²⁷ Jonathan Salerno, Jacob Mwalyoyo, Tim Caro, Emily Fitzherbert, Monique Borgerhoff Mulder; The Consequences of Internal Migration in Sub-Saharan Africa: A Case Study, *BioScience*, Volume 67, Issue 7, 1 July 2017, Pages 664–671, <https://doi.org/10.1093/biosci/bix041>.

²²⁸ *Ibid.*

²²⁹ Many of Tanzania’s pastoralists and agropastoralists culturally value large quantity of cattle in their herds more than healthier, or higher quality, cattle at lower numbers. This cultural practice is an important dimension of the broader threat posed by the internal migration of agropastoralists.

²³⁰ Jonathan Salerno, Jacob Mwalyoyo, Tim Caro, Emily Fitzherbert, Monique Borgerhoff Mulder; The Consequences of Internal Migration in Sub-Saharan Africa: A Case Study, *BioScience*, Volume 67, Issue 7, 1 July 2017, Pages 664–671, <https://doi.org/10.1093/biosci/bix041>.

decreases in forest and woodland areas and increases in other forms of land use between 1990 and 2010.²³¹

Internal migration and changes in land use fragment habitat for ecologically important species; as Figure 4 below demonstrates, in the southern highlands, settlements are saturating open land outside of protected areas—particularly along tarmac roads—cutting off increasingly scarce corridors for elephant movements. In western Tanzania, internal migration often leads to individuals settling adjacent to established villages, expanding the footprint of settled areas and often leading to encroachment into village lands or nearby forest areas.²³² In many parts of the country, this migration leads to settlement near protected areas and increasing incidences of human-wildlife conflict, particularly in the southern highlands, central Tanzania, and southern Tanzania.²³³ The risk of such migration is further exacerbated by recent orders against the eviction of pastoralists and agro-pastoralists in or near protected areas.²³⁴ This order has the potential to increase the frequency with which formal or informal settlements in

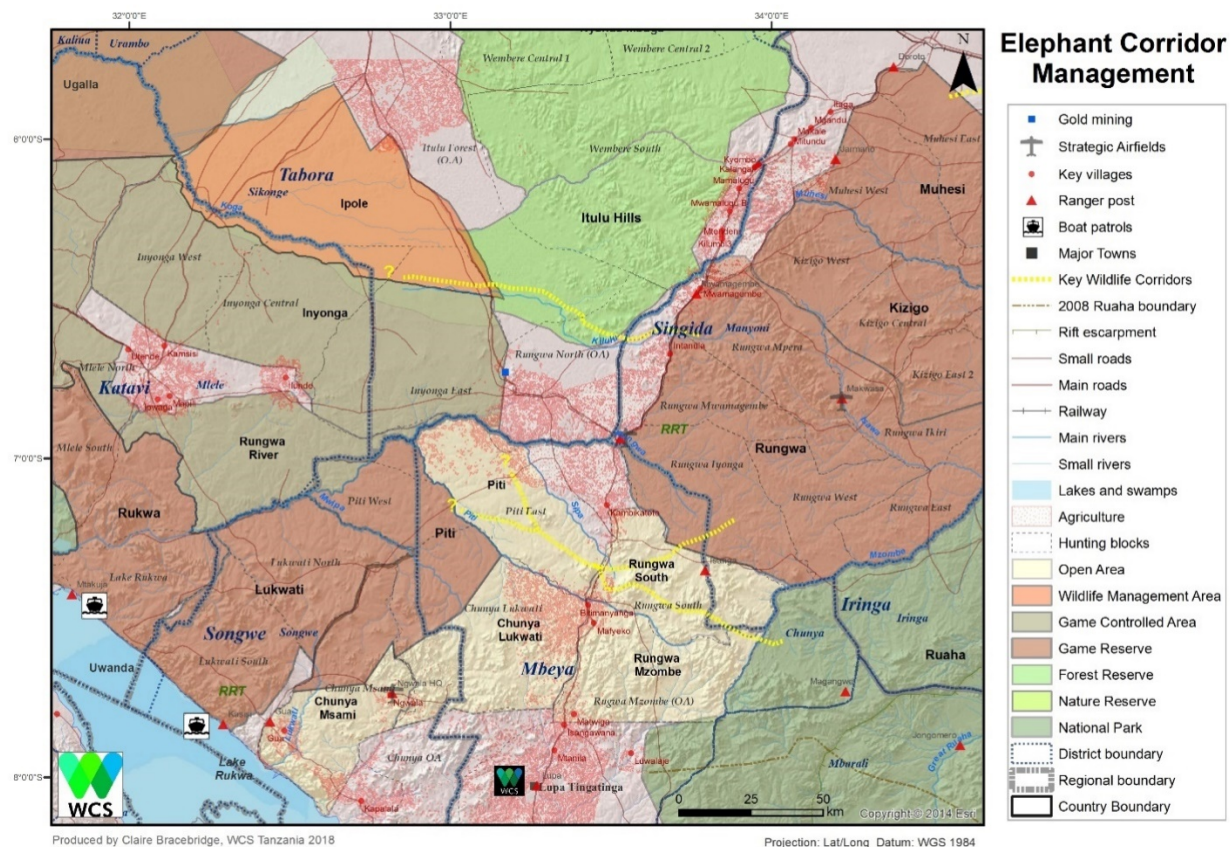


Figure 4 Land Use Conflicts with Elephant migration in Tanzania's southern highlands

SOURCE: Wildlife Conservation Society, 2018, shared by Aaron Nicholas

²³¹ The United Republic of Tanzania. Fifth National Report on the Implementation of the Convention on Biological Diversity. Dar es Salaam: URT, March 2015.

²³² Jonathan Salerno, Jacob Mwalyoyo, Tim Caro, Emily Fitzherbert, Monique Bergerhoff Mulder; The Consequences of Internal Migration in Sub-Saharan Africa: A Case Study, *BioScience*, Volume 67, Issue 7, 1 July 2017, Pages 664–671,

²³³ *Ibid.*

²³⁴ "Tanzania: President Magufuli's Oder Against Evictions Hailed." *The Citizen*. 24 January 2019. Accessed on February 22 2019. <https://allafrica.com/stories/201901240133.html>.

sensitive areas are established and embolden those looking for new, fertile land for their cattle to venture further into protected lands.

CHARCOAL AND WOOD FUEL PRODUCTION

Wood and charcoal are the main sources of energy for households in rural and urban areas in Tanzania and account for approximately 85% of total energy consumption. Wood fuel and charcoal production is one of the main drivers of deforestation in Tanzania. The use of wood fuel is more pronounced in rural settings (92.0%) than it is in urban areas (28.4%). The demand for charcoal is expected to double to 2.5 million tons by 2030 from a 2012 baseline given growing populations in cities, where most consumption takes place because of limited affordable energy alternatives, particularly for cooking and heating.²³⁵

Unsustainable charcoal production for domestic and industrial use is depreciating the country's natural stock of forest ecosystem assets, with existing demand (approximately 62.3 cubic meters or m³) exceeding available sustainable harvest (42.8 m³).^{236,237} An estimated 13% of the country's Miombo woodlands have been lost since the 1990s, with the rate of nationwide deforestation approximately 400,000 ha of woodland and tropical forests annually.^{238,239} Charcoal from natural forests (i.e., not from exotic species) is produced illegally in an unmanaged and unsustainable manner across many parts of the country.²⁴⁰ Unsustainable, illegal charcoal production leads to loss of woody biomass, deforestation and degradation of forests, and loss of habitat for biodiversity. According to stakeholder interviews, charcoal production affects almost all forest types in Tanzania: montane forests (e.g., Eastern Arc and Albertine Rift), miombo woodlands (e.g., Kigoma, Selous, Ruaha), mangrove (e.g., Tanga and Rufiji), and dryland forests (e.g., Mtwara and Lindi).

TIMBER EXTRACTION

Non-regulated timber harvest is a cause of widespread deforestation in Tanzania. Harvesting of timber occurs illegally in communal or state-owned protected areas; in forests allowed for harvesting but without legal documentations; and in open access land where there are no forest management or harvesting plans.^{241,242} The harvested timber ends up in major cities in mainland Tanzania (e.g., Kigoma to Mwanza),²⁴³ Zanzibar (e.g., mangrove wood from Rufiji delta),²⁴⁴ regional neighbors (e.g., Kenya), or

²³⁵ Lokina, Razack, Elizabeth Robinson, and Jesper Stage. "Economics of forest products in Tanzania." *Working Papers of the Finnish Forest Research Institute* 98 (2018): 87–92.

²³⁶ The United Republic of Tanzania. *National Environmental Statistics Report (NESR), 2017 Tanzania Mainland*. Dar es Salaam: URT, June 2018.

²³⁷ Ministry of Natural Resources and Tourism, URT. *National Forest Resources Monitoring and Assessment of Tanzania Mainland (NAFORMA)*. Dar es Salaam: URT, May 2015.

²³⁸ Byers, Bruce, et al. Tanzania's Environmental Threats and Opportunities Analysis (ETOA). USAID/Tanzania, 2012.

²³⁹ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

²⁴⁰ Burgess, Neil D., Isaac Malugu, Peter Sumbi, Almas Kashindye, Adam Kljazi Karyn Tabor, Boniface Mbilinyi, Japhet Kashaigili Timothy Maxwell Wright, Roye Gereau, Lauren Coad, Kathryn Knights Jamie Carr, Antje Ahrends and Rebecca L. Newham. "Two decades of change in state, pressure and conservation responses in the coastal forest biodiversity hotspot of Tanzania." *Oryx* 51, no. 1 (2017): 77-86.

²⁴¹ Ministry of Natural Resources and Tourism, URT. *National Forest Resources Monitoring and Assessment of Tanzania Mainland (NAFORMA)*. Dar es Salaam: URT, May 2015.

²⁴² Sungusia, Eliezeri and Jens Friis Lund. "Against all policies: Landscape level forest restoration in Tanzania." *World Development Perspectives* 3, September 2016: 35-37.

²⁴³ Consultation with GoT representatives, Nov 2018.

²⁴⁴ Consultation with US Government representatives, Oct 2018.

non-regional international markets (e.g., China).²⁴⁵ The unsustainable harvest of timber leads to loss of woody biomass and loss of forest cover, increasing risk of land degradation and reducing habitat for biodiversity. Selective logging also results in loss of certain preferred species, which may lead to their local extinction.

Surrounded by landlocked countries and endowed with a large shipping port, Tanzania functions as both a destination and transit hub for legal and illegal consignments.²⁴⁶ Kenya and Uganda are also transit points²⁴⁷ and a destination for timber from, in addition to Tanzania, the Democratic Republic of Congo (DRC) and the Central African Republic.²⁴⁸

MAJOR INFRASTRUCTURE AND ENERGY DEVELOPMENT PROJECTS IMPACTING ECOLOGICALLY IMPORTANT AREAS

Significant infrastructure and energy projects are underway or planned in Tanzania that could impact terrestrial and marine biodiversity, including within protected areas. These projects include hydropower, pipelines, and road construction.

Major infrastructure development corridors underway or planned include the following:

1. **Central Development Corridor:** Transportation route that connects the Port of Dar es Salaam by road, rail, and inland waterways to central and northern-western Tanzania, and then onto Burundi, Rwanda, Uganda, and Eastern part of the DRC.²⁴⁹
2. **Tanga Development Corridor:** To connect an oil pipeline between Tanga port and Uganda (and through Mwanza on Lake Victoria).^{250,251}
3. **Southern Agricultural Growth Corridor of Tanzania (SAGCOT):** Massive GoT-led effort to develop the agriculture sector through business investment.
4. **Mtwara Development Corridor:** Promoting regional economic integration with Mozambique, Malawi, and the Mtwara Region, Tanzania.
5. **Dar Es Salaam Development Corridor/TAZARA Corridor:** Connects the Dar es Salaam port with southern and eastern highlands and Zambia through the TAZARA railway and the Dar es Salaam–Tunduma highway.
6. **GoT-led Stiegler Gorge Hydropower Dam:** The dam – located downstream of Selous Game Reserve – would create a reservoir inundating an estimated 1,200 km² of land including a portion of the Selous Game Reserve and would impact large forest tracts, mangrove forests, and fisheries. WWF estimates potential dramatic impacts to the prawn and shrimp fisheries in the Rufiji Delta due to salinity changes, affecting food and livelihoods for approximately 200,000 people²⁵². The dam is

²⁴⁵ Lukumbuzya, Kahana and Cassian Sianga. *Overview of the Timber Trade in East and Southern Africa: National Perspectives and Regional Trade Linkages*. 53 pp. Cambridge, UK: TRAFFIC and WWF, April 2017.

²⁴⁶ Ibid.

²⁴⁷ Teleconference with USFWS Office of Enforcement, 26 October 2018.

²⁴⁸ Mapesa, M., O. Kyampaire, J. Begumana, J. Bemigisha. "Timber, charcoal and wildlife trade in the Greater Virunga Landscape, WWF, Kampala, Uganda." *Greater Virunga Transboundary Collaboration*. February 2013.

²⁴⁹ "Dar es Salaam – Chalinze – Morogoro Road Capacity Upgrade." *Programme for Infrastructure Development in Africa (PIDA)*. Accessed on December 28, 2018. <http://www.au-pida.org/view-project/200/>.

²⁵⁰ Karuri, K. "Natural gas pipeline between Tanzania and Uganda to be running within three years." *Business Day*, September 27, 2018. <https://www.businesslive.co.za/bd/world/africa/2018-09-27-natural-gas-pipeline-between-tanzania-and-uganda-to-be-running-within-three-years/>.

²⁵¹ Consultation with large, international NGO, October 2018.

²⁵² Dye, Barnaby and Hartmann, Jorge. "The True Cost of Power: The Facts and Risks of Stiegler's Gorge Hydropower Dam in Selous Game Reserve." World Wildlife Fund for Nature, 2017.

also predicted to increase downstream erosion, reduce fertility of downstream farmland, and potentially desiccate lakes used by wildlife (and which benefit wildlife tourism).^{253,254}

Other road projects include the upgrading from gravel to bitumen standard of Kabingo-Kasulu-Manyovu (260 km) road section in Tanzania.²⁵⁵ Another project is the planned coastal highway linking the towns of Malindi in Kenya to Bagamoyo in Tanzania, with planned construction to start in early 2019 (jointly funded by the East African Community and AfDB).²⁵⁶ Finally, an upgrade is planned in the Kigoma Region of 51 km of the Uvinza-Illunde-Malagarasi road.²⁵⁷

6.1.2 OVEREXPLOITATION OR UNSUSTAINABLE USE OF RESOURCES

WILDLIFE POACHING, TRAFFICKING OF HIGH-VALUE SPECIES, AND BUSH- AND SEA-MEAT HUNTING

Poaching, trafficking, and subsistence hunting remain significant threats to Tanzanian biodiversity.²⁵⁸ Megafauna species under pressure from poaching include elephants and rhinos, as Tanzania is an important source and transit location of the international illegal ivory trade. Tanzania was named among the most instrumental suppliers of illegal ivory by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 2013.²⁵⁹ The country's elephant population dropped from 109,051 in 2009 to 43,521 in 2015—a 60% decrease and the highest absolute and relative decline of any country in East Africa.²⁶⁰ Tens of thousands of elephants have been lost in the last decade, particularly in the Selous–Niassa Ecosystem, the Ugalá–Moyowozu Ecosystem, and the corridor between the Ruaha and Katavi ecosystems.^{261,262} Populations in Tarangire and Serengeti National Parks, by contrast, have been relatively unaffected by the recent poaching crisis.

Eastern black rhinos occur in Tanzania in four to five population groups and are critically endangered. Census data on Tanzanian black rhinos are limited, but a recent census indicated the number in the Selous Game Reserve is less than 50,²⁶³ while Serengeti, Ngorongoro and Mkomazi each contain fewer

²⁵³ Ibid.

²⁵⁴ IUCN. “IUCN, Reactive Monitoring Mission. Selous Game Reserve World Heritage Site, United Republic of Tanzania. 8-15 February 2017.” 19 May 2017.

²⁵⁵ “AfDB Approve USD322 Million for Road Upgrade in Tanzania and Burundi.” *Tanzania Invest.com*, November 27, 2018. <https://www.tanzaniainvest.com/transport/afdb-usd-322-million-road-upgrade> and follow us on www.twitter.com/tanzaniainvest.

²⁵⁶ “Construction of Tanzania-Kenya Highway to Begin in Early 2019.” *Tanzania Invest.com*, December 5, 2018.

<https://www.tanzaniainvest.com/transport/construction-malindi-bagamoyo-kenya-highway>.

²⁵⁷ “Abu Dhabi Lend Tanzania USD15 Million for Road Upgrade.” *Tanzania Invest.com*, April 9, 2018.

<https://www.tanzaniainvest.com/transport/abu-dhabu-adfd-loan-road-upgrade>.

²⁵⁸ USAID and ECODIT LLC. “Tanzania Whole-of-Project Evaluation (WOPE) of the Natural Resources Management Project: Final Evaluation Report.” 22 November 2017.

²⁵⁹ McGrath, Matt. “‘Gang of eight’ on ivory probation.” *BBC*, 14 March 2013. <https://www.bbc.com/news/science-environment-21788664>.

²⁶⁰ Thouless, C., H.T. Dublin, J.J. Blanc, D.P. Skinner, T.E. Daniel, R.D. Taylor, F. Maisels, H. L. Frederick and P. Bouché. *African elephant status report 2016: an update from the African Elephant Database*. Gland, Switzerland, IUCN/ SSC Africa Elephant Specialist Group: 2016.

²⁶¹ Debonnet, Guy and Stephen Nindi. “Technical Study on Land Use and Tenure Options and Status of Wildlife Corridors in Tanzania.” Prepared under the PROTECT contract. April 2017.

²⁶² Consultation with US Government representatives, Oct 2018.

²⁶³ IUCN. “IUCN, Reactive Monitoring Mission. Selous Game Reserve World Heritage Site, United Republic of Tanzania. 8-15 February 2017.” 19 May 2017.

than 100 individuals.²⁶⁴²⁶⁵ Other frequently trafficked animals include pangolin, lions (teeth and claws), leopards (pelts), monkeys (e.g., black-and-white and red colobus), chimpanzees, birds (e.g., African Grey parrots), and reptiles (e.g., chameleons, snakes).²⁶⁶ These species are often stolen from protected areas in Tanzania and then trafficked out of the country for consumption or medicinal purposes.²⁶⁷ There is also a significant illegal bushmeat trade with exportation across borders—from Tanzania across Lake Tanganyika to DRC and Burundi, and internationally to the Middle East and to supply expatriate Africans in Europe.²⁶⁸ Preferred prey species vary by location, ethnic group, time of year, and whether the meat is intended for medicinal or consumption purposes. Popular species to the west include impala (*Aepyceros melampus*), common duiker (*Sylvicapra grimmia*), warthog (*Phacochoerus africanus*), buffalo (*Syncerus caffer*), bushbuck (*Tragelaphus scriptus*), bushpig (*Potamochoerus porcus*) and zebra (*Equus quagga*)²⁶⁹. Popular species in northern Tanzania, specifically the Serengeti include buffalo, wildebeest, and other migratory species²⁷⁰.

The scale of local consumption of wildlife bushmeat is unknown in most areas. In Serengeti, nearly 100,000 wildebeest are poached each year (~8% of the population). While this offtake appears to be sustainable, more sensitive non-target species such as giraffe, carnivores, and elephant and rhino are frequently caught in bushmeat snares. There is general concern, and anecdotal reports, about increases in bushmeat and ivory hunting in remote areas where workers are building roads and other infrastructure.

In marine contexts, sea turtles are still frequently caught in large-mesh gillnets and drift-nets, with the meat typically consumed locally by fishers, though NGO community conservation efforts over the past 15 to 20 years has helped significantly to reduce the practice of poaching nesting female turtles and their eggs.²⁷¹ Very occasionally a remnant dugong is accidentally caught in drift-nets and consumed locally (the meat is considered a delicacy). The incidence is probably only one individual per one to two years as the population is now extremely low, with the last reported incident near Pemba Island in August 2017. As noted in the IUU fishing section below, other species such as sharks (including whale sharks) and yellowfin tuna are also threatened due to illegal catch.

²⁶⁴ Consultation with GoT representatives, November 2018.

²⁶⁵ Stakeholders note low confidence exists for precise animal counts in Tanzania. Data are only collected periodically when donor funding is available. Wildlife census data are collected and curated by TAWIRI.

²⁶⁶ Consultation with US Government representatives, October 2018.

²⁶⁷ Regarding methods used for shipping of illegal wildlife and timber products: to avoid authorities traffickers often shift ports of departure for their goods or modify trafficking methods. For instance, the US Fish and Wildlife Service's Office of Enforcement stated they are seeing fewer large containers full of illicit goods but instead smaller air cargo shipments, which are more difficult to track and discover.

²⁶⁸ Birdlife International. *Eastern Afromontane Biodiversity Hotspot*. Nairobi: BirdLife International--Critical Ecosystem Partnership Fund, January 24, 2012.

²⁶⁹ Martin, Andimile, Tim Caro, and Monique Borgerhoff Mulder. "Bushmeat Consumption in Western Tanzania: A Comparative Analysis from the Same Ecosystem." *Tropical Conservation Science*, (September 2012), 352–64. doi:10.1177/194008291200500309.

²⁷⁰ Mfunda, Iddi M. and Elvin Roskaft. "Bushmeat hunting in Serengeti, Tanzania: An important economic activity to local people." *International Journal of Biodiversity and Conservation* Vol. 2(9), pp. 263-272, September 2010.

²⁷¹ "Sea Sense Annual Reports." *Sea Sense Family of Sites*. Accessed December 28, 2018. www.seasense.org/publications/.

LIVESTOCK ENCROACHMENT AND OVERGRAZING

Livestock grazing within protected areas has greatly increased in recent years. In the Serengeti Ecosystem, for instance, a 2016 aerial survey conducted by TAWIRI counted greater than 78,000 cattle and greater than 48,000 young hogs inside of the protected area boundaries.²⁷² This encroachment removes forage resources for wild herbivores, increases human-wildlife conflict such as livestock depredation by wild carnivores, and may promote disease transmission between livestock and wildlife. Additionally, there is growing concern that year-round, heavy grazing by livestock promotes invasion by plants with low palatability in communal grazing areas and at edges of protected areas. In particular, the non-native, noxious weed *Parthenium hysterophorus* has invaded grazing areas in northern Tanzania, rendering them a poor habitat for grazing livestock and wildlife.²⁷³

In western Tanzania, USAID recently worked with JGI (who engaged TAWIRI and College of African Wildlife Management, or Mweka) to conduct aerial surveying of livestock, revealing tens of thousands of cattle encroaching into these landscapes. Consultations consistently noted the migration of agropastoralists often originating from near Lake Victoria, into new areas as a major contributing factor leading to degradation of landscapes and fragmentation of habitat.

IUU FISHING, INCLUDING USE OF DESTRUCTIVE FISHING GEAR AND UNSUSTAINABLE FISHING PRACTICES

The use of illegal and destructive fishing gear poses serious threat to marine and aquatic ecosystems, threatening the ability of the ecosystems to sustain livelihoods and ecological integrity.²⁷⁴ Illegal fishing gear is prevalent in artisanal marine fisheries, and illegal and unsustainable practices include blast-fishing, small mesh-nets, beach seines and other drag nets (including the illegal use of ring nets in shallow waters as bottom-dragging gear).²⁷⁵ The Lake Tanganyika Floating Health Clinic has observed residents of the Lake Tanganyika basin using bed nets (intended for malaria prevention) to fish small fry near the shoreline, despite a series of laws that prohibit bed net use and other fine-gauge nets for fishing.²⁷⁶ Other significant illegal fishing practices include use of SCUBA for fishing lobster, octopus and sea cucumber, and fishing with poison or chemical toxins. Natural recovery of hard corals has also been hampered by changes in fish community composition caused by overfishing, which disrupts various ecological recovery processes.

The impacts on biodiversity from illegal and unsustainable fishing practices have been cited by multiple consulted stakeholders. For instance, blast-fishing reduces fish productivity and destroys coral reefs (one of the most important habitats for numerous commercially important species of fish and other non-commercial marine biodiversity). Importantly, most stakeholders have reported a drastic decline in incidences of blast-fishing since 2017, attributing this change to strict enforcement and penalties for blast fishing. Although legal, use of ring nets in shallow waters (less than 50 m depth) can have significant

²⁷² TAWIRI. *Status and distribution of wildlife, livestock and bomas in and around Serengeti Ecosystem, Tanzania, TAWIRI Aerial Survey Report*. Arusha: Tanzania Wildlife Research Institute & Frankfurt Zoological Society, 2016.

²⁷³ Kilewa, Ramadhan and Amzath Rashid. "Distribution of Invasive Weed *Parthenium hysterophorus* in Natural and Agro-Ecosystems in Arusha Tanzania." *International Journal of Science and Research (IJSR)* 3, no. 12 (December 2014): 1724-1727.

²⁷⁴ Francis, Julius and Ian Bryceson, "Chapter 4: Tanzanian Coastal and Marine Resources: Some Examples Illustrating Questions of Sustainable Use." *Lessons Learned: Case Studies in Sustainable Use*. Dar es Salaam: 2000.

²⁷⁵ van Hoof, Luc, Marloes Kraan. *Mission Report Tanzania: Scoping mission marine fisheries of Tanzania*. Wageningen: Wageningen Marine Research (University & Research centre), 2017.

²⁷⁶ McLean, Kate, Aisha Byanaku, Augustine Kubikonse, Vincent Tshowe, Said Katensi, and Amy Lehman. "Fishing with Bed Nets on Lake Tanganyika: A Randomized Survey." *Malaria Journal* 13, no. 1 (2014): 395.

effects on habitats and certain marine species. NGOs such as SeaSense and WWF note that nets have been linked to entanglement and by-catches of whale sharks in Mafia.²⁷⁷ Beach seining and other degrading use of illegal small-mesh nets in the artisanal prawn fishery in Rufiji and Bagamoyo is considered a major reason why a 10-year moratorium in the industrial prawn trawl fishery from 2008-2017 only resulted in minor stock recovery.²⁷⁸ A disregard of licensing requirements, coupled with weak enforcement by district authorities, is also prevalent amongst artisanal fishers.

IUU fishing also occurs in offshore EEZ waters beyond 12 nautical miles (an area managed by the Deep Sea Fishing Authority [DSFA]).²⁷⁹ Unlicensed fishing by foreign vessels has likely reduced significantly since operationalization of the DSFA in 2009-10 and other regional surveillance networks such as FISH-i Africa. However, there is still significant illegal activity, e.g., by East Asian longliners including shark-finning, trans-shipment at sea, and sub-standard treatment of crew. Some western Indian Ocean tuna stocks, in particular yellowfin tuna (the main species caught in Tanzania's EEZ), have reached overfished status in recent years.²⁸⁰

IUU fishing is also extensive in inland freshwater fisheries, such as Lake Victoria. The biomass of Nile perch in the lake dropped from 2.3 million tonnes in 1999 to 300,000 tonnes in 2008.²⁸¹ No known studies have been conducted to quantify the monetary effects of either the loss to GDP from the direct effects of IUU, or the secondary effects of IUU to habitat and other marine populations.

6.1.3 CLIMATE CHANGE

Globally, the extent that climate change will impact biodiversity varies depending on multiple factors, such as taxonomy, timescale, and location. Most climate change models project significant negative impacts to biodiversity and, in the most aggressive emissions scenarios, mass extinctions are possible.²⁸²

In the Tanzanian context, changing climatic conditions are already detectable and projected to continue (or accelerate). Annual average temperatures are projected to increase by an additional 1°C to 2.7°C by the 2060s. Changes in mean annual precipitation are more uncertain than temperature, both with regards to magnitude and direction of change. Under a high climate change scenario, mean annual precipitation is projected to decrease in many parts of the country, particularly between May and November. By contrast, increases in rainfall are projected between December and March throughout most of the country, with Southwestern Tanzania the primary exception. Projections further point to increased frequency of higher-intensity rainfall, particularly in the northwest. Sea level may rise between 0.1 and 0.4 meters by mid-century, and 0.4 and 0.8 meters by 2100, while ocean temperatures are expected to continue to warm. Coastal erosion has been reported along virtually the entire Tanzanian coast and around nearby islands. Further, by mid-century, droughts are anticipated to increase in

²⁷⁷ Sea Sense. "Whale Sharks in Tanzania." Accessed December 28, 2018. <http://www.seasense.org/projects/whale-shark-conservation/>.

²⁷⁸ TAFIRI. Assessment of the status of prawn stocks after closure of commercial prawn trawling in Tanzanian coastal waters. Tanzania Fisheries Research Institute, Dar es Salaam. 67pp: 2016

²⁷⁹ ²⁷⁹ Gonza, Hosea. *An Overview of the Fisheries Sub Sector: Achievements, Challenges, and Priorities for Financial Year 2014/15*. United Republic of Tanzania: The Ministry of Livestock and Fisheries Development. 16 October 2014.

²⁸⁰ IOTC, 2015

²⁸¹ Anderson, Jim. *Options to Reduce IUU Fishing in Kenya, Tanzania, Uganda and Zanzibar*. EU, August 2011

²⁸² Bellard, Celine, Cleo Bertelsmeier, Paul Leadley, Wilfried Thuiller, and Franck Courchamp. "Impacts of Climate Change on the Future of Biodiversity." *Ecology letters* 15, no.4 (2012): 365-377.

intensity, particularly in coastal areas and Southwestern Tanzania. As Tanzania already regularly experiences floods, increased frequency of heavy rainfall may lead to greater frequency of flooding, especially in the northwest.²⁸³

These altered conditions will stress biodiversity and forests in Tanzania in many ways. Rising sea levels and increasing temperatures could result in saline intrusion, increased ocean temperatures, and coastal erosion, which are likely to impact coastal and marine habitat such as mangrove forests, coral reefs, and seagrass beds. For example, while Tanzanian reefs experience some degree of annual bleaching from sea temperature fluctuations, significant bleachings driven by rising sea temperatures in 2005 and 2016 have reinforced a decadal declining trend in hard-coral cover over the past 20 years. Corals support biodiverse coastal ecosystems and provide essential ecosystem services such as protection against winds, wave energy, and storm surge.²⁸⁴ Tanzania's freshwater lakes are likewise experiencing warming, leading to reductions in nutrient cycling and productivity of freshwater fisheries. Freshwater ecosystems are further threatened by sedimentation following heavy rains.

In the grassland-savanna, the impacts of changing climatic conditions are difficult to accurately measure and project. While increasing temperatures, changes in rainfall amount and intensity, and shifts in seasonality could result in disruptions to migratory corridors, some research has found changes to Tanzania's grassland-savanna to be relatively modest.²⁸⁵

Increased temperatures and more intense droughts will increase the risk of wildfires, which are already a threat to ecosystems, particularly in the southern highlands and western Tanzania.²⁸⁶ Additionally, rising temperatures and increased drought intensity will affect water availability, which can lead to widespread deaths of some species (e.g., large numbers of hippopotami deaths have already been observed during severe drought conditions).²⁸⁷

Changing climatic conditions will also magnify many of the drivers elaborated in Section 6.2, below.

6.1.4 OTHER DIRECT THREATS: INVASIVE SPECIES, POLLUTION

INVASIVE SPECIES

Invasion by exotic (non-native) species is a significant management issue in some areas, including within protected areas. These species can reduce forestry and livestock productivity, and potentially impact biodiversity. However, given that the invasions have occurred rapidly, and monitoring resources are limited, there has been relatively little comprehensive research on the potential impacts. In Tanzania's southern highlands, pine and eucalyptus—plants frequently grown in plantations for lumber given their fast-growing nature—are infiltrating sensitive ecosystems such as Mt. Rungwe Nature Reserve, essential

²⁸³ "Climate Change Knowledge Portal: Tanzania." *The World Bank Group Site Family*. Accessed December 28, 2018. http://sdwebx.worldbank.org/climateportal/countryprofile/home.cfm?page=country_profile&CCode=TZA&ThisTab=RiskOverview.

²⁸⁴ USAID. "Climate Risk Profile: Tanzania." June 2018.

https://www.climatelinks.org/sites/default/files/asset/document/20180629_USAID-ATLAS_Climate-Risk-Profile-Tanzania.pdf.

²⁸⁵ Carr, J.A., W.e. Outhwaite, G.I. Goodman, T.E.E Oldfield and W.B. Foden. "Vital but vulnerable: Climate change vulnerability and human use of wildlife in Africa's Albertine rift." Gland, Switzerland: IUCN, 2013.

²⁸⁶ Setting wildfires to clear farmlands is common in the miombo ecosystem (e.g., Kigoma, Mbeya, Tabora, and Rukwa) as well as Morogoro, Lindi, Pwani, Mtwara, Ruvuma and Tanga Regions. Fires may also be used to facilitate animal hunting, as a tool for honey collection, eradication of tsetse flies and ticks, or to induce growth of fresh grass in rangelands.

²⁸⁷ *ibid.*

habitat for the critically endangered kipunji.²⁸⁸ In Lake Victoria, Nile perch and water hyacinth are pervasive invasive species that have substantially altered the lake ecosystem, posing significant harm to the remaining endemic cichlids found in the lake. The Indian House Crow, introduced to Zanzibar in the 1890s, preys on eggs of local songbirds and reptiles.

Illustrative invasive species include the following:

- **PLANTS:** *Azadirachta indica*, *Parthenium hysterophorus* (a noxious weed that significantly reduces crop yields and grazeland), *Lantana camara*, *Cedrela mexicana*, *Cedrela odorata*, *Opuntia spp.* (prickly pear), *Argemone ochroleuca* (Mexican poppy), and *Datura stramonium* (Jimson weed).
- **INSECTS:** *Cinara cupressi*, *Heteropsylla cubana*, *Leucaena psyllid*, *Eucalyptus chalcids*.^{289 290}

The GoT has recently announced an initiative to combat invasive species at the national scale.²⁹¹

POLLUTION

Misuse of agrochemicals such as nitrogenous fertilizers or pesticides may lead to water pollution, impacting the health of aquatic ecosystems (e.g., eutrophication, algal blooms). Among Tanzanian smallholder farmers, the problem is primarily a result of imbalanced nutrient supply rather than excessive application of fertilizers. Commonly, smallholder farmers apply nitrogen-bearing fertilizer like urea without phosphorus or potassium, which leads to dangerous accumulation of nitrate in the soil.²⁹²

As of 2014, the 5th National Report on the Implementation of the Convention on Biological Diversity found that more than half of all inland water ecosystems in Tanzania were either degraded or in imminent threat of degradation as a result of human activity.²⁹³ Changes to water flows for agriculture as a result of shifting precipitation patterns, more intense drought periods (particularly in southeastern Tanzania), and poor water management practices resulting in overabstraction, pollution, and resource conflict are several causes of ecosystem degradation.

Another increasing contributor to pollution are artisanal mining activities; for example, evidence suggests that artisanal mining may be leading to accumulated heavy metals in Lake Rukwa.²⁹⁴

²⁸⁸ Mwakisunga, B., "Forest Biomass Management Challenges in Commercially Exotic Tree Plantation Areas: A Case Study from the Rungwe Volcanic Province (Southern Highlands of Tanzania)." *Journal of Geoscience and Environment Protection*, 5, 67-75. (2017) Accessed 09 January 2019. <https://doi.org/10.4236/gep.2017.53006>.

²⁸⁹ Bukombe, John et al. "Fire regulates the abundance of alien plant species around roads and settlements in the Serengeti National Park." *African Journal of Ecology* 9, no.3 (May 2018): 357-367.

²⁹⁰ Madoffe, S. and J. Mwambo. "Status of Forest Invasive Species in Tanzania." FAO. <http://www.fao.org/forestry/12731-096675ff56970e4b6621b12d73bbb86af.pdf>.

²⁹¹ Namkwahe, John. "National task force launched to combat invasive species in Tanzania." *The Citizen*, September 28, 2018. <https://www.thecitizen.co.tz/News/National-task-force-launched-to-combat-invasive-species-/1840340-4781664-6c2k37z/index.html>.

²⁹² The United Republic of Tanzania. *National Environmental Statistics Report (NESR), 2017 Tanzania Mainland*. Dar es Salaam, URT, June 2018.

²⁹³ The United Republic of Tanzania. *Fifth National Report on the Implementation of the Convention on Biological Diversity*. Dar es Salaam, URT, March 2015.

²⁹⁴ The United Republic of Tanzania. *National Environmental Statistics Report (NESR), 2017 Tanzania Mainland*. Dar es Salaam, URT, June 2018.

6.2 INDIRECT THREATS (DRIVERS) TO BIODIVERSITY

Per the USAID I18/I19 Best Practices Guide, a driver is “the ultimate factor, usually social, economic, political, institutional, or cultural, that enables or otherwise adds to the occurrence or persistence of one or more threats.” There are many factors driving the threats identified above, but the most significant and influential drivers in the country are as follows:

- weak governance and limited institutional effectiveness,
- population growth and internal migration,
- a lack of viable and affordable non-wood fuel and other energy sources,
- domestic and international markets for timber and other biodiversity products,
- inadequate data collection and management to inform decision-making,
- lack of access to and awareness of sustainable livelihoods, and
- limited technical capacity for value addition in key sustainable livelihood sectors.

Each of these drivers affects numerous threats. The expected doubling of the population over the next 30 years and the effects of climate change, though threats on their own, will interact with and intensify other drivers.

6.2.1 WEAK GOVERNANCE AND LIMITED INSTITUTIONAL EFFECTIVENESS

Protection of forests and biodiversity in Tanzania is threatened by inconsistent and ineffective governance.²⁹⁵ Tanzania ranks 103 out of 180 countries on the Corruption Perception Index, a measure of the perceived level of corruption in a country’s public sector.²⁹⁶ While concrete data and evidence are challenging to collect, most stakeholders note that corruption occurs, to varying extents, across all levels of government.²⁹⁷ Corruption and a lack of accountability, coupled with often ineffective policies, hinders the protection of biodiversity and forests in Tanzania. Incentives exist for government officials to allow exploitative/illegal activities such as poaching, which contributes to a lack of political will to enact change.²⁹⁸

Limited governmental resources (e.g., inadequate anti-poaching equipment at the local level) hinder effective conservation and biodiversity protection. Further, revenue sources (e.g., from National Park fees) that should be allocated to natural resource management and environmental protection are reportedly often held up in central government and do not promptly or fully return to the administrative bodies overseeing protected area management.²⁹⁹ Benefit-sharing schemes, such as those envisioned for WMAs, are often poorly designed, with central government deriving the majority of revenues, undermining community motivation to participate in such schemes.

A lack of integration and coordination among governmental, non-governmental, and private sector stakeholders also poses an indirect threat to Tanzania’s forests and biodiversity. For instance, competition across ministries or agencies, such as TANAPA, TAWA, or TFS, and between

²⁹⁵ Ministry of Finance and Economic Affairs, URT. *National Strategy for Growth and Reduction of Poverty II (NSGRP II)*. Dar es Salaam: URT, July 2010.

²⁹⁶ “Corruption Perceptions Index” *Transparency International*, 2017. <https://www.transparency.org/>.

²⁹⁷ Wilson, Ed; Robert McInnes, Damas Mbaga, Patrick, and Ouedraogo. Kilombero Valley, United Republic of Tanzania. Ramsar Site No. 1173. Ramsar Advisory Mission Report. April 2017.

²⁹⁸ Byers, Bruce, et al. Tanzania’s Environmental Threats and Opportunities Analysis (ETOA). USAID/Tanzania, 2012.

²⁹⁹ Consultation with privately managed nature reserve, November 2018.

governmental and non-governmental organizations for control and revenue streams, can paralyze efforts to effectively protect natural resources. In general, GoT institutions face limited capacity for effective natural resource management.

Finally, as shown by its steadfast commitment to projects such as Stiegler’s Dam in the Selous, despite warnings contained in environmental and social assessments and communicated by international conservation organizations (e.g., UNESCO, World Wildlife Fund [WWF]), the GoT has prioritized large infrastructure projects even when they compromise biodiversity protection. While some of these projects (e.g., road construction) are co-funded by multilateral donors and therefore include environmental and social safeguards, other infrastructure activities do not align well with conservation goals.

6.2.2 POPULATION GROWTH

Tanzania’s population has experienced exponential growth over the past 50 plus years. From 1957 to 2012, the population nearly quintupled, growing from 8.8 million to 44.9 million as of the most recent census (2012). In 2013, the annual population growth rate was 3.1% and life expectancy was 59.8 years of age for men and 63.8 years of age for women.³⁰⁰ As Tanzania’s total population has sharply increased, the country has also experienced substantial urbanization; between 1967 and 2012 the proportion living in urban areas increased from 5.7% to 29.1%, with Dar es Salaam accounting for approximately one-third of overall urban population in Tanzania.³⁰¹ Population growth is projected to continue, with an average growth rate of 3% for Tanzania’s mainland expected through 2035, which would lead to a nearly 65% increase in overall population,³⁰² while by mid-century the urban population is projected to quintuple.³⁰³ Figure 5 shows the effects the next five years of projected growth would have on population density. While population density will increase nationally, urban centers such as Mwanza, Arusha, and Dar es Salaam, western Tanzania (near Kigoma), and the southern highlands (near Mbeya) are likely to grow the most. Western Tanzania will also continue to support large refugee populations from Burundi and DRC, which numbered at approximately 743,000 in 2017.³⁰⁴

Tanzania’s urban centers struggle from lack of sufficient infrastructure, provision of social services, and governance.³⁰⁵ As growth increases, so too may unsustainable demand on natural resources (e.g., for energy use) and migration into new, less densely populated, land areas. Such trends would exacerbate existing drivers (e.g., see weak governance in 6.2.1, the lack of accessible or affordable alternatives to biomass energy discussed in 6.2.3, and domestic demand for timber and other biodiversity products discussed in 6.2.4). As discussed in 6.1.1 under land use changes, increased population growth in areas of

³⁰⁰ The United Republic of Tanzania. *National Population Projections*. Dar es Salaam, URT, February 2018.

³⁰¹ International Growth Centre. *Urbanization in Tanzania, Population Growth, Internal Migration and Urbanisation in Tanzania 1967-2012: A Census-Based Regional Analysis, Tanzania’s Urban Population, 1967-2012, A Density-Based Measure of ‘Urban’ for Tanzania? A Feasibility Study Using Dodoma Region*. London: LSE & Oxford University, April 2014.

³⁰² Ibid.

³⁰³ Worrall, L., Colenbrander, S., Palmer, I., Makene, F., Mushi, D., Mwijage, J., Martine, M., and Godfrey, N. *Better Urban Growth in Tanzania: Preliminary Exploration of the Opportunities and Challenges*. Coalition for Urban Transitions, London and Washington, DC. Available at: <http://newclimateeconomy.net/content/cities-working-papers>.

³⁰⁴ “United Republic of Tanzania.” *Global Focus, UNHCR Operations Worldwide*. UNHCR. Accessed December 27, 2018. <http://reporting.unhcr.org/node/2517?y=2018#year>.

³⁰⁵ Worrall, L., Colenbrander, S., Palmer, I., Makene, F., Mushi, D., Mwijage, J., Martine, M., and Godfrey, N. *Better Urban Growth in Tanzania: Preliminary Exploration of the Opportunities and Challenges*. Coalition for Urban Transitions, London and Washington, DC. Available at: <http://newclimateeconomy.net/content/cities-working-papers>.

high biodiversity places significant pressure on limited resources and increases human wildlife conflicts.³⁰⁶ For example, population pressure around parks leads to land conversion for agriculture, pasture land, artisanal mining, and unsanctioned construction.

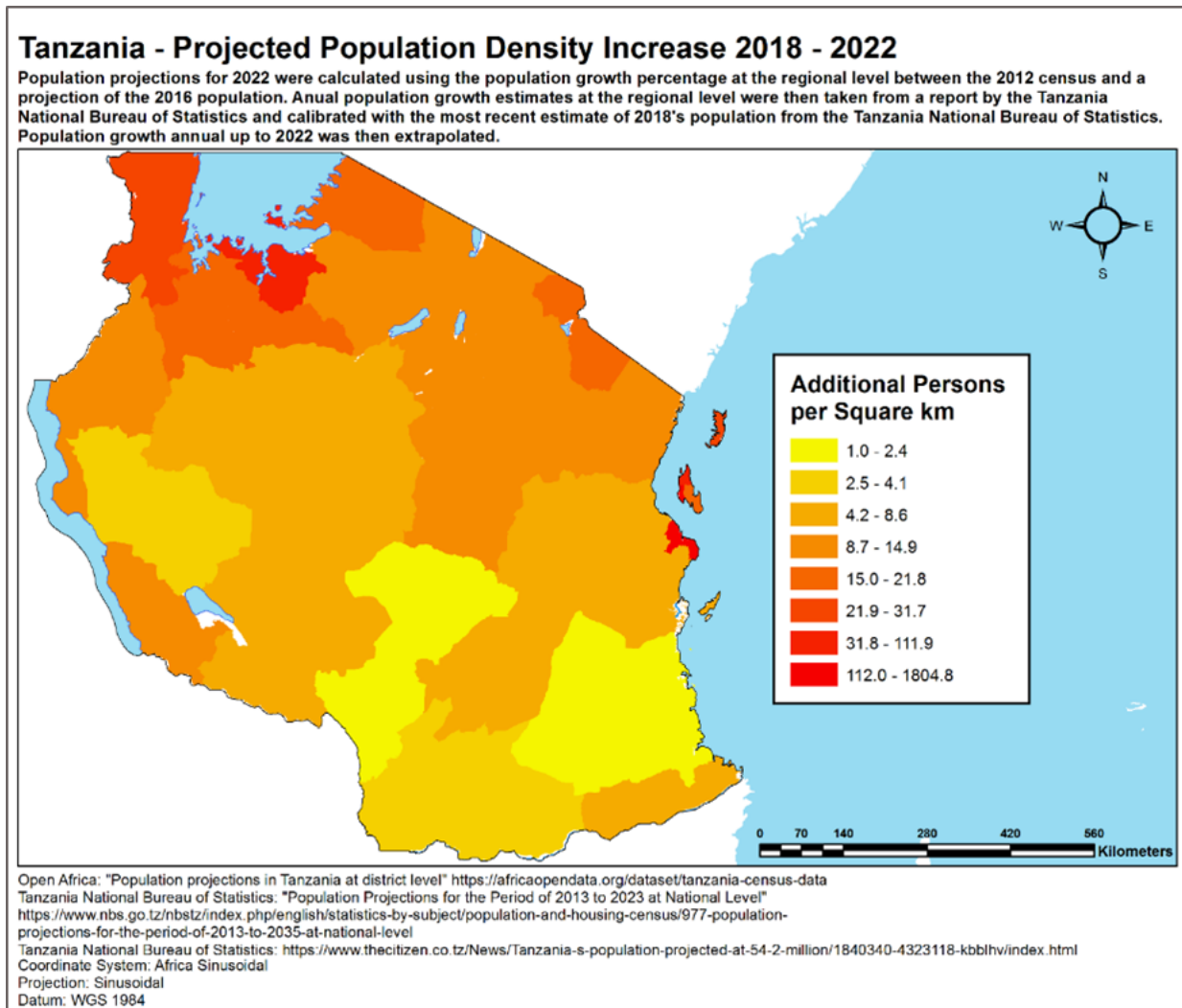


Figure 5 Projected Population Density Increase in Tanzania 2018 - 2022

6.2.3 INSUFFICIENT AVAILABILITY OF OR ACCESSIBILITY TO SUSTAINABLE ENERGY ALTERNATIVES TO WOOD FUEL AND CHARCOAL

The limited availability of or accessibility to alternative sources of energy was frequently cited during stakeholder consultations as a major driver of charcoal and wood-fuel demand. Access to alternative energy sources such as liquified petroleum gas (LPG), electricity from the main grid, off-grid electricity, and kerosene depends heavily on price and availability. About 32.8% and 11.3% of the Tanzanian households (11,454,818 households studied) in urban and rural areas, respectively, use some form of

³⁰⁶ USAID/Tanzania Economic Growth Office. "Natural Resources Management Project, Project Appraisal Document." March 24, 2014.

electricity. In urban areas, 96% of electrified households are connected to the national grid, whereas in rural areas, more than 50% of those electrified are using solar power.

LPG availability in Tanzania has been increasing steadily, from 24,470 MT in 2011 to 90,296 MT in 2016. In interviews, LPG was described as the most preferred alternative given its low running costs. The initial investment/purchase of the cooking stove and gas cylinder, however, remain an obstacle. Across Tanzania, only 7.2% of households use LPG, the majority of which are urban and have high incomes to afford the costs. As LPG is a viable alternative option that is efficient and relatively cheap compared to other sources such as charcoal, there is need for a national policy to promote its use.³⁰⁷

The challenges pertaining to the availability and accessibility of affordable energy alternatives are distinct in rural versus urban areas. While urbanization rates are high, the majority of Tanzania's population still lives in rural areas, and those living in rural areas are predominantly poor. Transport and logistical costs lead to higher prices for fuel such as LPG, while charcoal and fuel wood are generally more abundant and readily available. In urban areas, while the cost of LPG is lower than rural areas—and, in aggregate, may be lower than the cost of charcoal³⁰⁸—the upfront investment required to obtain the necessary equipment for household or commercial use is typically prohibitive, particularly for the urban poor. Absent subsidies or increased access to finance to support LPG investment, charcoal and fuelwood remain the most economical option for those in rural and urban settings.

6.2.4 DOMESTIC AND INTERNATIONAL MARKETS FOR TIMBER AND OTHER BIODIVERSITY PRODUCTS (INCLUDING WILDLIFE, CHARCOAL, BUSHMEAT, AND TARGET MARINE SPECIES)

Across Tanzania, population growth and international demand combine to increase the pressure on natural resources, particularly for timber, charcoal, target marine species, freshwater fish, and wildlife products. TFS estimates that Tanzania has a wood supply deficit of 30%, with approximately 42.8 million cubic meters (m³) of wood available for sustainable production, but approximately 62.3 million m³ of wood is used annually to meet household energy demand or due to loss from land conversion.³⁰⁹ This pressure is exacerbated further by demand from other countries within the region (e.g., Kenya, South Africa) as well as Asian markets (e.g., India, China) as their developing economies demand sawn timber (sawn timber accounted for approximately 80% of the value of Tanzania's forest exports between 2002 and 2014).³¹⁰

The harvesting of Tanzania's natural resources often occurs in ecologically important areas (e.g., pressures on the Eastern Afromontane Biodiversity Hotspot, in the Albertine Rift and Eastern Arc mountain ranges). Insufficient data and governance systems are in place to ensure sustainable off-take and regeneration.³¹¹ For example, the number of Tanzanian fishermen fishing in Lake Tanganyika increased from 12,500 to 26,000 between 1996 and 2011; however, a fisheries stock assessment has not

³⁰⁷ Consultation with local office of international NGO, Nov 2018.

³⁰⁸ Consultation with GoT representatives, November 2018; other locations, discussing relative cost of charcoal vs. LPG in various settings.

³⁰⁹ Ministry of Natural Resources and Tourism, URT. *National Forest Resources Monitoring and Assessment of Tanzania Mainland (NAFORMA)*. Dar es Salaam: URT, May 2015.

³¹⁰ Lukumbuzya, Kahana and Cassian Sianga. *Overview of the Timber Trade in East and Southern Africa: National Perspectives and Regional Trade Linkages*. 53 pp. Cambridge, UK: TRAFFIC and WWF, April 2017.

³¹¹ Consultation with US Government Representatives, Oct 2018.

been conducted at the lake since the 1970s.³¹² Similarly, in sensitive coastal mangrove ecosystems, a very limited number of areas have up-to-date information on forest resources.

Tanzania is one of the largest exporters of live wild animals—and the largest in East Africa—with 655 mammals, 2091 birds, and 57,567 reptiles exported between 2006 and 2015, primarily to Asian markets such as Japan, Taiwan, and Hong Kong.³¹³ Additionally, there is a local, largely informal, market for bushmeat, though good data on the extent of the bushmeat trade in and outside of Tanzania is hard to find given its informality. The 2018 lifting of the ban on trophy hunting and bushmeat trade,³¹⁴ which was imposed in 2015 due to misuse of permits, could further strain oversight and management around legal and sustainable sourcing of wildlife products absent proper monitoring systems. The move to lift the ban could be associated with pressure that TAWA has been facing from the central government to raise revenue.³¹⁵

6.2.5 INADEQUATE DATA COLLECTION AND MANAGEMENT TO INFORM DECISION-MAKING AND PLANNING

Limited data are publicly available and accessible to assess the status of biodiversity and forestry resources in Tanzania. For instance, the GoT reports that inadequate spatial coverage data exists on village land, forest reserves, and WMAs.³¹⁶ The Zanzibar’s Ministry of Agriculture and Natural Resources notes that inadequate data are available on non-renewable natural resources.³¹⁷ In addition, the GoT notes inadequate forestry, agricultural, and marine data on, for example:^{318,319,320}

- Tree removals and emissions from forest management (e.g., lack of reliable information in trends in coverage, rates of deforestation, the specific carbon sequestration abilities of the remaining mangrove forests³²¹);
- Relevant historical data on forest management and governance at the national level;
- Existing and new forest areas set for sustainable forest management and their monitoring plans;
- Marine ecosystem and fisheries stock status.

In terms of wildlife data, the Conservation Information and Monitoring Unit (CIMU) at TAWIRI is formally tasked with the collection, curation and release of all terrestrial wildlife counts and surveys of

³¹² Consultation with GoT representatives, November 2018; consultation noted that the fish catch between the two periods dropped from 66,469MT to 59,396MT; a sign of unmanaged and unsustainable fishing practices resulting in lower quality catch.

³¹³ Outhwaite, Willow and Lauren Brown. *Eastward Bound: Analysis of CITES-listed flora and fauna exports from Africa to East and Southeast Asia*. Cambridge: TRAFFIC, March 2018.

³¹⁴ Tairo, Apolinari. “Tanzania lifts ban on hunting for trophies and bush meat.” *The East African*, November 13, 2014. <https://www.theeastafrican.co.ke/news/ea/Tanzania-lifts-ban-on-hunting-trophies-bush-meat/4552908-4848704-4ib5n8z/index.html>.

³¹⁵ Consultation with GoT representatives, Nov 2018.

³¹⁶ The United Republic of Tanzania. “Tanzania’s Forest Reference Emission Level Submission to The UNFCCC.” Dar es Salaam: URT, December 2016.

³¹⁷ Ministry of Agriculture and Natural Resources, Department of Forestry and Non-Renewable Natural Resources, The Revolutionary Government of Zanzibar. “Zanzibar Natural Forest Resources Management Plan: 2015-2025.” May 2015.

³¹⁸ Ibid.

³¹⁹ The United Republic of Tanzania. *Agricultural Sector Development Programme Phase Two (ASDP II)*. Dar es Salaam: URT, May 2016.

³²⁰ Paula, Jose, ed. *Regional State of the Coast Report: Western Indian Ocean*. UNEP, 2015.

³²¹ USFS and USAID/East Africa have a collaborative program which is trying to address regional gaps in knowledge, called the East Africa Regional Mangrove Carbon Project’s (EARMCP), begun in 2013.

biological diversity in Tanzania. CIMU, however, has limited budget to carry out surveys without the support of international organizations, and thus data are deficient or dated from many areas. Even when data exist, stakeholders such as USFWS note that it is challenging to obtain accurate biological data, such as animal count numbers, from the GoT. GoT has recently limited the release of data through official policies.³²²

On the other hand, USFWS and other stakeholders note that some of the NGOs—e.g., Wildlife Conservation Society (WCS), Frankfurt Zoological Society (FZS), and TRAFFIC (the wildlife trade monitoring network)—have been more effective in navigating the collection and release of biodiversity information by funding and partnering with the GoT in data collection efforts. A significant issue with these counts is a lack of technical capacity to carry out rigorous surveys and analyze the resulting raw data. Furthermore, the limited capacity for research, technology, and generation of accurate information and data on biodiversity limits the contribution of science to planning and decision-making processes.³²³

6.2.6 LACK OF ACCESS TO AND AWARENESS OF SUSTAINABLE LIVELIHOODS

Limited public knowledge and information on the value and socio-economic potential of biodiversity contributes to its degradation, in part through communities engaging in unsustainable livelihood practices. For instance, publicly available information is lacking in Tanzania on sustainable approaches to natural resource management (e.g., cash crop agriculture, agroforestry, value addition to non-timber forest products). This lack of information has contributed to the prevalence of unsustainable practices and immediate income livelihoods in agriculture (e.g., shifting cultivation, slash-and-burn), fishing (unsustainable practices such as the use of ring nets), forestry (e.g., charcoal production, logging for timber), and livestock (e.g., encroachment into protected areas).

Many rural communities—due to a lack of access to environmental and economic education—unknowingly participate in social behaviors and practices harmful to the resources on which they depend. For example, because the harvests of subsistence agriculture are highly variable, rural populations often turn to natural resources to meet basic needs such as food. This heavy dependence on natural resources leads to unsustainable exploitation, degradation of habitats, and loss of biodiversity.

Lack of commitment by local government authorities in promoting sustainable practices and sharing best practices exacerbate issues associated with subsistence livelihoods. For instance, during the assessment team's interviews and field visits, the lack of awareness and application of best practices in agriculture, fisheries, forestry and land management were noted as drivers that can lead communities to engage in activities that threaten biodiversity. These best practices include Payment for Ecosystem Services (PES), Climate Smart Agriculture (CSA), land management through land use plans, BMUs, and VLFRs. The challenges to expand the use of these practices derive from the time it takes to develop such schemes in

³²² “Any person who is authorised to process any official statistics, shall before publishing or communicating such information to the public, obtain an authorisation... A person shall not disseminate or otherwise communicate to the public any statistical information which is intended to invalidate, distort or discredit official statistics...Any person who publishes or communicates any official statistics contrary to the provisions of this Act, commits an offence and is liable, on conviction to a fine of not less than ten million shillings or to imprisonment for a term of not less than three years or to both.” Amendment of the Statistics Act. Bill Supplement to the Gazette of the United Republic of Tanzania No. 23. Vol.99. 8 June 2018.

³²³ URT, 2018.

different geographical zones, readiness by the local government authorities to devolve powers, and the acquisition of necessary technical skills.³²⁴

6.2.7 LIMITED TECHNICAL CAPACITY TO ACCESS FORESTRY, FISHERIES, LIVESTOCK, AND AGRICULTURAL VALUE CHAINS

The technical capacity to access natural resource value chains -- i.e., taking advantage of the full range of value-adding activities required to bring a product or service through the different phases of production -- is lacking for local communities and local government authorities in Tanzania. Affected sectors include forestry, fisheries, livestock, and agricultural, with capacity gaps across production, post-harvest handling, processing, and distribution. For instance, assessment team consultations in Kigoma found that a lack of capacity contributes to or exacerbates existing levels of poverty, driving: 1) increased instances of unsustainable practices³²⁵ and 2) encroachment upon protected or reserved land for grazing and farming.³²⁶

For communities to benefit from value chains, land tenure must be established and aligned with village land use planning.³²⁷ However, land use planning is an expensive undertaking that requires specialists, and if not done in a proper and participatory manner, can result in an ineffective exercise. The assessment team heard numerous anecdotes of land use plans that failed to be implemented because communities did not possess the technical skills to maximize the intended benefits from livestock, agriculture, and/or forestry activities designated within the VLUPs.³²⁸ In places such as Kigoma, the majority of the population are farmers with low financial capacity and knowledge to manage their land for improved value chains.³²⁹ In many areas across the country, access to timber is readily available in areas with tenure rights to own and harvest forest resources (i.e., legal and sustainable), as well as those without any tenure rights (i.e., illegal and unsustainable). However, timber harvest is concentrated heavily on thirty of the approximately 1,600 well-known tree species in Tanzania as many species have poor market value, a reality exacerbated by lack of technical skills and technology to harvest and process for higher quality. Communities engaged in fisheries management via BMUs (e.g., Tanga coastal areas) and open access (e.g., Lake Tanganyika) often lack the financing and technical capacity to invest in sustainable technologies to harvest and prepare fish to reach market.³³⁰ In some areas commercial fisheries have contracted directly with fishermen for their catch because BMUs do not have a system in place to help communities market their catch.

³²⁴ Consultations with bilateral donor implementing partner and GoT representatives, November 2018.

³²⁵ Consultation with GoT representatives, November 2018.

³²⁶ Consultation with GoT representatives, November 2018.

³²⁷ Consultation with GoT representatives, November 2018.

³²⁸ Most VLUPs end at the zoning stage (stage 4), thus limiting full implementation (stage 5) and monitoring (stage 6), which would provide the basis for access and use of land management best practices. Stage 5 includes the development of management plans for each zone, restoration of the degraded land, and undertaking the necessary steps for attracting private sector investments.

³²⁹ Consultations with local office of international NGO and GoT representatives, November 2018.

³³⁰ Consultations with local office of international NGO and GoT representatives, November 2018.

7. ACTIONS NECESSARY TO CONSERVE AND PROTECT TROPICAL FORESTS AND BIODIVERSITY

The following table (Table 13) defines the actions necessary to effectively conserve and protect tropical forests and biodiversity in Tanzania. The defined actions necessary represent the full range of actions the assessment team believes necessary to effectively realize sound and sustained conservation and management of Tanzania’s extensive biodiversity and tropical forest. This Assessment does not proscribe the below actions to any particular actor (neither within USAID nor within Tanzania), but these actions necessary directly inform the “extent to which” analysis conducted in Section 8, the outputs of which inform the guiding principles and programming recommendations for USAID/Tanzania developed in Section 9.

TABLE 13. ACTIONS NECESSARY, DRIVERS ADDRESSED, AND LINKED THREATS ACCORDING TO TIER OF PRIORITY

ACTIONS NECESSARY	DRIVER(S) ADDRESSED	LINKED THREATS
TIER I: HIGHEST PRIORITY		
Action 1: Develop and implement integrated and coordinated land use and resource management plans that empower women and reinforce conservation of biodiversity.		
<ul style="list-style-type: none"> ● Land use and terrestrial and aquatic resource management plans for prioritized wildlife dispersal areas, buffer zones, fisheries management areas and connective corridors that are prepared in coordination with communities, village councils, local co-management bodies (e.g., Authorized Associations, BMUs, Village Natural Resource Committees), LGAs, regional authorities, and local protected area management authorities will help ensure: 1) local, district, and regional/landscape level land use and resource management plans are aligned; 2) communities understand and can inform and engage with district or regional considerations in developing VLUPs; and 3) that government understands the economic / cultural / future needs of relevant communities. <ol style="list-style-type: none"> I. Village, district, and regional land use management plans that account for resource-intensive livelihoods (e.g., agriculture, livestock grazing, charcoal production) in recognition of growing populations and resource demand will help minimize unsustainable exploitation of resources and create space for targeted interventions to increase the application of best management practices 	<ul style="list-style-type: none"> ● Limited technical capacity for value addition in key sustainable livelihood sectors value chains ● Weak governance and limited institutional effectiveness ● Population growth and internal migration 	<ul style="list-style-type: none"> ● Agricultural expansion ● Illegal and unsustainable timber harvesting ● Charcoal production ● Major infrastructure development ● Land use change ● Expansion of existing or creation of new settlements ● Wildlife poaching and trafficking of high-

TABLE 13. ACTIONS NECESSARY, DRIVERS ADDRESSED, AND LINKED THREATS ACCORDING TO TIER OF PRIORITY

ACTIONS NECESSARY	DRIVER(S) ADDRESSED	LINKED THREATS
<p>2. Participatory planning that maximizes participation of women, applying best practices (e.g., those used by UCRT) to increase to relative proportion the number of women on village councils, or in decision-making capacities, compared against legal requirements will foster empowerment of women.</p> <p>3. Continuing long-term capacity-building around co-management for all relevant stakeholders (e.g., communities, public sector, private sector) will improve effectiveness of management and funding mechanisms for co-management. Increased emphasize on capacity building for women and youth in communities, and women-led private sector enterprises will facilitate empowerment of women.³³¹</p> <ul style="list-style-type: none"> ● Donors, NGOs, VPO, and PO-RALG working together to improve cross-sectoral coordination with and across LGAs, Regional Administrations, central government, and private sector actors , in particular coordination to align efforts around land use planning and resource mapping and technical assistance to support implementation of land use plans, and prioritization of interventions. ● Creation of mechanisms to coordinate land use or resource management planning with water resource management planning (e.g., by Water User Association [WUA] creations) will facilitate conservation. ● Donor coordination with VPO and President’s Office - Regional Administration and Local Government (PO-RALG) will improve cross-sectoral coordination with and across LGAs, Regional Administrations, central government, NGOs, private sectors, and multilateral/bilateral donors (e.g., DPG). Leveraging this multi-stakeholder coordination will facilitate adoption of best practices and innovative technologies that can expedite and reduce cost of land use and resource management planning. 		<p>value species</p> <ul style="list-style-type: none"> ● Livestock encroachment and overgrazing

³³¹ LTA noted that the village councils and village executive committees they worked with would often abuse their power, underscoring the importance of combining innovative land tenure systems with best practices in land use planning and governance.

TABLE 13. ACTIONS NECESSARY, DRIVERS ADDRESSED, AND LINKED THREATS ACCORDING TO TIER OF PRIORITY

ACTIONS NECESSARY	DRIVER(S) ADDRESSED	LINKED THREATS
<p>Action 2: Support targeted food security, family planning, and economic growth initiatives aligned with priority (terrestrial and marine) biodiversity and forestry conservation geographies and targets.</p>		
<ul style="list-style-type: none"> ● Donors, working with relevant GoT sector ministries, that target opportunities to provide training to extension service providers and direct technical assistance to communities on agriculture/livestock/aquaculture best practices (e.g., via extension services) will enhance the likelihood of implementation of land use plans by improving the effectiveness of their component elements. Best practices for consideration include climate smart and climate resilient practices such as: <ul style="list-style-type: none"> – improved water resource management; – agroforestry initiatives that can improve soil fertility while providing biomass energy alternatives; – intercropping and crop rotations; post-harvest agricultural byproduct management; – selection of agrochemicals, proper timing of their application, and use in appropriate quantities; – grazeland management planning; destocking to improve quality/health of livestock; fish pond construction and siting; water quality management; and cage fishing – noting species, locations, management practices ● Collaboration between GoT and donors on ways to catalyze sustainable natural-resource based enterprises (e.g., voluntary reducing emissions from deforestation and forest degradation (REDD)+, eco-tourism, PES, certified high-value timber, WMAs) through: 1) increased access to finance, 2) facilitated linkages to hospitable community partners, and 3) support on sustainable business and management practices will increase sustainable derivation of benefits received by communities for conservation and sound natural resource management. <ul style="list-style-type: none"> ○ Encouraging Public-Private Partnerships (PPPs) via competitive grants/solicitations will create linkages to communities engaged on participatory land use or natural resource management planning and enable piloting of new innovative enterprises ○ Prioritizing existing PPP models with demonstrated success that can be scaled up in 	<ul style="list-style-type: none"> ● Limited technical capacity for value addition in key sustainable livelihood sectors ● Lack of access to and awareness of sustainable livelihoods ● Inadequate data collection and management to inform decision-making 	<ul style="list-style-type: none"> ● Illegal fishing gear and unsustainable fishing practices ● Agricultural expansion and poor agricultural management practices ● Illegal timber extraction ● Livestock encroachment ● Expansion of settlements ● Firewood and charcoal production ● Climate change

TABLE 13. ACTIONS NECESSARY, DRIVERS ADDRESSED, AND LINKED THREATS ACCORDING TO TIER OF PRIORITY

ACTIONS NECESSARY	DRIVER(S) ADDRESSED	LINKED THREATS
<p>current contexts or tailored and trialed in new Tanzanian contexts, and that meet a core set of criteria for sustainable resource use, youth engagement, and women entrepreneurship and leadership will facilitate collaboration. For instance, the Mpingo Conservation and Development Initiative (MCDI) has supported the establishment of a Forest Stewardship Council (FSC)4-certified community forest in southern Tanzania. MCDI works with private sector buyers (e.g., in the United Kingdom) to extract, process and export high-value ebony wood (<i>Dalbergia melanoxylon</i>, or Mpingo in Kiwahili) used in the manufacture of musical instruments such as clarinets and oboes. MCDI has established a group-based certification scheme open to any community-managed natural forest in Tanzania.³³²</p> <ul style="list-style-type: none"> • The training of GoT officials (down to the local level) in sustainable management practices within their relevant sector (e.g., agriculture, livestock, aquaculture, tourism) to better regulate current and future natural resource management and extraction activities will address the current weakness in GoT institutional and technical capacity at national, regional, and district levels to facilitate the conversion of different economic sectors to a more sustainable use of natural resources, • Financial and political support to academic institutions (e.g., African College of Wildlife Management, Mweka; Sokoine University of Agriculture; Nelson Mandela-African Institute of Science and Technology, Arusha; Institute of Marine Sciences, Zanzibar) will build the capacity of the next generation of NRM stakeholders. • Continuation of population, health, environment (PHE) initiatives in high population growth areas throughout the country -- particularly Dar es Salaam, western Tanzania (e.g., Kigoma, Uvinza), and the Lakes regions (e.g., Mwanza) -- (and introduced where they do not currently exist) will help communities understand the linkage between unsustainable resource use and poor health and nutrition outcomes. 		

³³² Blomley, Tom. 2013. Lessons Learned from Community Forestry in Africa and Their Relevance for REDD+. USAID-supported Forest Carbon, Markets and Communities (FCMC) Program. Washington, DC, USA.

TABLE 13. ACTIONS NECESSARY, DRIVERS ADDRESSED, AND LINKED THREATS ACCORDING TO TIER OF PRIORITY

ACTIONS NECESSARY	DRIVER(S) ADDRESSED	LINKED THREATS
<p>Action 3: Coordinate prioritization and improve implementation of tropical forestry and biodiversity protection and management.</p>		
<ul style="list-style-type: none"> ● Establishing and implementing a formal prioritization process to select geographies and target species to be conserved and guide GoT, donor, and NGO selection of key buffer zones, dispersal areas, migration routes, and connective corridors will facilitate conservation programming (and collect data re: Action 6). ● The GoT's (e.g., VPO DoE, PO-RALG, MNRT, TFS) improvement of their overall evaluation of protected area assets, reserves/game-controlled areas, and nature forest reserves will ensure that existing technical and financial resources for protected area management are maximized and inform coordination across GoT entities. <ul style="list-style-type: none"> ○ Improving coordination between government institutions (TAWA; TANAPA; Ministry of Agriculture, Food Security and Cooperatives; Ministry of Livestock and Fisheries; Ministry of Works, Transport and Communications, etc.) and donors, along with their IPs, will enhance the management of natural resources, avoid duplication of efforts, and minimize 'turf wars'— especially among actors ultimately vested in the same or similar outcomes (e.g., TAWA and TANAPA). ● Consistently engaging and training local and regional governance bodies of biodiversity and tropical forests will facilitate effective, multi-sectoral management, and oversight, especially if engagement is aligned with priorities established by VPO DoE, PO-RALG, MNRT, and TFS. Key focus areas for capacity building include multi-sectoral land use and resource management planning; how LGAs and RASs can effectively coordinate, support, and otherwise engage with village-level planning efforts; and how LGAs and RASs can better collect, manage, share, and coordinate data, best practices, and aligned interventions. 	<ul style="list-style-type: none"> ● Limited technical capacity for value addition in key sustainable livelihood sectors ● Inadequate data collection and management to inform decision-making ● Weak governance and limited institutional effectiveness 	<ul style="list-style-type: none"> ● Agricultural expansion ● Illegal and unsustainable timber harvesting ● Charcoal production ● Major infrastructure development ● Land use change ● Expansion of existing or creation of new settlements ● Wildlife poaching and trafficking of high-value species ● Livestock encroachment and overgrazing ● Use of illegal and destructive fishing gears and unsustainable fishing practices ● Climate change

TABLE 13. ACTIONS NECESSARY, DRIVERS ADDRESSED, AND LINKED THREATS ACCORDING TO TIER OF PRIORITY

ACTIONS NECESSARY	DRIVER(S) ADDRESSED	LINKED THREATS
Action 4: Increase access to and affordability of alternatives to biomass energy, particularly in urban areas.		
<ul style="list-style-type: none"> GoT research on cost-reflective tariffs or subsidy schemes to increase adoption of LPG and electricity connectivity in urban areas will facilitate reducing demand for charcoal and wood fuels by providing affordable energy alternatives. Donors and NGOs that seek opportunities to support the formal acquisition of land tenure (e.g., via individual or communal CCROs) to equity (e.g., using CCROs as collateral) will enable increased investment in household LPG infrastructure—particularly in urban areas—to reduce urban demand for charcoal and wood fuel. Aggressive GoT exploration and pursuit of development of non-hydroelectric energy development (e.g., feasibility studies or tenders to evaluate or develop solar, wind, geothermal, or natural gas; conduct least-cost of electricity assessments based on existing resources and projected changes in energy demand based on population growth and climate change) will increase development of affordable energy alternatives to existing dependence on biomass/wood-based energy. Collaboration amongst VPO, DoE, Ministry of Energy, and National Environmental Management Council (NEMC) will ensure that the identification, prospecting, and selection of energy solutions is done in a manner consistent with broader biodiversity and tropical forest conservation priorities and requirements, including enforcing existing Environmental Impact Assessment legislation. 	<ul style="list-style-type: none"> A lack of viable and affordable non-wood fuel and other energy sources Population growth and internal migration Weak governance and limited institutional effectiveness 	<ul style="list-style-type: none"> Charcoal and wood fuel production Climate change
Action 5: Promote counter wildlife trafficking (CWT) and anti-poaching initiatives; combat illegal, unreported, and unregulated (IUU) fisheries.		
<ul style="list-style-type: none"> GoT, NGOs, and donors strengthening of participatory community engagement (including employing individuals from the communities) with villages in key corridors, buffer zones, and dispersal areas to understand community dynamics and identify complementary programming that can address drivers such as poverty or food insecurity, will reduce the likelihood of communities participating or allowing wildlife trafficking. 	<ul style="list-style-type: none"> Domestic and international markets for timber and other biodiversity products Weak 	<ul style="list-style-type: none"> Poaching and trafficking Human-wildlife conflict Bushmeat hunting

TABLE 13. ACTIONS NECESSARY, DRIVERS ADDRESSED, AND LINKED THREATS ACCORDING TO TIER OF PRIORITY

ACTIONS NECESSARY	DRIVER(S) ADDRESSED	LINKED THREATS
<ul style="list-style-type: none"> ● Continued GoT, NGO, and donors training to law enforcement officials, rangers, and village game scouts will make law enforcement officials more efficient and capable of preventing wildlife crimes. Key training topics include: use of improved technologies (e.g., for monitoring movement of illegal products at borders and ports, identification in local markets, or tracking wildlife movement); crime scene management, evidence collection, handling, and storage; intelligence gathering and sharing; and adjudication of wildlife trafficking crimes. ● Engagement and strong coordination with GoT’s new anti-poaching coalition and the various organizations involved in CWT and anti-poaching (e.g., TRAFFIC, USFWS, TAWA, TANAPA, US Department of the Interior’s International Technical Assistance Program [DOI-ITAP], US Department of State’s Bureau of International Narcotics and Law Enforcement Affairs [DOS-INL], PAMS Foundation, UN Office on Drugs and Crime [UNODC]) will ensure a cohesive CWT approach is taken. ● Increased funding for anti-poaching equipment (e.g., vehicles, cameras, radios, tracking devices for rhino and elephants) and infrastructure (e.g., improved roads to facilitate ranger access and park management) will equip wildlife officers with essential materials for combatting wildlife trafficking. ● Enhancing inter-agency surveillance and control of marine waters across internal waters, territorial seas and Tanzania’s Exclusive Economic Zone (EEZ) by targeting IUU fisheries as well as illegal timber, mangrove and wildlife trafficking (these illegal practices are sometimes inseparable from other trafficking and security infringements) will reduce illegal practices. Establishing capacity for surveillance and control within internal and territorial waters [to 12 nm] and strengthening capacity as an independent, domestic capability will facilitate this reduction in illegal practices. Offshore surveillance within the EEZ beyond 12nm is likely to require joint arrangements and cost-sharing with neighboring countries. 	<p style="text-align: center;">governance and limited institutional effectiveness</p>	<ul style="list-style-type: none"> ● Expansion of settlements

TABLE 13. ACTIONS NECESSARY, DRIVERS ADDRESSED, AND LINKED THREATS ACCORDING TO TIER OF PRIORITY

ACTIONS NECESSARY	DRIVER(S) ADDRESSED	LINKED THREATS
TIER 2 - HIGH PRIORITY ACTIONS		
Action 6: Collect key biodiversity and forestry data to fill existing data gaps and inform future conservation-related interventions.		
<ul style="list-style-type: none"> ● Continuation of donor and TFS development of improved data on total forest resources throughout the country, with high priority areas such as Albertine Rift and Eastern Arc montane forests, coastal dryland forests, and mangrove forests will be instrumental for better understanding the timber trade (e.g., amount being exported, main ports of export, and main sources/locations of internal demand) as well as informing the success of future conservation initiatives. ● The GoT undertaking and validating biodiversity and fish stock assessments in marine (e.g., Tanga, Pemba, Mtwara [data is lacking in all coastal inshore waters]) and key freshwater (e.g., Lake Tanganyika) ecosystems will improve understanding of practices o sustainably manage aquatic ecosystems. ● GoT and donors increasing their priorities to collect data in high biodiversity areas will inform conservation planning and management, particularly for threatened (and historically overlooked) endemic species (e.g., chameleons, kipunji, red colobus, tree frogs). 	<ul style="list-style-type: none"> ● Limited technical capacity for value addition in key sustainable livelihood sectors ● Inadequate data collection and management to inform decision-making ● Weak governance and limited institutional effectiveness 	<ul style="list-style-type: none"> ● Unsustainable and illegal fishing practices ● Unsustainable and illegal logging ● Wildlife trafficking and poaching
Action 7: Strengthen commitment to transparent governance including enforcement at national and local levels, strengthened capacity for monitoring, and compliance with and enforcement of natural resource laws and policies.		
<ul style="list-style-type: none"> ● Donors and NGOs leveraging of the current administration’s anti-corruption push by training investigative journalists, lawyers, independent judicial systems, academics, third-party monitors, and watchdog NGOs will help hold political leaders and officials accountable. ● Actions to increase capacity include: <ul style="list-style-type: none"> ○ Increased enforcement and criminal investigation (e.g., wildlife and environmental crimes) at national, regional, and local levels. ○ Strengthened capacity for monitoring, compliance, and enforcement of natural 	<ul style="list-style-type: none"> ● Limited technical capacity for value addition in key sustainable livelihood sectors ● Lack of access to and awareness of 	<ul style="list-style-type: none"> ● Wildlife trafficking and poaching ● Illegal and unsustainable logging ● Unsustainable and illegal fishing practices

TABLE 13. ACTIONS NECESSARY, DRIVERS ADDRESSED, AND LINKED THREATS ACCORDING TO TIER OF PRIORITY

ACTIONS NECESSARY	DRIVER(S) ADDRESSED	LINKED THREATS
<ul style="list-style-type: none"> resource laws and policies (e.g., reducing illegal and unsustainable natural resource harvesting practices). ○ Collect, use and share data with relevant actors, particularly on wildlife populations ○ Maintaining political and civil stability to encourage foreign and domestic investment, promote trust in government activities, and protect vital natural resources. ○ Disseminating regulatory information on a regular basis to ensure the public knows their rights, laws and penalties associated with infractions, and the roles and responsibilities of law enforcement agents. ● Decentralizing authority and financial management from central government to regions, districts, and protected area management authorities will provide more flexibility in addressing local issues. ● Providing sufficient resources to local areas will improve law enforcement, local planning, and community outreach. Resources could include: finances for equipment, infrastructure, operations, and training. 	<ul style="list-style-type: none"> sustainable livelihoods ● Domestic and international markets for timber and other biodiversity products ● Weak governance and limited institutional effectiveness 	<ul style="list-style-type: none"> ● Pollution and ecosystem degradation from gas and mineral extraction or exploration

TIER 3 - ADDITIONAL NECESSARY ACTIONS

Action 8: Support development, revision, harmonization, and research to inform strengthened regulatory and legal framework impacting natural resource management

<ul style="list-style-type: none"> ● GoT working with donors to conduct research and build capacity around negotiating deals for resource exploitation, a priority area for GoT, will strengthen resource management. Research and capacity building topics include how best to mainstream environmental issues - including conservation of biodiversity and sustainable resource management -- into such deals, with attention paid to the location of exploited resources, the infrastructure needs and their attendant impacts, and the requirements expected of and enforced for bidding private sector entities. 	<ul style="list-style-type: none"> ● Weak governance and limited institutional effectiveness ● Limited technical capacity for value addition in key 	<ul style="list-style-type: none"> ● Trafficking and poaching ● Illegal and unsustainable logging ● Pollution and ecosystem degradation from
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TABLE 13. ACTIONS NECESSARY, DRIVERS ADDRESSED, AND LINKED THREATS ACCORDING TO TIER OF PRIORITY

ACTIONS NECESSARY	DRIVER(S) ADDRESSED	LINKED THREATS
<ul style="list-style-type: none"> ● TFS, MNRT, Forestry and Beekeeping Division (FBD), donors, and NGOs coordinating to a) work to harmonize permitting systems for timber products, b) develop mechanisms to recognize forged documents, c) improve management capacity for communities and government in managing coastal mangroves (e.g., stock assessment, offtake, and monitoring), and d) support development and utilization of forest management plans, with full involvement of local communities will increase sector coordination and reduce the illegal harvesting and transportation of timber products. ● Donors, NGOs, and local (e.g., village and district) leadership t collaboration with MNRT in the piloting of the new Wildlife Corridor Regulation to evaluate its efficacy and viability as a tool will improve protection and conservation of wildlife corridors, migration areas, buffer zones, and dispersal areas. Piloting should be followed by participatory consultation and modification to the regulation. ● Donors and NGOs engagement with GoT in refining the new freshwater protected area legislation will facilitate adoption of the regulation. The taking of leadership positions by donors and NGOs in piloting the procedures will improve conservation of freshwater biodiversity (e.g., in Lake Tanganyika, Lake Rukwa) and the effectiveness of the regulation. ● Establishment of new policies to formalize and govern aquaculture and bushmeat markets, e.g., addressing value chain and environmental impact issues will support sustainable development. 	<p>sustainable livelihood sectors</p> <ul style="list-style-type: none"> ● Lack of access to and awareness of sustainable livelihoods ● Domestic and international markets for timber and other biodiversity products 	<p>oil/gas/mineral extraction</p>

8. EXTENT TO WHICH THE ACTIONS PROPOSED FOR SUPPORT BY THE AGENCY MEET THE ACTIONS NECESSARY

This section characterizes the Assessment team’s findings regarding the “extent to which” the actions proposed or under implementation by USAID/Tanzania support the ‘actions necessary’ as defined in Section 7.

Table 14 provides a summary overview of where current and planned Mission strategy and programming contribute to the actions necessary, have opportunity to do so more fully, or simply do not adequately contribute. This is accomplished by mapping the current CDCS IRs (columns) against the eight defined actions necessary (rows).

Section 8.1 elaborates on this overview, with each sub-section describing for one of the eight defined actions necessary, the manner in which current and planned programming contribute to that action, examples within current programming of that contribution, and opportunities for the Mission to improve upon that contribution through and under their new CDCS.

TABLE 14. EXTENT TO WHICH NECESSARY ACTIONS ARE ADDRESSED BY USAID/TANZANIA PROGRAMMING										
<p>+ = EXISTING PROGRAMS MEET THE ACTION NECESSARY AND INTEGRATE DIRECT CONSERVATION ACTIONS FOR TROPICAL FORESTS AND BIODIVERSITY</p> <p>Δ = EXISTING PROGRAMS MEET THE ACTION NECESSARY BUT DO NOT SPECIFICALLY INTEGRATE BIODIVERSITY AND FOREST ISSUES INTO THEIR ACTIVITY</p> <p>○ = OPPORTUNITY FOR USAID, ACTIVITIES ARE NOT CURRENTLY MEETING THE NECESSARY ACTION, BUT COULD IN FUTURE PROGRAMS</p>	USAID/TANZANIA									
	DO 1 – Tanzanian Women and Youth Empowered			DO 2 – Inclusive Broad-Based Economic Growth Sustained				DO 3 – Effective Democratic Governance Improved		
	IR 1.1 - Gender Equality Increased	IR 1.2 - Health Status Improved	IR 1.3 - Lifelong Learning Skills Improved	IR 2.1 - Binding Constraints to Private Sector Investment Reduced	IR 2.2 - Agricultural Productivity and Profitability Increased in Targeted Value Chains	IR 2.3 - Stewardship of Natural Resources Improved	IR 2.4 - Unmet Need for Family Planning Reduced	IR 3.1 - Citizen Engagement Made More Effective	IR 3.2 - Government Delivery of Services Improved	IR 3.3 - Government Accountability Increased
ACTIONS NECESSARY										
Action 1 – Develop and implement integrated and coordinated land use and resource management plans that empower women and reinforce conservation of biodiversity	Δ/O		Δ/O	○		+/Δ			○	

TABLE 14. EXTENT TO WHICH NECESSARY ACTIONS ARE ADDRESSED BY USAID/TANZANIA PROGRAMMING

<p>+ = EXISTING PROGRAMS MEET THE ACTION NECESSARY AND INTEGRATE DIRECT CONSERVATION ACTIONS FOR TROPICAL FORESTS AND BIODIVERSITY</p> <p>Δ = EXISTING PROGRAMS MEET THE ACTION NECESSARY BUT DO NOT SPECIFICALLY INTEGRATE BIODIVERSITY AND FOREST ISSUES INTO THEIR ACTIVITY</p> <p>○ = OPPORTUNITY FOR USAID, ACTIVITIES ARE NOT CURRENTLY MEETING THE NECESSARY ACTION, BUT COULD IN FUTURE PROGRAMS</p>	USAID/TANZANIA									
	DO 1 – Tanzanian Women and Youth Empowered			DO 2 – Inclusive Broad-Based Economic Growth Sustained				DO 3 – Effective Democratic Governance Improved		
	IR 1.1 - Gender Equality Increased	IR 1.2 - Health Status Improved	IR 1.3 - Lifelong Learning Skills Improved	IR 2.1 - Binding Constraints to Private Sector Investment Reduced	IR 2.2 - Agricultural Productivity and Profitability Increased in Targeted Value Chains	IR 2.3 - Stewardship of Natural Resources Improved	IR 2.4 - Unmet Need for Family Planning Reduced	IR 3.1 - Citizen Engagement Made More Effective	IR 3.2 - Government Delivery of Services Improved	IR 3.3 - Government Accountability Increased
ACTIONS NECESSARY										
Action 2 – Support targeted food security, family planning, and economic growth initiatives aligned with priority (terrestrial and marine) biodiversity and forestry conservation geographies and targets	Δ/O	Δ	○	○	○	+/Δ	+	+/Δ	Δ/O	+/Δ
Action 3 – Coordinated prioritization and improved implementation of tropical forestry and biodiversity protection and management			Δ/O	Δ/O	○	+/Δ		Δ/O	Δ/O	+/Δ
Action 4 – Increase access to and affordability of alternatives to biomass energy, particularly in urban areas				Δ/O		○				
Action 5 – Promote CWT and anti-poaching initiatives; combat IUU fisheries				Δ		+/Δ		Δ	+/Δ	Δ/O
Action 6 – Collection of key biodiversity and forestry data to fill existing data gaps and inform future conservation-related interventions				Δ	○	○				
Action 7 - Strengthen commitment to transparent governance and anti-corruption				Δ	○	○		○	○	+/Δ

TABLE 14. EXTENT TO WHICH NECESSARY ACTIONS ARE ADDRESSED BY USAID/TANZANIA PROGRAMMING

<p>+ = EXISTING PROGRAMS MEET THE ACTION NECESSARY AND INTEGRATE DIRECT CONSERVATION ACTIONS FOR TROPICAL FORESTS AND BIODIVERSITY</p> <p>Δ = EXISTING PROGRAMS MEET THE ACTION NECESSARY BUT DO NOT SPECIFICALLY INTEGRATE BIODIVERSITY AND FOREST ISSUES INTO THEIR ACTIVITY</p> <p>○ = OPPORTUNITY FOR USAID, ACTIVITIES ARE NOT CURRENTLY MEETING THE NECESSARY ACTION, BUT COULD IN FUTURE PROGRAMS</p>	USAID/TANZANIA									
	DO 1 – Tanzanian Women and Youth Empowered			DO 2 – Inclusive Broad-Based Economic Growth Sustained				DO 3 – Effective Democratic Governance Improved		
	IR 1.1 - Gender Equality Increased	IR 1.2 - Health Status Improved	IR 1.3 - Lifelong Learning Skills Improved	IR 2.1 - Binding Constraints to Private Sector Investment Reduced	IR 2.2 - Agricultural Productivity and Profitability Increased in Targeted Value Chains	IR 2.3 - Stewardship of Natural Resources Improved	IR 2.4 - Unmet Need for Family Planning Reduced	IR 3.1 - Citizen Engagement Made More Effective	IR 3.2 - Government Delivery of Services Improved	IR 3.3 - Government Accountability Increased
ACTIONS NECESSARY										
<p>Action 8 – Support development, revision, harmonization, or research to inform strengthened regulatory and legal framework impacting natural resource management</p>		○			Δ/○	○	Δ/○			

8.1 DISCUSSION OF EXTENT TO WHICH THE CURRENT AND PLANNED STRATEGY AND PROGRAMMING SUPPORT THE ACTIONS NECESSARY TO CONSERVE BIODIVERSITY AND TROPICAL FORESTS OF TANZANIA

8.1.1 ACTION 1: DEVELOP AND IMPLEMENT INTEGRATED AND COORDINATED LAND USE AND RESOURCE MANAGEMENT PLANS THAT EMPOWER WOMEN AND REINFORCE CONSERVATION OF BIODIVERSITY

TABLE 15. EXTENT TO WHICH THE CURRENT OR PLANNED STRATEGY AND PROGRAMMING CONTRIBUTE TOWARD ACTION 1

ACTION 1	CONTRIBUTION TOWARD ACTION 1
<p>Land use and terrestrial and aquatic resource management plans for prioritized wildlife dispersal areas, buffer zones, fisheries management areas and connective corridors that are prepared in coordination with communities, village councils, local co-management bodies, LGAs, regional authorities, and local protected area management authorities will help ensure: 1) local, district, and regional/landscape level land use and resource management plans are aligned; 2) communities understand and can inform and engage with district or regional considerations in developing VLUPs; and 3) that government understands the economic/cultural/ future needs of relevant communities.</p> <ul style="list-style-type: none"> • Village, district, and regional land use management plans that account for resource-intensive livelihoods • Participatory planning that maximizes participation of women, applying best practices • Continue long-term capacity-building around co-management for all relevant stakeholders 	<p>IR 2.3 (particularly sub-IR 2.3.1) generally contributes to Action 1. The strategy draws important linkage between IR 2.1 and IR 3.1, reflecting the integrated nature of land use and resource management planning and citizen engagement and effective governance. While the strategy—and subsequent NRM PAD—focused primarily on WMAs, consultations with USAID/Tanzania’s NRM team revealed intent to support broader set of community-based management or co-management models available, in line with this Action. IR 2.3 seems to equate current or potential high value tourism areas with areas of high biodiversity value. The assessment team notes and commends that the USAID/Tanzania NRM team recognized the need to support high biodiversity areas not solely for their current or potential tourism value.</p> <p>IR 2.3 further highlights the need for strengthened governance of, and institutions supporting, natural resource management. IR 3.2 captures the importance of working to improve the effectiveness of service delivery, with particular focus on LGAs. Many of USAID’s programs—both in NRM and FTF programming—work in coordination with LGAs, donors, and NGOs in conducting land use planning and resource mapping efforts. Sub-IR 2.3.2 emphasized the importance of enhancing the economic benefits derived from conservation-based enterprises. IR 2.3, particularly sub-IR 2.3.3, addresses coordination between land use and water resource management planning, particularly USAID’s water resource management work in its FTF/SAGCOT program areas.</p> <p>IR 1.1 and IR 1.3 present opportunities to empower women and youth, respectively. As described in Box 1, below, UCRT’s work in this regard may be an excellent model to replicate in other parts of the country. Currently the strategy does not explicitly emphasize gender equality and youth empowerment as a core tenet of land use management and resource management planning and implementation efforts.</p> <p>Examples:</p> <ul style="list-style-type: none"> • GMU’s community-based land use planning to create contiguous forest area across 74 villages • Landscape Conservation in Western Tanzania (LCWT) will engage with local government to improve natural resource management and support 104 villages in Western Tanzania in participatory land use planning and implementation of those VLUPs.

TABLE 15. EXTENT TO WHICH THE CURRENT OR PLANNED STRATEGY AND PROGRAMMING CONTRIBUTE TOWARD ACTION I

ACTION I	CONTRIBUTION TOWARD ACTION I
<p>Donors, NGOs, VPO, and PO-RALG working together to improve cross-sectoral coordination with and across LGAs, Regional Administrations, central government, and private sector actors, with goal to align efforts around land use planning and resource mapping and technical assistance that can support implementation of land use plans, and prioritization of interventions.</p>	<ul style="list-style-type: none"> • LCWT will also promote expansion and operationalization of and use planning at the landscape scale. • Endangered Ecosystems - Northern Tanzania (EENT) worked in tandem with local NGO UCRT to establish communal CCROs, which created an approximately 600,000-ha contiguous area of grazelands to reduce persistent human-wildlife conflict and avoiding further degradation of rangelands. • In practice, Mission programming can increase explicit emphasis on gender equality – e.g., within leadership roles at village levels in land use and resource management planning activities. UCRT emphasizes gender-balanced leadership, mandating that all villages with which they work add 5 women to the village council, ensuring at least 12 of 30 members are women, extending beyond the Tanzanian requirement that “no less than 7” women are members of the village council (out of typically 20 or 25 total individuals).
<p>Creation of mechanisms to coordinate land use or resource management planning with water resource management planning (e.g. via WUAs) will facilitate conservation.</p>	<ul style="list-style-type: none"> • The Land Tenure Assistance (LTA) program integrated participatory village-level land use planning with the innovative Mobile Applications to Secure Tenure (MAST) approach to securing—and the Technical Register Under Social Tenure (TRUST) approach to registering—land tenure within villages. • GMU application of the MAST approach, which costs under \$2000 per plan ,as an alternative to villages’ engaging the LUPC to support their VLUPs (which costs approximately \$6,000 per plan).
<p>Donor coordination Work with VPO and PO-RALG will to improve cross-sectoral coordination with and across LGAs, Regional Administrations, central government, NGOs, private sectors, and multilateral/bilateral donors (e.g., DPG). Leveraging this multi-stakeholder coordination will facilitate adoption of best practices and innovative technologies that can expedite and reduce cost of land use and resource management planning.</p>	<p>Opportunities</p> <ul style="list-style-type: none"> • However, the strategy focused too heavily on WMAs and opportunity exists for supporting women- and youth-focused entrepreneurship and/or capacity building to improve gains derived from these processes. • Greater strategic attention on cross-sectoral coordination that spans local, regional, and central government, and engages private sector would support land use and resource management planning within and across villages and would help ensure effective dialogue and coordination at multiple levels of governance and across technical sectors in design and implementation of those plans. • USAID’s targeted technical assistance of that coordinates land use and water resource management does not currently sufficiently overlap with, or work to support resilience and conservation of, high value biodiversity areas.

8.1.2 ACTION 2: SUPPORT TARGETED FOOD SECURITY, FAMILY PLANNING, AND ECONOMIC GROWTH INITIATIVES ALIGNED WITH PRIORITY (TERRESTRIAL AND MARINE) BIODIVERSITY AND FORESTRY CONSERVATION GEOGRAPHIES AND TARGETS

TABLE 16. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 2

ACTION 2	CONTRIBUTION TOWARD ACTION 2
<p>Donors, working with relevant GoT sector ministries, that target opportunities to provide training to extension service providers and direct technical assistance to communities on agriculture/livestock/aquaculture best practices (e.g., via extension services) will enhance the likelihood of implementation of land use plans by improving the effectiveness of their component elements. Best practices for consideration include climate smart and climate resilient practices.</p>	<p>IR 2.1 seeks to reduce binding constraints to economic growth, IR 2.2 seeks to enhance agricultural productivity and profitability, and IR 2.3 seeks to improve stewardship of natural resources. However, the current strategy is very limited in its intersection of targeted technical assistance for agricultural, livestock, and/or aquaculture livelihoods and conservation programming. Such an intersection falls within the overarching DO 2, but in both the strategy and in practice, technical programming in agriculture, energy, and biodiversity and natural resource management largely operate independently of one another. IR 3.2 provides space for GoT capacity building in NRM space, but the CDCS does not specifically target such sustainable resource management capacity building, rather focusing on health programming. Support to academic institutions falls fully within IRs 2.1, 2.2, and 2.3, and is complementary to IRs 1.1 and 1.3. The Mission’s health portfolio is its largest area of technical service delivery, with family planning particularly supported under IR 1.2, IR 2.4, and IR 3.2.</p>
<p>Collaboration between GoT and donors on ways to catalyze sustainable natural-resource based enterprises through: 1) increased access to finance, 2) facilitated linkages to hospitable community partners, and 3) support on sustainable business and management practices will support increased and more sustainable derivation of benefits received by communities for conservation and sound natural resource management</p> <ul style="list-style-type: none"> ○ Encourage PPPs via competitive grants/solicitations to create linkages to communities engaged on participatory land use or natural resource management planning; 	<p>Examples of Mission decisions and programming in support of Action 2 include:</p> <ul style="list-style-type: none"> • The Mission’s shift from predominantly supporting the WMA model within its NRM portfolio to increased focus on connective corridors. • The Mission’s NRM portfolio decision to utilize a contract vehicle for grants-under-contract support to innovative conservation enterprises. • GMU and LCWT targeting the intersection of key conservation objectives with enhancing food security, family planning, and promoting economic growth; further these programs buttress their land use planning efforts with, among other interventions, support to coffee producers to facilitate intensified production (rather than expansion), improve extension services, and assist processing. These programs also support improved agricultural practices (e.g., use of manure and mulching) and linking coffee producers with the coffee auction in Moshi. • LCWT will incorporate surveying to evaluate the extent of livestock pressure in the region and studying cohabitation of chimps and livestock. • One of the core objectives of LCWT is the integration of a family-planning component as part of a broader PHE platform. • In addition to supporting the establishment of communal CCROs to connect large grazelands areas, EENT supported UCRT on establishing grazeland management plans; these plans help reinforce biodiversity conservation objectives by reducing human-wildlife conflict. • USAID programming under FTF and NRM portfolios both incorporate elements of such capacity building for

TABLE 16. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 2

ACTION 2	CONTRIBUTION TOWARD ACTION 2
<p>enable piloting of new innovative enterprises</p> <ul style="list-style-type: none"> ○ Prioritize existing PPP models with demonstrated success that can be scaled up in current contexts or tailored and trialed in new Tanzanian contexts, and that meet a core set of criteria for sustainable resource use, youth engagement, and women entrepreneurship and leadership. 	<p>or with key academic institutions in Tanzania (e.g., Sokoine University, Mweka College), and support under the NRM portfolio is typically designed to boost capacity of current and future NRM stakeholders.</p> <ul style="list-style-type: none"> • The Mission has recently integrated family planning and NRM programming in western Tanzania, which presents challenges related both to high population growth rates as well as high value, threatened species and habitat (e.g., chimpanzee range) <p>Opportunities for USAID to strengthen its support to Action 2, include:</p> <ul style="list-style-type: none"> • Designing programming such that agricultural- or livestock-related technical assistance geographically overlap with conservation programming; this would likely require a commitment to geographic coverage of FTF programming in areas beyond SAGCOT (and limited presence in Zanzibar). • An integrated IR under DO 2 that incorporates objectives for agricultural, livestock and potentially aquaculture³³³ productivity and best management practices as well as conservation of biodiversity objectives. • Programming under IR 2.1 could expand to seek to enhance access to finance for the types of innovate enterprises or PPPs that could boost conservation outcomes and the livelihoods of those living near areas of high biodiversity value; alternatively, the Mission could consider an integrated IR, either as part of that proposed above, or by expanding the current IR 2.1 to have a bit broader remit that would better support conservation objectives in line with Action 2. • Creating cross-sectoral linkages in the upcoming CDCS to boost capacity of local, district, and regional governance service delivery in health, agriculture, livestock, aquaculture, natural resource management, and land use planning, particularly in geographic areas where USAID support in different technical areas is overlapping. • Increased support focused on implementation of VLUPs, expanding existing programming that supports their development.³³⁴ Many stakeholders noted that donor support ceased upon acquisition of a CCRO (e.g., land tenure) for land parcels, without building capacity on how to implement the land uses as designated in VLUPs,³³⁵ such that once donors left the area communities would often quickly revert to unsustainable
<p>Training GoT officials (down to the local level) in sustainable management practices within their relevant sector will help better regulate current and future natural resource management and extraction activities.</p>	
<p>Financially and politically support academic institutions to build the capacity of the next generation of NRM stakeholders.</p>	
<p>Continuation of PHE initiatives in high population growth areas throughout the country -- particularly Dar es Salaam, western Tanzania, and the</p>	

³³³ GMU technical assistance did not include livestock and grazeland management, but LCWT will now incorporate the studies on livestock numbers in the region. Livestock management is still not specifically incorporated into the program’s conservation objectives. Similarly, neither GMU nor LCWT address fishing; consultation with the TUUNGANE program and the Tanzania Fisheries and Research Institute (TAFIRI) Kigoma office both noted opportunities in aquaculture and cage fishing along Lake Tanganyika, while consultation with RAS Mbeya noted the regional priority to boost aquaculture and fish ponds throughout the region.

³³⁴ Consultation with GoT representatives in November 2018, noted that actual implementation of those VLUPs was generally limited and short-lived (i.e., 1 to 2 years).

³³⁵ Multiple stakeholders noted this,

TABLE 16. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 2

ACTION 2	CONTRIBUTION TOWARD ACTION 2
<p>Lakes regions -- (and introduced where they do not currently exist) will help communities understand the linkage between unsustainable resource use and poor health and nutrition outcomes.</p>	<p>resource management and livelihood practices, undermining the purpose and efficacy of the VLUP.³³⁶</p> <ul style="list-style-type: none"> • Leveraging opportunities to more explicitly target empowering women in local governance – village councils and village executive committees. • Seeking opportunities to integrate family planning, nutrition/food security, and biodiversity programming in areas proximate to sensitive ecosystems where undernutrition and/or population growth rates present development challenges.

8.1.3 ACTION 3: COORDINATED PRIORITIZATION AND IMPROVED IMPLEMENTATION OF TROPICAL FORESTRY AND BIODIVERSITY PROTECTION AND MANAGEMENT

TABLE 17. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 3

ACTION 3	CONTRIBUTION TOWARD ACTION 3
<p>Establishing and implementing a formal prioritization process to select geographies and target species to be conserved and guide GoT, donor, and NGO selection of key buffer zones, dispersal areas, migration routes, and connective corridors will facilitate conservation programming (and collect data re: NA 6).</p>	<p>The current CDCS, particularly IR 2.3, and NRM PAD, emphasizes support to priority ecosystems related to conservation of biodiversity resources, predominantly the Masaai Steppe, the Southern Highlands, and western Tanzania.</p> <p>Examples of Mission decisions and programming in support of Action 3 include:</p> <ul style="list-style-type: none"> • The Mission’s collaborative relationships with key GoT actors, such as MNRT’s Wildlife Division and TAWA and parastatals such as TANAPA and TAWIRI. • USAID’s coordinated engagement around CWT and anti-poaching has been exemplary, working closely with key GoT actors and other donors and NGOs active in CWT and anti-poaching (further elaborated in Section 8.1.5).
<p>The GoT’s (e.g., VPO DoE, PO-RALG, MNRT, TFS) improvement of their overall evaluation of protected area assets, reserves/game-controlled areas, and nature forest reserves will help ensure existing technical and financial resources for</p>	

³³⁶ Consultation with bilateral donor implementing partners, November 2018, noted that communities were still dependent on programming to ensure implementation of land use planning, and more guidance over a longer time-period was required.

TABLE 17. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 3

ACTION 3	CONTRIBUTION TOWARD ACTION 3
<p>protected area management are maximized, and to inform coordination across GoT entities.</p> <ul style="list-style-type: none"> Improving coordination between government institutions (TAWA; TANAPA; Ministry of Agriculture, Food Security and Cooperatives; Ministry of Livestock and Fisheries; Ministry of Works, Transport and Communications, etc.) and donors, along with their implementing partners (IPs), will enhance the management of natural resources, avoid duplication of efforts, and minimize ‘turf wars’— especially among actors ultimately vested in the same or similar outcomes (e.g., TAWA and TANAPA). 	<ul style="list-style-type: none"> PROTECT, charged with a policy and coordination role, supported GMU in developing the National Chimpanzee Protection Policy and the Chimpanzee Protection Action Plan and worked with EENT and SHARPP on policy issued related to WMAs prior to the Mission’s strategic shift. USAID’s “Iringa Integration Hub” allowed partners to meet and exchange information, coordinating quarterly meetings attended by IPs (including TetraTech/WARIDI and WCS/SHARPP) and government partners. The Iringa Integration Hub created more integration across programs than would have otherwise existed, and programs such as SHARPP were noted as having achieved integration and coordination to a modest degree. USAID co-chairing of the DPG-E and Wildlife sub-group, convening regularly with other donors to communicate about ongoing and planned initiatives and work to align efforts. Accounts from USAID, Finland, and the World Bank all suggested positive interrelation among the donors via the DPG-E. <p>Opportunities for USAID to strengthen its support to Action 3 include:</p>
<p>Consistently engaging and training local and regional governance bodies of biodiversity and tropical forests will facilitate effective, multi-sectoral management, and oversight, especially if aligned with priorities established by VPO DoE, PO-RALG, MNRT, and TFS. Key focus areas for capacity building include multi-sectoral land use and resource management planning; how LGAs and RASs can effectively coordinate, support, and otherwise engage with village-level planning efforts; and how LGAs and RASs can better collect, manage, share, and coordinate data, best practices, and aligned interventions.</p>	<ul style="list-style-type: none"> Introducing a coordinating entity that is both engaged on a multi-sectoral basis across USAID programming and with relevant GoT stakeholders. Insufficient coordination and integration across activities undermines the potential for outcomes to be maximized, while USAID’s lack of strategic coordination with GoT at the policy level may undermine long-term sustainability of results.³³⁷ Refining its overarching strategic priorities for conservation programming to better guide and conceptually align partners operating in different landscapes; this refining could include a coalescing vision that provides a set of prioritized geographies, target species, and actions. Formally engaging with GoT on establishment of country-wide geographic priorities for biodiversity and tropical forestry conservation. Capacity building and training on effective land use planning and resource mapping, particularly at district and regional levels. Building capacity on effective and sustained implementation of land use plans at all levels would be particularly valuable. Building capacity of and ensuring coordination with village, district, and regional governance authorities.³³⁸

³³⁷ Consulted stakeholders stated that even programs with the mandate to coordinate USAID’s programming, such as PROTECT, failed to properly engage with national, regional, and district level GoT officials, defaulting too much to autonomous strategic choices.

³³⁸ Consultation with GoT officials, November 2018, during which emphasis was placed on the importance of notifying regional and district governance when initiatives are being implemented, highlighting that this was not done routinely enough.

8.1.4 ACTION 4: INCREASE ACCESS TO AND AFFORDABILITY OF ALTERNATIVES TO BIOMASS ENERGY, PARTICULARLY IN URBAN AREAS

TABLE 18. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 4

ACTION 4	CONTRIBUTION TOWARD ACTION 4
<p>GoT research undertaken on cost-reflective tariffs or subsidy schemes to increase adoption of LPG and electricity connectivity in urban areas will facilitate reducing demand for charcoal and wood fuels by providing affordable energy alternatives.</p>	<p>Within the CDCS, Sub-IR 2.1.2 specifically targets increasing the reliability of energy supply in the country. The CDCS states that non-cost-reflective tariffs, high technical losses, theft, limited institutional planning capacity, and a weak enabling environment for business investment contribute to a stunted energy sector that ultimately represents one of the binding constraints to economic growth (which IR 2.1 seeks to address). The strategy notes that USAID will pursue “technical and financial strengthening of the power utilities, relevant regulatory agencies, and ministries.”</p>
<p>Donors and NGOs that seek opportunities to support the formal acquisition of land tenure to equity will enable increased investment in household LPG infrastructure—particularly in urban areas—to reduce urban demand for charcoal and wood fuel.</p>	<p>Notwithstanding, under the existing bilateral agreement, USAID technical assistance to GoT in this sector is demand-driven by GoT. USAID is thus not necessarily in a position to lead conversations and guide GoT policy discussion, considerations, or actions around energy sector development. Second, programming is very centralized within USAID out of the PA Mission in Pretoria, South Africa. While the Mission does contribute to the design of activities, final decision on design and resource availability is ultimately determined outside of the USAID/Tanzania Mission. As Tanzania’s population continues to grow and the trend toward urbanization increases, the need for affordable and reliable energy alternatives will become increasingly urgent. A 1993 study estimated that between 1990 and 2010, a one percent increase in urban population would result in a 14% increase in charcoal production.³³⁹ While this estimate likely does not fully map to the current context, it remains likely that increasing urbanization will continue to drive growth in charcoal demand, underpinned by overall population growth and heightened energy needs.</p>
<p>Aggressive GoT exploration and pursuit of development of non-hydroelectric energy development will increase development of affordable energy alternatives to existing dependence on biomass/wood-based energy</p>	<p>Examples of Mission decisions and programming in support of Action 4 (via Power Africa and as driven by GoT demand) include:</p> <ul style="list-style-type: none"> • Conducting feasibility assessments for selected projects upon request by GoT (e.g., hydropower development in Njombe). • Capacity building for relevant stakeholders.³⁴⁰

³³⁹ Hosier, Richard, Mark Mwandosya, and Matthew Luhanga. “Future energy development in Tanzania: The energy costs of urbanization.” *Energy Policy* 21, no. 5 (May 1993): 524-542.

³⁴⁰ As example, in 2015 USAID led a capacity building workshop for Tanzanian utility and ministry officials focused on cost-reflective tariffs in an effort. Source: “USAID Training on Cost-Reflective Tariffs, August 17-20, 2015, Dar es Salaam, Tanzania.” NARUC. Accessed December 28, 2018. <https://www.naruc.org/international/where-we-work/africa-middle-east/tanzania/training-aug2015/>.

TABLE 18. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 4

ACTION 4	CONTRIBUTION TOWARD ACTION 4
<p>Collaboration amongst the VPO, DoE, Ministry of Energy, and NEMC will ensure that the identification, prospecting, and selection of energy solutions is done in a manner consistent with broader biodiversity and tropical forest conservation priorities and requirements, including enforcing existing Environmental Impact Assessment legislation.</p>	<ul style="list-style-type: none"> • Engaging with the Overseas Private Investment Corporation (OPIC; soon to become the U.S. International Development Finance Corporation, or IDFC) on candidate projects.³⁴¹ • USAID’s PA work has facilitated some diversification of Tanzania’s electricity sector (e.g., providing transaction assistance related to GoT funded construction of a 150 MW gas-fired thermal plant) <p>Opportunities for the Mission to increase its support toward Action 4:</p> <ul style="list-style-type: none"> • Support policy and regulatory reform that will 1) attract investment in energy infrastructure to increase power generation and reliable transmission and distribution of electricity, and 2) allow non-biomass energy alternatives to be affordable to urban residential and business consumers that rely almost exclusively on charcoal for energy and cooking. • Support policy and regulatory reforms to increasingly promote and facilitate adoption of LPG by urban households and businesses. • Advocate for continued diversification of power generation beyond hydroelectric (hydroelectric is increasingly unreliable in Tanzania in the face of increasing demands on water resources and changing climatic conditions such as shifting precipitation patterns and higher temperatures).

8.1.5 ACTION 5: PROMOTE CWT AND ANTI-POACHING INITIATIVES; COMBAT IUU FISHERIES

TABLE 19. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 5

ACTION 5	CONTRIBUTION TOWARD ACTION 5
<p>GoT, NGOs, and donors strengthening of participatory community engagement with villages in key corridors, buffer zones, and dispersal areas to understand community</p>	<p>USAID’s work on CWT and anti-poaching initiatives falls predominantly under sub-IR 2.3.1 of the current CDCS and has been exemplary; consulted stakeholders explicitly praised the “vision” demonstrated by USAID.³⁴² USAID’s bilateral and regional missions substantially inform and contribute to the impactful approach to CWT and anti-poaching that has been ongoing in Tanzania, particularly during current CDCS programming. The CDCS</p>

³⁴¹ Consultation with bilateral donor staff, November 2018. USAID’s engagement with OPIC is generally limited to making recommendations on projects within the parameters that the project will a) increase megawatts (MWs), b) support clean energy, c) lead to more connections, and d) facilitate cross-border trade. While USAID may be engaged or consulted on projects to pursue, OPIC will likewise have independent internal processes for prioritizing projects to support.

³⁴² See USAID’s resources on “Measuring Efforts to Combat Wildlife Crime.” <https://rmpportal.net/biodiversityconservation-gateway/legality-sustainability/wildlife-crime/measuring-efforts-to-combat-wildlife-crime>

TABLE 19. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 5

ACTION 5	CONTRIBUTION TOWARD ACTION 5
<p>dynamics and identify complementary programming that can address drivers such as poverty or food insecurity, will reduce the likelihood of communities participating or allowing wildlife trafficking.</p>	<p>specifically targets wildlife crimes, with focus on “strengthening protected area management, supporting community wildlife management regimes, and improvement of monitoring and patrol systems.” Ultimately, the role that USAID/Tanzania and USAID/East Africa play is essential to the success seen in this space over the past 5 years. While USAID’s efficacy in CWT and anti-poaching programming is strong, there remain opportunities for enhancing current and future initiatives, outlined below.</p>
<p>Continued GoT, NGO, and donors training to law enforcement officials, rangers, and village game scouts will make law enforcement officials more efficient and capable of preventing wildlife crimes on: use of improved technologies; crime scene management, evidence collection, handling, and storage; intelligence gathering and sharing; and adjudication of wildlife trafficking crimes.</p>	<p>Examples of mission decisions and programming in support of Action 5 include:</p> <ul style="list-style-type: none"> • The mission supported CWT and anti-poaching efforts through SHARP, EENT, and PROTECT, as well as via a Participating Agency Program Agreement (PAPA) with the DOI-ITAP. • The mission coordinates closely with US Fish and Wildlife Service (USFWS), UNODC, TRAFFIC, and PAMS. • The bilateral mission is supported by the USAID/East Africa Regional Mission, which funds essential programming such as Wildlife Trafficking, Response, Assessment and Priority Setting (TRAPS), implemented by TRAFFIC, in collaboration with IUCN. • USAID has worked closely with USFWS to support capacity-building initiatives for key GoT stakeholders. This training and technical assistance has focused on evidence collection and management, jurisdictional processes and best practices, and work with magistrates and judges on effective adjudication of wildlife trafficking cases.
<p>Engagement and strong coordination with GoT’s new anti-poaching coalition and the various organizations involved in CWT and anti-poaching will ensure a cohesive CWT approach is taken.</p>	<ul style="list-style-type: none"> • The mission has supported training and technical assistance to TANAPA and TAWA rangers (predominantly the latter), dissemination of equipment such as radios and cameras, and training on improved technologies for data collection and sharing. • USAID has worked closely with TAWIRI on aerial surveying of elephant populations to evaluate the progress anti-poaching and CWT efforts have had in curbing elephant poaching. While the results of this aerial survey were not yet available to the assessment team, the effort underscores USAID’s commitment to conducting effective CWT and anti-poaching interventions.
<p>Increased funding for anti-poaching equipment (e.g., vehicles, cameras, radios, tracking devices for rhino and elephants) and infrastructure (e.g., improved roads to facilitate ranger</p>	<ul style="list-style-type: none"> • USAID helped facilitate the successful conclusion of a protracted process to establish a Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) desk in Zanzibar.³⁴³ • Mission programming issued grants to numerous local NGOs engaged in combating wildlife trafficking, allowing them to build anti-poaching capacity of protected area authorities and communities.³⁴⁴

³⁴³ As Zanzibar has been identified as a key transit hub for illegally traded wildlife products, the establishment of the CITES desk marks a noteworthy accomplishment toward enhancing GoT’s capacity to minimize illegal trade of wildlife products.

³⁴⁴ These organizations also collaborate with stakeholders on data collection to better understand the extent of poaching.

TABLE 19. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 5

ACTION 5	CONTRIBUTION TOWARD ACTION 5
<p>access and park management) will equip wildlife officers with essential materials for combatting wildlife trafficking.</p>	<p>Opportunities for the mission to increase its support toward Action 5:</p> <ul style="list-style-type: none"> • USAID has predominantly focused its support on illegal wildlife trafficking and enforcement “up the value chain,” prioritizing higher-level strategic engagement and capacity building. Despite this support, some stakeholders noted that there was need—and room—for additional support to rangers,³⁴⁵ and support on localized enforcement needs to better focus on long-term community-level engagement. Long-term organizational presence in local communities is essential to collecting on-the-ground intelligence for effective anti-poaching initiatives. This local presence builds trust and helps address daily challenges within those communities which may lead to poaching.³⁴⁶ • Stakeholders noted the need for additional CWT support related to timber, forest products, and marine wildlife. • Capacity-building interventions—such as training law enforcement officials on CITES—present an opportunity to better integrate considerations related to the illegal trade of timber and non-timber forest products.³⁴⁷ • USAID’s current work with TAWA and MNRT could be expanded to broader, inter-agency trainings inclusive of actors such as TFS to enhance enforcement and coordination around timber harvesting and trade.³⁴⁸ <p>Regarding marine life, studies are ongoing, with TRAFFIC embarking on evaluation of nearshore artisanal fisheries, looking specifically at sea turtles, sea horses, giant clams, fish maws, and sea cucumbers;³⁴⁹ while USAID is not—and does not need to—directly fund these studies, USAID could enhance the effectiveness of such evaluations by better supporting collection of baseline data against which such evaluations could be considered.</p>
<p>Enhancing inter-agency surveillance and control of marine waters across internal waters, territorial seas and Tanzania’s Exclusive Economic Zone (EEZ) by targeting IUU fisheries as well as illegal timber, mangrove and wildlife trafficking (these illegal practices are sometimes inseparable from other trafficking and security infringements) will reduce illegal practices. Establishing capacity for surveillance and control within internal and territorial waters [to 12 nm] and strengthening capacity as an independent, domestic capability will facilitate this reduction in illegal practices. Offshore surveillance within the EEZ beyond 12nm is likely to require joint arrangements and cost-sharing with neighboring countries.</p>	

³⁴⁵ Consultations with local NGOs active in supporting wildlife management and related services (cannot be publically disclosed), November 2018

³⁴⁶ Consultation with an NGO active in supporting wildlife management and related services (cannot be publically disclosed), November 2018

³⁴⁷ Consultation with an NGO active in supporting wildlife management and related services (cannot be publically disclosed), November 2018

³⁴⁸ Ibid.

³⁴⁹ Ibid.

8.1.6 ACTION 6: COLLECTION OF KEY BIODIVERSITY AND FORESTRY DATA TO FILL EXISTING DATA GAPS AND INFORM FUTURE CONSERVATION-RELATED INTERVENTIONS

TABLE 20. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 6

ACTION 6	CONTRIBUTION TOWARD ACTION 6
<p>Continuation of donor and TFS development of improved data on total forest resources throughout the country, with Albertine Rift and Eastern Arc montane forests, coastal forests, and mangrove forests all high priority.</p>	<p>In conjunction with the GoT and IPs, USAID/Tanzania has strengthened data and information collection on NRM, by building capacity of key stakeholders, undertaking data collection and analyses, and providing resources to support related efforts. The CDCS' Cross-Cutting IR for "Data-driven decision-making, planning and implementation improved," demonstrates the mission's recognition of the importance of, and need for, improved data to enhance decision-making. The NRM PAD elaborated the mission's aim to "support the generation, analysis and use of data to help drive decision-making and contribute to the development and implementation of key national environmental policies, and legislation to support local rights and benefits from natural resources."</p> <p>USAID/Tanzania acknowledges that significant challenges remain with regards to biodiversity and forestry data availability and quality. As discussed in Section 6.2.9, USAID and the GoT note the incompleteness of existing forestry, agricultural, and marine data. For example, elephant population data are lacking for several wildlife corridors, and reliable fish stock data in marine ecosystems are minimal. Key reasons for the data inadequacy are that 1) many GoT institutions at the ministry, regional and district level lack data-collection and analysis skills and resources, and 2) the government's restriction on the public release of data has hindered transparency and collaboration with USAID/Tanzania and NGOs (e.g., conservation organizations that conduct animal counts).</p>
<p>Implementation and validation of biodiversity and fish stock assessments in marine and key freshwater ecosystems by GoT to will facilitate better understanding of how to sustainably manage these aquatic ecosystems.</p>	<p>Examples of mission decisions and programming in support of Action 6 include:</p> <ul style="list-style-type: none"> • USAID investment in building the capacity of the NBS to improve the availability of sound agricultural data. • Via SAGCOT, the mission has worked with basin authorities, WUAs, irrigation users' associations, and others to generate, analyze, and use data-driven decision making. • USAID/Tanzania has worked with the GoT to collect information on NRM (e.g., aerial surveying of elephant to increase transparency and accountability on the importance of biodiversity to Tanzania. • USAID has collected data on the status and biological viability of approximately 30 wildlife corridors • USAID recently coordinated with TAWIRI on an aerial elephant survey to achieve a more current picture of the extent of elephant poaching and whether elephant populations are showing signs of recovery following the substantial poaching of the early 2000s.³⁵⁰ <p>Regional programming aligned with the bilateral mission's support to Action 6:</p>

³⁵⁰ Debonnet, Guy and Stephen Nindi. "Technical Study on Land Use and Tenure Options and Status of Wildlife Corridors in Tanzania." Prepared under the PROTECT contract. April 2017.

TABLE 20. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 6

ACTION 6	CONTRIBUTION TOWARD ACTION 6
<p>Increased prioritization by GoT and donors on collection of data in high biodiversity areas will help inform conservation planning and management, particularly for threatened endemic species.</p>	<ul style="list-style-type: none"> • The East Africa regional Sustainable Wetland Adaptation and Mitigation Program (SWAMP) collected information on tropical wetlands to apply to climate change adaptation and mitigation strategies • The East Africa Mangrove Carbon Project (EAMCP) has built capacity to improve the sustainability of mangrove ecosystems, amassing a good baseline for the state of mangrove forests in Tanzania, particularly the Rufiji Delta.³⁵¹ <p>Opportunities for the mission to increase its support toward Action 6:</p> <ul style="list-style-type: none"> • Work with willing GoT (e.g., TFS) partners, conservation organizations (e.g., MCDI, TCFG, TRAFFIC, and WWF), universities, and other interested stakeholders to improve data-collection efforts on total forest resources and the timber trade. • Work with willing GoT (e.g., Institute of Marine Sciences) partners, conservation organizations (e.g., Sea Sense, TRAFFIC, WWF), universities, and other interested stakeholders to improve data-collection efforts fish-stock assessments in marine and key freshwater ecosystems

³⁵¹ Chumbler, Caroline. "Generating Mangrove Data and Putting it to Work in East Africa." *ClimateLinks* (Blog). October 10, 2018. <https://www.climatelinks.org/blog/generating-mangrove-data-and-putting-it-work-east-africa>.

8.1.7 ACTION 7: STRENGTHEN COMMITMENT TO TRANSPARENT GOVERNANCE INCLUDING: ENFORCEMENT AT NATIONAL AND LOCAL LEVELS, STRENGTHENED CAPACITY FOR MONITORING, AND COMPLIANCE WITH AND ENFORCEMENT OF NATURAL RESOURCE LAWS AND POLICIES.

TABLE 21. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 7

ACTION 7	CONTRIBUTION TOWARD ACTION 7
<p>Donors and NGOs leveraging the current administration’s anti-corruption push by, for example, training investigative journalists, lawyers, independent judicial systems, academics, third-party monitors, and watchdog NGOs will help hold political leaders and officials accountable.</p> <p>Actions to increase capacity include:</p> <ul style="list-style-type: none"> ● Increased enforcement and criminal investigation (e.g., wildlife and environmental crimes) at national, regional, and local levels. ● Strengthened capacity for monitoring, compliance, and enforcement of natural resource laws and policies (e.g., reducing illegal and unsustainable natural resource harvesting practices). ● Collect, use and share data with relevant actors, particularly on wildlife populations ● Maintaining political and civil stability to encourage foreign and domestic investment, promote trust in government activities, and protect vital natural resources. 	<p>The CDCS has a strong focus on improving governance, accountability, and stability; in particular, DO 3 discusses achieving transparent, accountable, democratic governance, and controlling corruption. DO 3 further highlights the challenges that poor governance, corruption, and instability present in Tanzania as major drivers of unsustainable development. USAID also noted that it will promote accountable, transparent and responsive governance, as outlined in President Obama’s 2012 Strategy Toward Sub-Saharan Africa,³⁵² and support national and local government institutions that promote accountability and strengthen public service delivery. The NRM PAD states that, to support the long-term viability of Tanzania’s wildlife and natural resources, there is a clear need for improved NRM and governance at the landscape scale. The PAD also notes the need to support capacity building of local actors to enhance local governance and benefit sharing, as well as to develop new opportunities for local engagement in conservation enterprises.³⁵³ Despite USAID/Tanzania’s efforts, the need for additional work strengthening governance and combatting corruption has been cited by multiple stakeholders.</p> <p>Examples of mission decisions and programming in support of Action 7 include:</p> <ul style="list-style-type: none"> ● USAID/Tanzania has also collaborated with the GoT on organizational capacity development and governance of WMAs. Core areas for continuing support for WMAs include capacity strengthening on application and enforcement of regulations, good governance, anti-poaching efforts, and bringing them nearer to sustainability in terms of improved natural resource management and self- governance.³⁵⁴ ● As discussed under Action 5, there are also multiple anti-corruption actions being taken by USAID under the domain of CWT and anti-poaching. <p>Opportunities for the mission to increase its support toward Action 7:</p> <ul style="list-style-type: none"> ● NGOs and other donors see weak governance as a major threat to biodiversity and forests

³⁵² The Office of the President, USA. “US Strategy Toward Sub-Saharan Africa.” June 2012.

³⁵³ USAID/Tanzania Economic Growth Office. “Natural Resources Management Project, Project Appraisal Document.” March 24, 2014.

³⁵⁴ Ibid.

TABLE 21. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 7

ACTION 7	CONTRIBUTION TOWARD ACTION 7
<ul style="list-style-type: none"> Disseminating regulatory information on a regular basis to ensure the public knows their rights, laws and penalties associated with infractions, and the roles and responsibilities of law enforcement agents. 	<p>due to the lack of enforcement, circumvention of laws by government officials, not properly financing conservation needs, poor land use planning, poor coordination between government institutions and civil society, and poor planning for future eventualities (e.g., climate change). Weak governance can translate to lack of necessary allocation of resources to law enforcement (e.g., preventing artisanal mining, illegal timber harvesting, encroachments, and poaching) and corruption (e.g., between forest officers and timber companies).</p>
<p>Decentralizing authority and financial management from central government to regions, districts, and protected area management authorities will help provide more flexibility in addressing local issues.</p>	<ul style="list-style-type: none"> Current and future USAID activities can incorporate strategies that influence governance through political pressure, technical assistance, and financial monitoring.
<p>Providing sufficient resources to local areas to improve law enforcement, local planning, and community outreach. Resources could include: finances for equipment, infrastructure, operations, and training.</p>	<ul style="list-style-type: none"> USAID can leverage the current GoT administration’s anti-corruption push to improve governance, accountability, and transparency with regard to biodiversity and forest programs. Effective biodiversity, forestry, and coastal programs could enhance governance benefits and help local people gain the rights to govern and benefit from natural resources. This includes continued work on ecotourism and other conservation enterprises in public-private managed areas that create jobs and generate income, collaborative fisheries management that makes fishing more sustainable, and community-based forest management groups and VLUPs that can support or reinforce governance systems across sectors.³⁵⁵

³⁵⁵ Ibid.

8.1.8 ACTION 8: SUPPORT DEVELOPMENT, REVISION, HARMONIZATION, AND RESEARCH TO INFORM STRENGTHENED REGULATORY AND LEGAL FRAMEWORK IMPACTING NATURAL RESOURCE MANAGEMENT

TABLE 22. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 8

ACTION 8	CONTRIBUTION TOWARD ACTION 8
<p>GoT working with donors to conduct research and build capacity around negotiating deals for resource exploitation, a priority area for GoT, will strengthen resource management. Research and capacity building focused on how best to mainstream environmental issues -- including conservation of biodiversity and sustainable resource management -- into such deals, with attention paid to the location of exploited resources, will help address the infrastructure needs and their attendant impacts, and the requirements expected of and enforced for bidding private sector entities.</p>	<p>USAID/Tanzania undertook many activities supporting the development, revision, or harmonization of regulatory and legal frameworks to improve NRM. USAID/Tanzania acknowledges that their approach to policy work has been opportunistic³⁵⁶ and not necessarily guided by a coalescing strategy. In turn, USAID relied increasingly on PROTECT as a coordinating vehicle across the NRM portfolio. Some stakeholders were highly complimentary of the Mission’s willingness to engage with GoT on policy reform or development of new policies in the biodiversity conservation space.³⁵⁷</p> <p>Examples of Mission decisions and programming in support of Action 8 include:</p> <ul style="list-style-type: none"> • Assistance with the Wildlife Corridor Regulation (an expansion of the 2009 Wildlife Conservation Act), which afforded the MNRT the authority to formally designate a wildlife corridor, buffer zone, migration area, or dispersal area through participatory engagement with relevant community/village, district, regional, and protected area management stakeholders. • Convening of key stakeholders to discuss the merits and issues of the Wildlife Corridor Regulation. • Preparing think-pieces on where and how USAID should prioritize support to improve connectivity between important or high biodiversity areas. • Evaluating the socio-political and economic factors impacting the efficacy of WMAs and formalized hunting in Tanzania. • A March 2018 update to the WCA Regulation. • Support to TAWIRI in development of the TAWIRI Act. • USAID contributed to harmonization and capacity building around improved governance and regulation of water resources management in the SAGCOT corridor. <p>Opportunities for the Mission to increase its support toward Action 8 include:</p>
<p>TFS, MNRT, Forestry and Beekeeping Division (FBD), donors, and NGOs coordinating to a) work to harmonize permitting systems for timber products, b) develop mechanisms to recognize forged documents, c) improve management capacity for communities and government in managing coastal mangroves (e.g., stock assessment, offtake, and monitoring), and d) support development and utilization of forest management plans, with full involvement of local communities, will increase sector coordination and reduce the illegal harvesting and transportation of timber products.</p>	
<p>Donors, NGOs, and local (e.g., village and district) leadership collaboration with MNRT in the piloting of the new Wildlife Corridor Regulation will help evaluate its efficacy and viability as a tool to improve protection and conservation of wildlife</p>	

³⁵⁶ Consultation with bilateral donor staff, November 2018.

³⁵⁷ Consultation with an international NGO, November 2018

TABLE 22. EXTENT TO WHICH THE CURRENT DO OR IR CONTRIBUTES TOWARD ACTION 8

ACTION 8	CONTRIBUTION TOWARD ACTION 8
<p>corridors, migration areas, buffer zones, and dispersal areas. Piloting should be followed by participatory consultation and modification to the regulation.</p>	<ul style="list-style-type: none"> • Refinement of the wildlife corridors regulation; the new wildlife corridors regulation aims to broaden the set of tools available to affect sound management of wildlife resources outside of protected areas.³⁵⁸ Consultations with stakeholders revealed a range of reactions from cautious optimism to concern over conflict with affected communities regarding the effectiveness of the regulation in its current iteration.³⁵⁹ Factors for evaluation of the efficacy of the regulation during piloting and implementation of the regulation include allowing communities to derive benefits from sustainable/allowable use of land demarcated as wildlife corridors, or expanding the types of protected areas that can be connected by corridors to include forest reserves and nature reserves. • Support establishment of freshwater protected areas. Consultations with the TAFIRI Kigoma office and Kigoma RAS noted the impending passage of new regulations governing freshwater protected areas.^{360,361} Lake Victoria’s biodiversity has suffered immensely due to invasive species and human population growth in Tanzania and neighboring countries, while Lake Tanganyika’s biodiversity also faces intense pressure, with high rates of population growth in and around Kigoma, and limited oversight of fishing practices in Tanzania, Burundi, and DRC.³⁶²
<p>Donor and NGO engagement with GoT in refining the new freshwater protected area legislation, will improve development and management of these areas. Donor and NGO leadership in piloting the procedures will further help improve conservation of freshwater biodiversity (e.g., in Lake Tanganyika, Lake Rukwa) and the effectiveness of the regulation.</p>	
<p>Establishment of new targeted policies to formalize and govern aquaculture and bushmeat markets, e.g., will help address value chain and environmental impact issues.</p>	

³⁵⁸ Consultation with bilateral donor implementing partner, November 2018

³⁵⁹ Consultations with bilateral donor implementing partners and local NGOs, November 2018

³⁶⁰ Consultation with GoT representatives, November 2018

³⁶¹ Consultation with GoT representatives, November 2018

³⁶² GoT officials noted that recent expansion of the Gombe Stream protected area to include a freshwater area has resulted, anecdotally, in larger fish within the protected area. The movement to pass freshwater protected area legislation underscores that freshwater biodiversity and sustainable fishery management are priorities for the current GoT administration and an area with which USAID has not been engaged to-date.

9. GUIDING PRINCIPLES AND PROGRAMMING RECOMMENDATIONS

By comparing the Extent to Which gap analysis against the Actions Necessary, the assessment team developed the following seven (7) Guiding Principles, presented in Section 9.1, to inform the Mission's strategic planning process with regards to incorporation of biodiversity and tropical forestry conservation and management in future Mission programming. These principles are meant to inform Mission program development, technical assistance and capacity building to help protect biodiversity and forests in Tanzania. Section 9.2 offers specific recommendations to guide Mission programs and interventions in each technical programming area, or as cross-sectoral, integrated opportunities.

9.1 GUIDING PRINCIPLES

- 1. Improve integration of biodiversity considerations into other USAID/Tanzania programming areas** (e.g., Democracy and Governance, Health, Education. See recommendations below). This could include creation of integrated DOs and IRs that include biodiversity, CWT and governance. Consultations with Mission staff made clear there are viable, pragmatic ways to integrate biodiversity considerations into all programming areas. As Mission biodiversity earmark requires programming be in areas of high biodiversity, other technical sectors would likely need to be flexible in their geographic areas considered to achieve such integration.
- 2. Colocate USAID/Tanzania biodiversity programming with other sector programming (e.g., family planning programs).** For example, promote natural resource-based enterprises, public-private partnerships, nature-based ecotourism, and community-based natural resource management that rely on localized, participatory resource management models including PFM, WMAs, BMUs and formal tenure acquisition via individual or communal CCROs.
- 3. Broaden biodiversity programming** to address illegal timber, marine surveillance and wildlife trade, exotic pet trade.
- 4. Continue focus on connectivity of important corridors for wildlife movement and genetic flow between protected and biologically diverse areas;**
 - Prioritize connective corridors with GoT
 - Focus on Albertine Rift (including Southern Highlands/Rift Mountains) + Eastern Arc
 - Add programming for the Coastal Forests of Eastern Africa and mangrove systems
- 5. Focus on energy alternatives in programming areas under USAID control.** For example, work with Tanzanian decision makers to pursue bio-mass and hydro-electric energy alternatives to increase the access to and availability of affordable and sustainable electricity in rural and urban areas.
- 6. In threatened biodiversity areas support further collection of baseline data** – e.g., forestry stock and trade, aquatic ecosystem health, species counts, livestock movement – to inform future USAID, GoT and other donor conservation-related interventions and sustainable development programs.
- 7. Support anti-corruption efforts.** For example, leverage ongoing GoT anti-corruption efforts to pursue leadership role with NGOs and other donors to strengthen good governance, accountability, and transparency measures regarding natural resource management and biodiversity conservation.

9.2 RECOMMENDATIONS AND OPPORTUNITIES FOR USAID PROGRAMMING

Table 23 offers numerous programming recommendations for USAID’s consideration in fulfilling the Actions Necessary detailed in this assessment. These recommendations are organized by technical area of focus, including a series of cross-sectoral or integrated recommendations. USAID programming is dictated by US Congressional earmarks, which necessarily informs and at times constrains the opportunities to integrate biodiversity and tropical forestry conservation into all technical programming areas. Recommendations in Table 23 are made based upon the Assessment Team’s understanding of any such constraints and framed in a manner practicable for the Mission, understanding that factors beyond the conservation of biodiversity and tropical forests will likewise inform final programming decisions.

To further support the Mission’s decision-making process for future programming, Table 12 23? also specifies selected “High Priority” recommendations. A designation of “High Priority” (HP) reflects the Assessment team’s analysis that the recommendation: 1) will address at least one of the primary drivers to significant threats to biodiversity and conservation; 2) will align with stated mission objectives or priorities regarding sustainable, broad-based economic growth; 3) is based upon extensive stakeholder consultation; and 4) includes a perceived cost-effective intervention.

Finally, in accordance with USAID’s Best Practice Guidance for I 18/I 19s, Table 23 organizes recommendations into the following three categories:

- **Opportunistic:** *Working within the boundaries of programs to improve the extent to which USAID is meeting the actions necessary to reduce threats*
- **Proactive:** *Adapting programs to improve the extent to which USAID is meeting the actions necessary to reduce threats*
- **Direct Threat Reduction:** *Designing with an explicit objective of reducing priority drivers of threats or otherwise contributing to biodiversity conservation.*

TABLE 23. RECOMMENDATIONS AND OPPORTUNITIES FOR USAID PROGRAMMING

RECOMMENDATIONS

OPPORTUNISTIC	PROACTIVE	DIRECT THREAT REDUCTION
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ECONOMIC GROWTH – AGRICULTURE AND FOOD SECURITY

<ul style="list-style-type: none"> • Link FTF program staff with biodiversity-funded NRM implementers such that they can offer guidance—and facilitate linkages with Tanzanian NGOs, extension officers, or technical resources—to improve agricultural management practices in areas with conservation programming. The objective would be to increase intensification of existing agricultural land and reduce shifting agriculture and agricultural expansion. • HP – Ensure robust application of USAID’s Environmental Assessment procedures for food security and agriculture programming – including site-specific environmental assessment for road construction/rehabilitation projects, irrigation, or similar infrastructure development projects with the potential to disrupt wildlife habitat or behavior (e.g., bisecting migratory corridors) or exacerbate human/wildlife conflict. Such applications must ensure proper consideration of: <ul style="list-style-type: none"> ○ Road projects understanding wildlife migration routes and introducing wildlife over/under passes as part of the planned mitigation measures for roads that are in key areas of connectivity. ○ Overall water resource demands from irrigation projects, and impacts on available water for humans and wildlife in the area ○ Potential cumulative impacts of certain 	<ul style="list-style-type: none"> • Incorporate an aquaculture or sustainable fisheries management component into USAID projects, such as the western Tanzania landscape conservation work • Shift the geographic presence of ongoing food security initiatives to align with existing to enhance implementation of VLUPs being supported. • Rukwa has the highest stunting rates in the country. For USAID programming in this area, seek to incorporate the following: <ol style="list-style-type: none"> 1. Provide technical support to improve agricultural intensification and reduce agricultural expansion in Ruaha-Rungwa-Piti connective corridors, which are increasingly threatened by population growth, expansion of existing settlements, and establishment of new settlements. 2. Link Rukwa area technical support to TFS in, e.g., Mbeya (on improved protected area management practices, community engagement, and forest reserve master planning) and villages around the Mt. Rungwe Nature Reserve (on land use planning and coexistence with kipunji to minimize human-wildlife conflict) to enhance conservation for the critically endangered kipunji. • Support achievement of NBSAP target to reduce 	<ul style="list-style-type: none"> • HP – Geographically align future food security and biodiversity-funded NRM programs such that technical assistance in the appropriate livelihoods (whether rice or maize cultivation, horticulture, livestock management, or aquaculture), will be integrated with land use and resource management planning as part of an NRM program. <ul style="list-style-type: none"> ○ For example, agriculture programs near protected and game areas should address expanding/shifting grazing issues and land tenure conflicts linked to biodiversity threats. • Support livestock market development initiatives in Western and Southern Tanzania, aimed to support behavior change around cultural practices that favor quantity of livestock over quality, linked to dairy and meat production markets. Look to successful examples, such as LivestockWorks under USAID/Kenya-supported Northern Rangelands Trust Initiative. • Require, via language in awards, that food security/FTF IPs delivering skills be well-suited to address underlying drivers of the threats to biodiversity (e.g., agricultural intensification of maize and rice; grazeland management or livestock destocking; aquaculture, cage fishing and fish ponds) and provide technical support to NRM programs (e.g., quarterly demonstrations in villages preparing VLUPs). • Reframe food security targets around improved management and value chain development of protein sources, with a focus on livestock, bushmeat, and sustainable freshwater and marine fisheries. USAID could
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TABLE 23. RECOMMENDATIONS AND OPPORTUNITIES FOR USAID PROGRAMMING

RECOMMENDATIONS

OPPORTUNISTIC	PROACTIVE	DIRECT THREAT REDUCTION
<p>infrastructure development—e.g., roads—such as changing population and traffic and impacts that could present to sensitive wildlife and/or habitat.</p>	<p>genetic erosion to maintain genetic diversity of cultivated plants, farmed and domesticated animals by supporting seed and DNA banks for cultivated plants and domesticated animals, respectively.</p>	<p>focus on freshwater lakes (e.g., Tanganyika) as well as key marine areas; Rufiji delta, Tanga/Pemba/Zanzibar, and Mwtara/Lindi.</p>

ECONOMIC GROWTH – POWER AFRICA/ENERGY DEVELOPMENT

<p>HP – Support research (e.g., develop white papers) in following areas:</p> <ol style="list-style-type: none"> 1. Promoting viable energy alternatives that will be less damaging to biodiversity than existing options (e.g., wood fuel and charcoal; hydropower). 2. Exploring renewable energy feed-in tariff (REFIT) or energy (e.g., LPG) subsidy programs that could improve non-biomass energy use in urban areas (either through adoption of LPG systems or increased connectivity and use of grid electricity). 	<ul style="list-style-type: none"> • Work with USAID/Power Africa to shift mode of engagement with GoT to more direct advisory relationship on energy development priorities, ideally embedding a technical advisor within the Ministry of Energy with the cache to meaningfully guide or support the Ministry’s decision-making process and steer toward adoption of energy solutions that will 1) reduce cost of electrification or energy use nationwide, and especially in urban settings; 2) shift energy mix increasingly away from heavy polluting (e.g., coal) power sources as well as power sources less resilient to changing climatic conditions (e.g., hydroelectric); and 3) ensure biodiversity and tropical forests conservation is well-integrated into decision-making on energy exploration and power generation options. • Work with USAID/Power Africa to prioritize robust ESIA governance as part of power development support (e.g., triple bottom line performance, identifying and mitigating risks of associated infrastructure such as wind turbines on 	<p>None available under current funding and mode of engagement.</p>
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TABLE 23. RECOMMENDATIONS AND OPPORTUNITIES FOR USAID PROGRAMMING

RECOMMENDATIONS		
OPPORTUNISTIC	PROACTIVE	DIRECT THREAT REDUCTION
	birds or power lines on migratory bird species.)	
ECONOMIC GROWTH – NRM, BIODIVERSITY FUNDING (NON-CWT EARMARK)		
<ul style="list-style-type: none"> Incorporate an aquaculture or sustainable fisheries management component into new projects, such as the landscape conservation work in western Tanzania. This will help address one of the underlying drivers of habitat degradation (livelihood challenges) while simultaneously supporting biodiversity. HP – To enhance community management of natural resources, facilitate connections among sustainable resource focused private enterprises, communities engaged in village- and landscape level land use planning, and NGOs working with those communities.³⁶³ This should include piloting new PPP models that effectively combine participatory community engagement, community derivation of benefits, and sustainable natural resource use/management as well as supporting existing models in-country 	<ul style="list-style-type: none"> Focus more on high biodiversity areas where USAID is not concentrating NRM programming (e.g., Eastern Arc Mountains; Coastal Forests of Eastern Africa; mangrove, coral reef, and sea grass ecosystems) to facilitate PPPs with extraction and commercial agriculture companies (e.g., coffee, timber, mines) to improve sustainable extraction, safety, and environmentally friendly practices Promote development and diversification of the economy through support to small and medium-sized enterprises; focus on green business and banking solutions. Broaden the existing policy support focus of the biodiversity portfolio to include elements not currently receiving USAID support, particularly: <ul style="list-style-type: none"> Financial and political support to academic institutions (e.g., African College of Wildlife Management, Mweka; Sokoine University of 	<ul style="list-style-type: none"> HP – Introduce dedicated programming focused on conservation of biodiversity and tropical forests in coastal landscapes, targeting the Coastal Forests of Eastern Africa Biodiversity Hotspot and marine ecosystems.: In conjunction with TFS,³⁶⁵ promote tree planting/agroforestry in pastoral and agricultural systems, and mangrove restoration and planting in marine and estuarine environments. Support sustainable fisheries co-management efforts for nearshore marine environment (e.g., Tanga, Pemba; Rufiji; Mtwara, Lindi). Work with BMUs, Collaborative Fishing Management Areas, and private stakeholders (e.g., commercial fisheries, hotel industry): initiate training, capacity building, awareness raising, management planning, sustainable financing (e.g., collecting license fees and a portion of the levies from fish export), recordkeeping, and enforcement (e.g., against

³⁶³ As example of where this would be beneficial, JGI discussed a failed attempt to create a voluntary REDD+ program; they succeeded in creating interest among community members and conducted carbon valuation for the area in question but did not have the needed links to carbon buyers in international markets. A more engaged PROTECT may have been able to facilitate linkage to Carbon Tanzania, an entrepreneurial REDD+-focused business, to improve the chances of successful implementation of the REDD+ model. Carbon Tanzania, for example, successfully coordinated with UCRT, leveraging their participatory land use planning, to support a REDD+ scheme in the Yaeda Valley in Northern Tanzania.

³⁶⁵ TFS has an existing National Tree Planting Strategy and National Forest Fund aimed at tree planting and increasing forest cover; each TFS region has targets established for new trees planted.

TABLE 23. RECOMMENDATIONS AND OPPORTUNITIES FOR USAID PROGRAMMING

RECOMMENDATIONS

OPPORTUNISTIC	PROACTIVE	DIRECT THREAT REDUCTION
<p>that can be expanded. Examples include:</p> <ul style="list-style-type: none"> ○ Community-managed natural forests in southeastern Tanzania (with sustainable high-value timber production) ○ Voluntary REDD+ schemes ○ Eco-tourism ○ WMAs (in limited cases) ○ PES schemes (e.g., program underway with Tanga water authority, and in Kilombero and the Eastern Arc Mountains where rural and urban water users contribute funds towards forest conservation).³⁶⁴ <ul style="list-style-type: none"> ● Ensure sharing and applying best practices throughout the country with regards to participatory land use planning and resource mapping—in particular, lessons learned from USAID’s work with UCRT on communal CCROs and work on VLUPs and landscape level land use planning should be integrated in programming to support land use planning initiatives designed to effectively conserve connective corridors for elephant movement between Rungwa, Ruaha, and Piti. In all instances where participatory land use planning is occurring, LGAs and RAs should be engaged and, when adjacent to protected areas, 	<p>Agriculture; Nelson Mandela-African Institute of Science and Technology, Arusha; Institute of Marine Sciences, Zanzibar) will build the capacity of the next generation of NRM stakeholders.</p> <ul style="list-style-type: none"> ○ Support scholarships or research grants, especially targeting women and youth. ○ Continue USAID’s efforts to enhance training in environmental journalism and environmental justice/advocacy (e.g., via support to the Journalists Environmental Association of Tanzania). ○ Foster linkages to communities that help integrate environmental education initiatives into economic development initiatives. ○ Build skills at the research institutes through scholarships to foreign institutions in technical areas that are relatively more limited, and thus for which there is insufficient capacity to train locally (e.g., statistical analysis). <ul style="list-style-type: none"> ● HP – To address issues of poverty and lack of livelihoods that make people dependent on natural resource extraction, build vocational and entrepreneurship skills with a greater focus on youth and women. In particular, future economic and leadership opportunities for women – tied 	<p>illegal fishing gear and practices).</p> <ul style="list-style-type: none"> ● Work with BMUs, village forest committees, and LGAs to enhance the integration of natural resource management into broader spatial and development planning and develop and implement coastal and marine management program plans. ● Use remote sensing data to assess marine and estuarine biodiversity.³⁶⁶ ● Assess sea surface temperature, sea surface height, habitat extent and condition, nutrient movement, water turbidity, ocean topography, algal blooms and bleaching events (e.g., link to climate change), and structural species observation (e.g., large kelps, corals, marsh and sea grasses, and intertidal mussel and oyster beds). ● Work with the GoT to achieve goal of increasing area covered under Marine Protected Areas from 6.5% to 10% (as laid out in the NBSAP and in line with Aichi Targets). ● Support development and implementation of monitoring plans for MPAs and PAs in/connected to prioritized intervention areas. ● Support sustainable livelihood development, particularly for women, such as seaweed and half pearl farming. ● Support nature-based tourism in Marine Park Areas and Marine Reserves (e.g., whale and dolphin watching tours,

³⁶⁴ Tetra Tech and Land Trees and Sustainability Africa. “Experiences and lessons learned in payments for ecosystem services (PES) in East Africa.” USAID PREPARED Program. January 2018.

³⁶⁶ Geller G.N. et al. “Remote Sensing for Biodiversity.” *The GEO Handbook on Biodiversity Observation Networks*. Springer, Cham, 2017.

TABLE 23. RECOMMENDATIONS AND OPPORTUNITIES FOR USAID PROGRAMMING

RECOMMENDATIONS		
OPPORTUNISTIC	PROACTIVE	DIRECT THREAT REDUCTION
<p>so too should the governing authorities (e.g., TANAPA, TAWA, TFS).</p> <ul style="list-style-type: none"> • Emphasize and support the multiple benefits of agroforestry for food, fodder, soil stabilization and fertilization, shade, and pollinators. Model tree nurseries covering a wide range of agroforestry trees (indigenous and non-invasive exotics) and fruit trees should be established in major areas where USAID/IPs are implementing food security and NRM activities. To enhance tree cover establishment, water sources, especially in the drier areas/areas without surface water resources (e.g., Southern Highlands), should be established and properly managed. • Access to finance can be increased via multilateral donors or private funders, by supporting formal acquisition of land tenure and linking land tenure to equity for sustainable ventures, and by working with local lending institutions to raise awareness about viable ventures and risk mitigation financing • HP – Conduct a Political Economy Analysis evaluating the extent of agro-pastoralist expansion into western and southern Tanzania. Use this analysis to evaluate what types of economic (e.g., livestock taxes with progressive/willing LGAs and livestock market development) and political (e.g., media campaigns or electoral “branding”) initiatives may be viable to address this driver of habitat degradation and 	<p>into family planning and science-based training – could improve conservation and biodiversity outcomes.</p> <ul style="list-style-type: none"> ○ Training entrepreneurship and agribusiness, especially near urban centers where demand is high for vegetables. ○ Explore establishing vocational centers for youth in each of the major towns, which could be done in partnership with local organizations or churches. • Improve forestry value chain to generate revenue sustainably, e.g., working with communities to market certified timber. 	<p>boardwalks through mangrove forests, deep sea fishing).</p> <ul style="list-style-type: none"> • Promote sustainable charcoal production looking at successful initiatives led by, as example, TCFG near Tanga and Uzungwe. • Undertake a collaborative process with GoT to develop science-based strategic priorities for conserving wildlife corridors and strengthening forest connectivity. • Develop a national biodiversity dashboard to collect and share data.

TABLE 23. RECOMMENDATIONS AND OPPORTUNITIES FOR USAID PROGRAMMING

RECOMMENDATIONS

OPPORTUNISTIC	PROACTIVE	DIRECT THREAT REDUCTION
<p>fragmentation. This analysis should also evaluation underlying population dynamics that may be driving this expansion.</p> <ul style="list-style-type: none"> • Where evaluation of assets dictates, support transition of game reserves to national parks (e.g., newly created Burigi National Park in NW Tanzania). • Support national level efforts to conserve ecological connectivity between protected areas in key geographies (, e.g. Tarangire-Manyara, Ruaha-Rungwa, Kilimber-Uzungwa Scarp) — any such approach must be done in a highly participatory, cross-sectoral manner that appropriately engages with the full range of affected stakeholders. 		

TABLE 23. RECOMMENDATIONS AND OPPORTUNITIES FOR USAID PROGRAMMING

RECOMMENDATIONS

OPPORTUNISTIC

PROACTIVE

DIRECT THREAT REDUCTION

ECONOMIC GROWTH – NRM, BIODIVERSITY (CWT EARMARK)

- **HP** – Continue working with relevant GoT agencies, other donors, and IPs to support CWT initiatives through capacity building and training for law enforcement, rangers, and village game scouts; provide and build capacity on use of innovative technologies for monitoring movement of illegal products at borders and ports and identification in local markets. Initiatives should incorporate participatory community engagement in villages in key corridors, buffer zones, and dispersal areas.

- Take advantage of recent placement of CITES desk on Zanzibar to strengthen enforcement of illegal trade of wildlife products and threats to endangered species.

- Support inter-agency surveillance and control of marine waters across internal waters, territorial seas and Tanzania’s Exclusive Economic Zone [EEZ]. A cross-cutting approach specifically targeted to IUU fisheries and illegal timber, mangrove and wildlife trafficking will facilitate conservation.
- **HP** – Expand collaboration with various organizations involved in CWT and anti-poaching (e.g., TRAFFIC, USFWS, TAWA, TANAPA, DOI-ITAP, DOS-INL, PAMS Foundation, UNODC) – currently focused on wildlife crimes – to address illegal trafficking involving marine waters/marine surveillance, IUU fisheries, and timber trade.

DEMOCRACY, RIGHTS, AND GOVERNANCE

- Within existing programming focused on data collection around human rights issues, increase efforts to gather evidence of the interrelation between human rights violations related to environmental management and conservation (e.g., livestock migration and eviction, coercion, corruption, or other pressures related to wildlife trafficking and poaching).

- Expand existing programming in support of elections and political processes to create designations for government officials identified as excellent/non-corrupt civil servants and natural resource stewards in the form of public accolades or invitations to events, to incentivize improved performance in those areas.
- Engage communities in learning how best to conduct landscape level planning for natural resource management.

- Work with local, regional, or national government authorities and/or parastatal authorities to revise aspects of natural resource governance that may have embedded incentive structures undermining effective governance of biodiversity and tropical forestry resources.

GLOBAL HEALTH (FAMILY PLANNING)

TABLE 23. RECOMMENDATIONS AND OPPORTUNITIES FOR USAID PROGRAMMING

RECOMMENDATIONS		
OPPORTUNISTIC	PROACTIVE	DIRECT THREAT REDUCTION
<ul style="list-style-type: none"> • Add dimensions of PHE programming into existing USAID projects. • Ensure that in all areas distributing insecticide treated bednets proximate to waterways (particularly the Great Lakes) used commonly for fishing that such distribution is complemented by education on proper bednet use, the hazard of illegal and improper use for fishing. 	<ul style="list-style-type: none"> • HP – Build upon existing USAID environmental education initiatives to draw more explicit linkages between the natural resource base, common livelihoods (e.g., agriculture, livestock), and family planning, targeting women and youth to create awareness about sustainable livelihoods practices and family outcomes. • When conducting capacity building on proper use of bednets and hazards of misuse, link capacity building efforts to BMUs (where applicable) to help enforce illegal use of bednets for fishing, e.g., by recognizing good actors/top performers 	<ul style="list-style-type: none"> • HP – Introduce integrated family planning programming in high population growth areas that also have high biodiversity value (e.g., Pemba Island and Zanzibar); if possible, integrate directly with biodiversity programming as part of PHE platform
EDUCATION		
<ul style="list-style-type: none"> • Incorporate elements from existing environmental education initiatives into primary education reading materials. 	<ul style="list-style-type: none"> • As some primary mathematics education will now be within the remit of USAID/Tanzania’s educational programming, incorporate into the curriculum age appropriate word problems built around unsustainable exploitation of natural resources or diminishing economic gains from degraded habitats and landscapes. 	<ul style="list-style-type: none"> • Broaden effort to increase number of girls in school and after-school programs to nurture an interest in science, conservation, and biodiversity.
CROSS-SECTORAL		
<ul style="list-style-type: none"> • Continue working with governmental agencies and NGOs to develop and implement land use plans and CCROs at the local level, as well as coastal and marine management program plans. [USAID could 	<ul style="list-style-type: none"> • Integrate climate change resiliency, adaptation, and mitigation into all USAID programs. This integration can be done through a new Mission Order that mandates in award or contract 	<ul style="list-style-type: none"> • Organize, educate, and encourage key figures with influence at the national, regional, district, and community levels to communicate and promote behavior change on the conservation of natural resources.

TABLE 23. RECOMMENDATIONS AND OPPORTUNITIES FOR USAID PROGRAMMING

RECOMMENDATIONS		
OPPORTUNISTIC	PROACTIVE	DIRECT THREAT REDUCTION
<p>facilitate a stakeholder workshop on developing and implementing land use plans].</p> <ul style="list-style-type: none"> • Integrate awareness-raising about sustainable natural resource management across USAID programming engaged at the community level. Key examples include educational and awareness raising campaigns (via ongoing media outreach efforts) around useful technologies that address prevailing environmental problems (e.g., efficient cookstoves, rainwater catchment, drip irrigation) and the economic value of natural resource sustainability. • Provide in-depth, and hands-on, technical training opportunities for government officials engaged in forest and wildlife protection. USAID can help provide the requisite skills for government officials engaged in forest, fisheries, and wildlife protection through short or long-term training programs. 	<p>language that IPs must identify the main climate risks to their activities and what opportunities they will pursue to adapt to or mitigate climate change impacts. Further language can require IPs to reduce their impact on extraction of natural resources that will likely be impacted by, or exacerbate, climate change impacts (e.g., water abstraction, wood burning/cutting, sand extraction from rivers). USAID’s climate integration policy—which addresses issues such as climate resilient agriculture, clean energy and technology, and sustainable water management—should be woven into all Mission and IP activities (see https://www.usaid.gov/climate/integration).</p>	<ul style="list-style-type: none"> • HP – Create a Mission-wide formalized contract or project with a mandate for cross-sectoral integration and coordination, including catalyzing private sector engagement. <ul style="list-style-type: none"> ○ Include in the contract or project a mandate that contracts and grants in agriculture and food security, environment, family planning, PMI, and DRG programs should include integration components. This mandate will maximize cross-sectoral linkages of programs and expedite dissemination of best practices for enhancing conservation efforts throughout the country. • HP – Introduce integrated biodiversity and food security (e.g., FTF) programs located in areas proximate to sensitive or threatened ecosystems and facing challenges pertaining to food access or undernutrition <ul style="list-style-type: none"> ○ Mission attention in/around Lake Rukwa may afford opportunities here, but intersection of food security and ecosystem sensitivity should be considered along Albertine Rift, Eastern Arc mountains, and coastal/marine ecosystems (including Zanzibar, Pemba, Mafia Islands). ○ For such programming to achieve desired results pertaining to conservation of biodiversity, programming must target core drivers in strategic manner (e.g., improved agricultural or grazeland management practices to reduce agricultural expansion or livestock encroachment in sensitive corridors, buffer zones, or dispersal areas, or working with BMUs to improve inland fisheries management while increasing livelihoods and diversifying/fortifying food security).

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ANNEXES

Annex A: Stakeholders Consulted

Annex B: Biographical Information on Report Authors

Annex C: Maps of Tanzania's Major Ecosystems

Annex D: Endangered Species Information

Annex E: Ratified International Agreements Relevant to Conservation of Biodiversity and Improved Natural Resource Management

Annex F: Key NGOs And Donors Supporting Conservation and Management of Tropical Forests and Biodiversity in Tanzania

Annex G: Biodiversity and Tropical Forestry Data and Information Gaps in Tanzania

Annex H: Protected Areas of Tanzania

Annex I: Key GoT Policies and Institutions

ANNEX A: STAKEHOLDERS CONSULTED

The Assessment Team conducted over 75 consultations, meeting with more than 150 individuals from across more than 65 organizations and entities, including academia, NGOs, donors, private sector companies, and Tanzanian or US Government entities. Table 24 shows the in-country consultation schedule from 05 – 17 November, the period in which the majority of field consultations were conducted. Table 25 provides a breakdown of consultations by organization or entity.

TABLE 24. STAKEHOLDER ORGANIZATIONS/ENTITIES CONSULTED	
Academic Institutions	2
Donors	6
NGOs (including IPs)	15
Private Sector (including IPs)	8
US Government (including multiple units within Agencies)	13
Government of Tanzania or Zanzibar	30
Consortia	2

ANNEX B: BIOGRAPHICAL INFORMATION ON REPORT AUTHORS

MR. MICHAEL MINKOFF (TEAM LEADER) – Mr. Minkoff is a Senior Associate at Cadmus. An international environmental management specialist, Mr. Minkoff is expert on USAID environmental compliance requirements, including FAA Sections 118 and 119, with 10 years of field- and desk-based environmental, natural resource management, and international development experience. With background in international environmental policy and political economy, Mr. Minkoff led the field-based Kenya FAA 118/119 Tropical Forestry + Biodiversity Assessment, the desk-based East Africa 118/119 Assessment and has supported environmental impact assessments for development projects in sub-Saharan Africa and Eastern Europe, for sectors including natural resource management, agriculture, and rural road rehabilitation. Mr. Minkoff has led and supported trainings on USAID’s environmental compliance and resource management requirements across multiple locations in Sub-Saharan Africa and the Middle East, reaching more than 250 USAID staff and partners. Mr. Minkoff has a B.A. in Political Philosophy from the University of Wisconsin and an M.A. in Law and Diplomacy from the Fletcher School of Law and Diplomacy, at Tufts University.

MR. JOSHUA HABIB (DEPUTY TEAM LEADER) – Mr. Habib is an international development specialist focusing on environmental, energy, and social impacts of projects, with over 20 years of experience. Mr. Habib has conducted field- and desk-based work in Africa, Eastern Europe, Latin America, and Asia, primarily for the US Agency for International Development (USAID) and US Forest Service International. Recent work includes Biodiversity and Forestry Assessments for USAID/Pakistan and South Sudan (2017, 2018); conducting USAID training in Malawi (2015), Kenya (2016), Tanzania (2017), Ukraine (2018), and Zimbabwe (2017) on environmental compliance and environmentally sound design and management (ESDM) of international development projects. Mr. Habib has a B.A. in Public Policy from Duke University and an M.S. in International Environment and Policy from the University of Michigan.

DR. HUSSEIN SOSOVELE (NATURAL RESOURCE MANAGEMENT SPECIALIST AND INSTITUTIONAL, REGULATORY, AND LEGAL FRAMEWORK EXPERT) – Prof. Hussein Sosovele has over 25 years of practical task related work experience. His expertise includes teaching, research, and consultancies in areas of Natural Resources Assessments and Management, Environmental and Social Impact Assessment, Strategic Environmental Assessments, Cultural and Heritage Impact Assessments, Risk Assessment, Resettlement Policies and International Safeguard Policies, and Policy Analysis. Prof. Sosovele has been actively involved in providing a range of technical and environmental related advise to Singita – Grumeti Reserves for over 15 years now and has conducted assignments for various projects and programs of all sizes at different locations, both within and outside of Tanzania. Prof. Sosovele is also actively involved in teaching and training at the postgraduate level at the University of Dar es Salaam and abroad where he teaches courses related to environmental management, resource assessment, and policy analysis, thus bringing field experience into teaching situations. Prof. Sosovele is currently manages the the East Africa Association of Impact Assessment (EAAIA), which aims to provide stimulus for growing the environmental assessment experience in member states. Sosovele is also the current chairperson of the Pan African program *Capacity Development and Linkages for Environmental Assessment in Africa* (CLEAA), which aims at strengthening Environmental Assessment Professional capacity in Africa. Prof. Sosovele also chairs the current Tanzania Environmental Experts Association (TEEA), which provides a platform to Environmental Assessment experts to meet, discuss, and engage

with other stakeholders, including governmental and private sector actors, on how to improve and grow the environmental assessments process in Tanzania. Prof. Sosovele has been instrumental and actively involved in the processes to establish the environmental management laws and regulations and Wildlife Management Areas (WMAs) through the program he has coordinated with WWF Tanzania Office.

DR. DAUDI MSANGAMENO (MARINE ECOLOGIST) – Dr. Msangameno is a lecturer, researcher, and consultant in coastal and marine ecology, working for the University of Dar es Salaam's Institute of Marine Sciences. Dr. Msangameno brings 14 years of research and consulting experience, working on numerous local, regional and continental projects. Most recently, Dr. Msangameno supported the Environmental Impact Assessment conducted for the oil terminal for the East African Crude Oil Pipe (EACOP) being planned for Tanga, in the Northern Coast of Tanzania. Dr. Msangameno also recently provided expert technical services for a variety of projects including, including the AF-funded *Implementation of Concrete Adaptation Measures to Reduce Vulnerability Livelihoods and Economy of Coastal Communities in Tanzania*; the *Development of the Regional Action Plan for Marine Litter in the Western Indian Ocean Countries*; and the development of *Ocean Governance Strategy for Africa*. Dr. Msangameno has a BSc in Biology and Geography and a PhD in Marine Sciences from the University of Dar es Salaam, as well as a MSC in Management of Natural Resources from the Norwegian University of Life Sciences.

MR. GEOFFREY MWANJELA (FORESTRY AND NATURAL RESOURCE GOVERNANCE) – is an international expert in forestry and natural resources governance with 10+ years experience supporting forestry and natural resource management development projects in East Africa. Mr. Mwanjela has designed and implemented several national and regional programs on natural resources in Tanzania, Kenya, Mozambique, Uganda and Madagascar, led policy reviews and program designs related to forestry for the Southern Africa Development Community, East African Community, and governments of Tanzania, Kenya, Uganda, and Mozambique. Mr. Mwanjela served as part of the team that led the USAID/Malawi Environmental Threats and Opportunities Assessment (in 2011), as well as the GEF-funded Country Portfolio Evaluation (1992-2012) conducted for Tanzania in 2013. Mr. Mwanjela holds a BSc of Aquatic Ecology and Management from the University of Dar-es-Salaam, and a Masters of Natural Resources Policy and Management from the Yale School of Forestry and Environmental Studies, Yale University

DR. RICHARD KANGALAWA (NRM EXPERT) – Prof. Kangalawe is expert in natural resources management, agriculture, land use, climate change vulnerability and adaptation, and livelihoods with over 30 years of field experience. Prof. Kangalawe has participated and led teams of experts in various research and consultancy projects in the areas of natural resources management, agriculture systems, land use and land degradation as well as climate change. Between 2003 and 2005 he led the study on Analysis of land use dynamics and land degradation processes in the Great Rift Valley, central Tanzania funded by OSSREA, while in 2004-2005 he led the study on Sustainable development and management of wetlands in Tanzania: A case study of Kilombero Valley – which focused on the dynamics and benefits of wetlands for communities in the SADC region with case studies in Tanzania and Zambia, and contributed to the umbrella action programme on sustainable wetland development and management in SADC countries under the FAO-Netherlands Partnership Programme. In 2007-2010 he participated in the Building African Capacity for Conserving Biodiversity in a Changing Climate in the Albertine Rift Region – a project jointly undertaken by the University of Dar es Salaam and the START International. He has also participated in the Integrated Ecosystem Assessment of the Livingstone Mountain Ranges in

Mbinga District, Tanzania, and assessment of climate change and variability, impacts, vulnerability and adaptive capacity of natural and social systems. In 2011-2012 Prof Kangalawe led the preparation of Tanzania National Report for the UN Conference on Sustainable Development, Rio+20, participated in the preparation of the National Climate Change Strategy and led the Africa Adaptation Programme (AAP) - mainstreaming climate change adaptation in the National Sectoral Policies of Tanzania - implemented by UNDP and executed by the Vice President's Office, Division of Environment, Tanzania. Prof Kangalawe also led a UNDP funded Policy review, harmonisation and traditional institutions for natural resources management in Kilimanjaro Region (2013-2015). Prof Kangalawe led the Ascertaining of sources of revenue for the National Environmental Trust Fund under the Vice President's Office (2015-2016) and participated in a UNDP-Tanzania consultancy on Preparation of the E-Agriculture Innovation Platform for Youth Farmers and Small and Medium Enterprises in Tanzania - Program Document (In 2017). Prof Kangalawe also led the Mangrove Capital Africa - Rufiji Delta Livelihoods Baseline Study – a project by Wetlands International-Africa (2017–2018). Between 2012 and 2015 he was the Director of Research of the University of Dar es Salaam, and in 2015-2018 he was the Deputy Principal (Academic) of Mkwawa University College of Education where he was responsible for overseeing academic, research and consultancy functions of these institutions. Prof Kangalawe holds a Diploma in Crop Production from Uyolet Agricultural Institute, a B.Sc. in Agriculture from Sokoine University of Agriculture, a Postgraduate Diploma in Natural Resources Management and Sustainable Agriculture and M.Sc. in Natural Resources Management from the Agricultural University of Norway, and a PhD in Physical Geography from Stockholm University.

ANNEX C: MAPS OF TANZANIA'S MAJOR ECOSYSTEMS

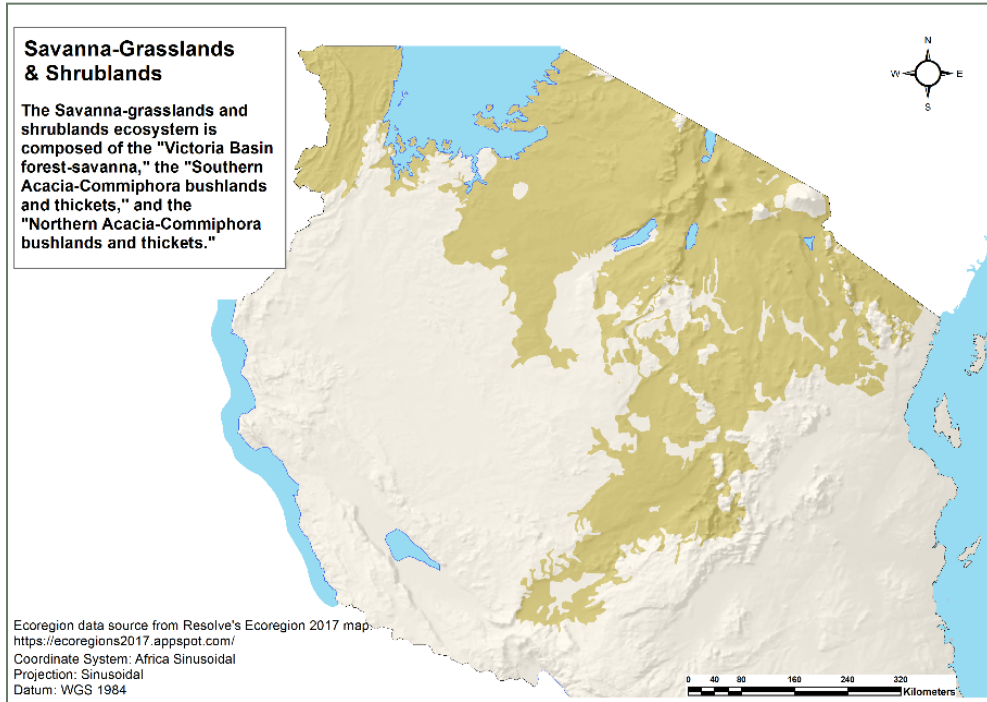


Figure 6 Savanna-Grasslands of Tanzania



Figure 7 Tanzania's Woodlands and Brushlands

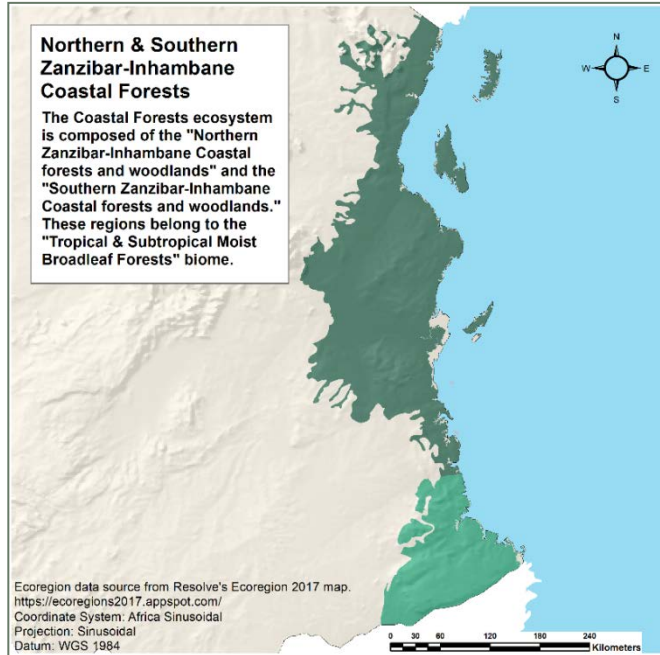


Figure 8 Coastal Forests of Tanzania

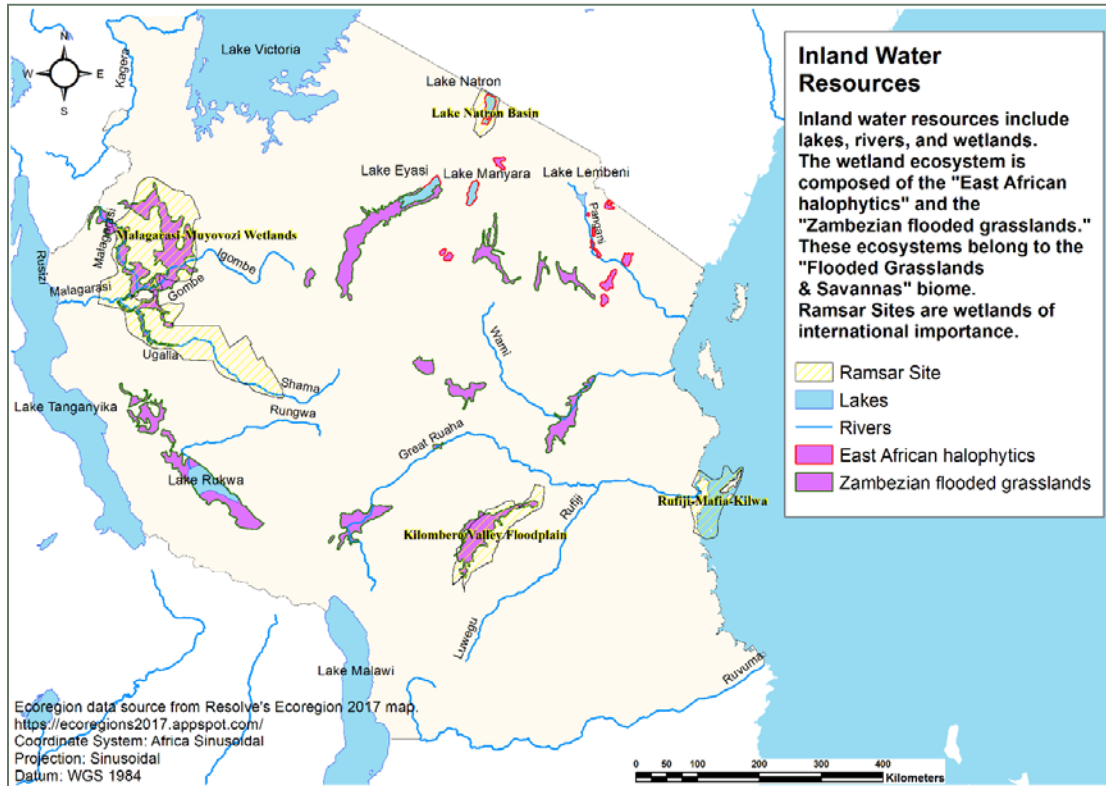


Figure 9 Map of Inland Water Resources

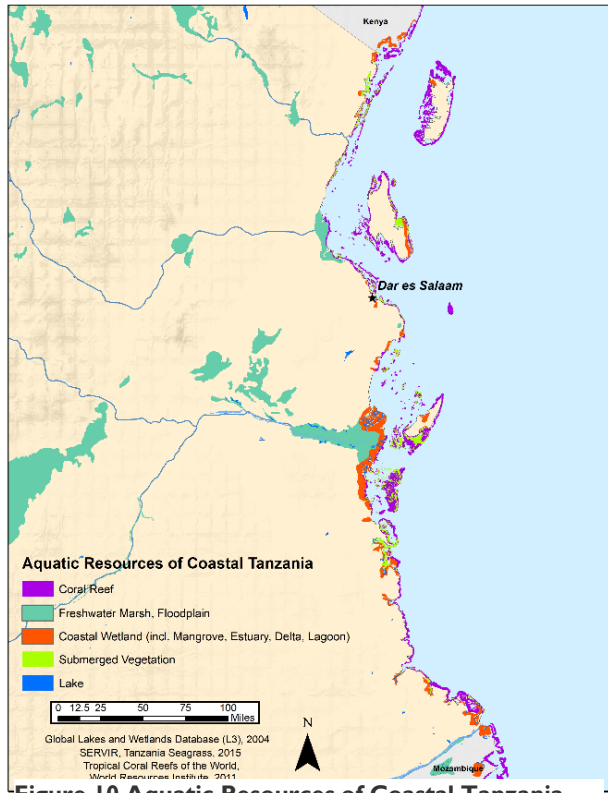


Figure 10 Aquatic Resources of Coastal Tanzania

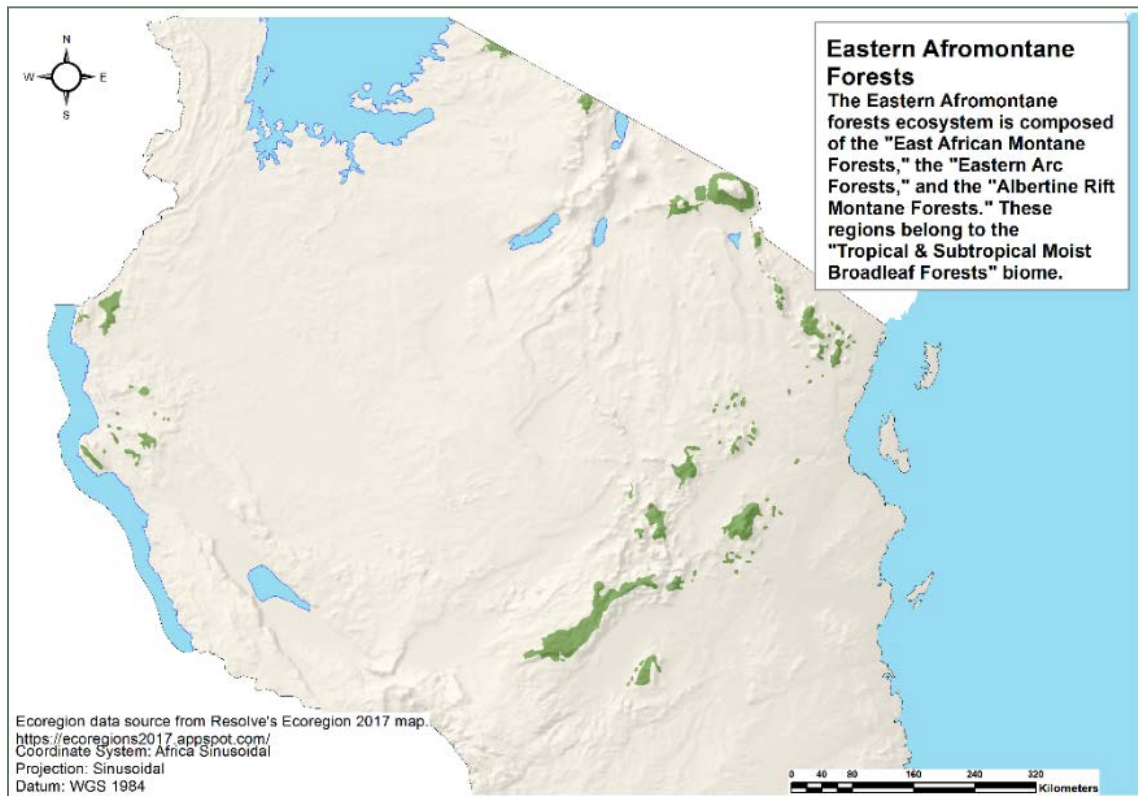


Figure 11 Eastern Afromontane Forests

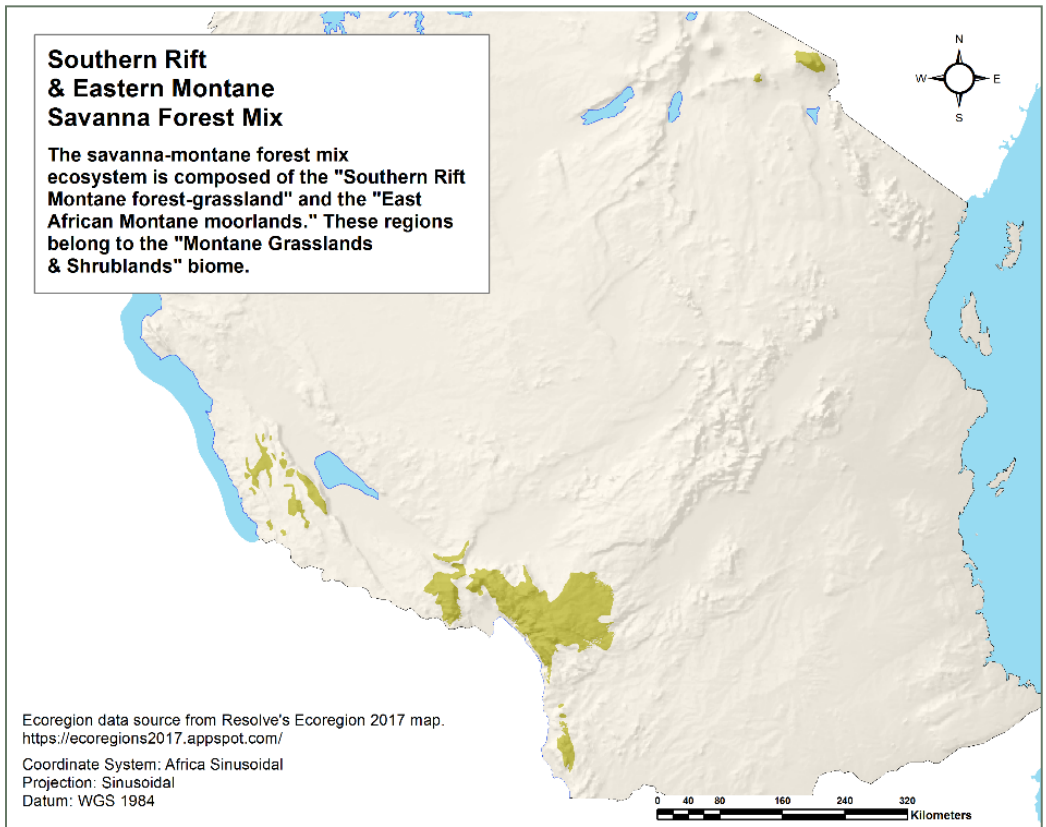


Figure 12 Montane Savanna-Forest Mix

ANNEX D: ENDANGERED SPECIES INFORMATION

TABLE 25. ENDEMISM AND THREATENED SPECIES IN TANZANIA

	ENDEMIC	THREATENED ENDEMIC	ENDANGERED
Mammals	27	17	40
Birds	33	16	49
Amphibians	86	58	61
Reptiles	-	-	34
Chameleons	22	10	-
Fish	-	-	176
Sharks & Rays	1	0	-
Mollusks (Invert)	-	-	11
Other Invert	-	-	118
Plants	4	3	632
Fungi & Protists	-	-	-
TOTAL	173	104	1121

TABLE 26. ANIMAL SPECIES IN TANZANIA BY RED LIST CLASSIFICATION

EX		EW		SUBTOTAL
I		I		2
CR	EN	VU		SUBTOTAL
111	131	247		489
NT	LR/cd	DD	LC	TOTAL
197	-	321	3,507	4,516

TABLE 27. METADATA COUNT OF SPECIES IN TANZANIA ON IUCN RED LIST FOR WHICH DATA IS AT LEAST 10 YEARS OLD

SPECIES TYPE	COUNT
Clubmosses and Firmosses	1
Ferns	6
Cone-bearing Trees and Plants	7
Flowering Trees and Plants	142
Insects	80
Birds	56
Mammals	41
Reptiles	31
Amphibians	52
Cartilaginous Fishes	20
Ray-finned Fishes	1
Sturgeon and Paddlefish	159
Small Crustaceans	2
Large Crustaceans	4
Gastropods	10
Sea Anemones and Corals	41
Sea Cucumbers	2
TOTAL	655

ANNEX E: RATIFIED INTERNATIONAL AGREEMENTS RELEVANT TO CONSERVATION OF BIODIVERSITY AND IMPROVED NATURAL RESOURCE MANAGEMENT

TABLE 28. CONVENTION, TREATY OR AGREEMENT BY YEAR ADOPTED/RATIFIED

CONVENTION, TREATY, OR AGREEMENT	YEAR ADOPTED/ SIGNED	YEAR RATIFIED/ ACCEDED
BIODIVERSITY		
African-Eurasian Migratory Water-bird Agreement	1995	1999
The International Treaty on Plant Genetic Resources for Food and Agriculture		2004
Convention on International Trade in Endangered Species of Wild Fauna and Flora		1979
Lusaka Agreement on Illegal Trade in Wild Fauna and Flora	1994	1994
United Nations Convention on Biological Diversity (CBD)	1992	1996
Preservation of Fauna and Flora in their Natural State	1992	1993
Ramsar Convention on Wetlands	1971	2000
Bonn Convention on Migratory Wild Animal Species		1999
Cartagena Protocol on Biosafety to the Convention on Biological Diversity		2003
Convention on Sustainable Management of Lake Tanganyika	1979	2004
Convention Concerning the Protection of the World's Cultural Heritage	1972	1987
CLIMATE CHANGE AND ENERGY		
United Nations Framework Convention on Climate Change (UNFCCC)	1992	1996
Kyoto Protocol to the UNFCCC	1997	2002
Vienna Convention for Protection of the Ozone Layer		1993
Montreal Protocol on Substances that Deplete the Ozone Layer		1993
Rotterdam Convention of Prior Informed Consent Chemicals	1998	2002
INTERNATIONAL WATERS		
United Nations Convention on the Law of the Sea	1982	1985
Sustainable Management of the Law of the Sea	1982	1985
Southern African Development Community Protocol on Fisheries	2001	2003
International Convention for the Prevention of Pollution from Ships (MARPOL)	1973	1973
Convention on prevention of marine pollution by dumping of wastes and other matters		1972
Convention on the conservation of migratory species of wild animals		
Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (the Nairobi Convention)	1985	1996
LAND DEGRADATION		
United Nations Convention to Combat Desertification (UNCCD)	1997	1997
Persistent Organic Pollutants		
Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal	1989	1993
Stockholm Convention on Persistent Organic Pollutants		2002
Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa	1991	1993
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade		1998

ANNEX F: KEY NGOS AND DONORS SUPPORTING CONSERVATION AND MANAGEMENT OF TROPICAL FORESTS AND BIODIVERSITY IN TANZANIA

TABLE 29. NGOS		
GEOGRAPHY	ORGANIZATION	AREA(S) OF FOCUS
WESTERN ZONE – KIGOMA, TABORA, KATAVI, RUKWA	Jane Goodall Institute (JGI)	Wildlife, land, agriculture, forestry
	The Nature Conservancy (TNC)	Fisheries, forestry and carbon, land, agriculture,
	IUCN	Water, land
	FZS	Wildlife, forestry
	WCS	Wildlife, restoration
EASTERN ZONE – DAR ES SALAAM, COAST REGION, MTWARA, AND LINDI	WWF	Forest, fisheries, wildlife
	MCDI	Community forestry
	Wetland International	Mangroves, Rufiji delta
NORTHERN ZONE - ARUSHA, MANYARA, AND KILIMANJARO, SERENGETI, NGORONGORO, AND TARANGIRE	TNC	Wildlife, pastoralism, forestry/carbon
	FZS	Wildlife
	Freidkin Conservation Fund	Wildlife
	WCS	Wildlife
	UCRT	Wildlife, pastoralism
	Africa Wildlife Fund (AWF)	Wildlife, landscapes
NORTH-EASTERN ZONE – EASTERN ARC, TANGA	BirdLife International	Usambaras mountains, forest
	Eastern Arc Mountains Endowment Fund	Forest, wildlife
	Tanzania Forest Conservation Group (TFCG)	Community forestry, sustainable charcoal
SOUTHERN ZONE - RUVUMA AND MTWARA	WWF	Forest, wildlife, fisheries, energy
	MCDI	Community forestry
	CARE	Land and agriculture
SOUTHERN HIGHLANDS - IRINGA, MBEYA, NJOMBE	IUCN	Southern Agricultural Growth Corridor of Tanzania (SAGCOT)
	WWF	Water, agriculture, SAGCOT
	CARE	Land, SAGCOT
	WCS	Wildlife, forest, landscape and forest restoration

ANNEX G: BIODIVERSITY AND TROPICAL FORESTRY DATA AND INFORMATION GAPS IN TANZANIA

TABLE 30. BIODIVERSITY AND TROPICAL FORESTRY DATA AND INFORMATION GAPS IN TANZANIA

SECTOR	DATA GAPS
COUNTER-TRAFFICKING AND POACHING	<ul style="list-style-type: none"> • Social-economic issues affecting wildlife management. • Business models and benefit sharing arrangements that support livelihoods and conservation. • Innovative approaches and models addressing human-wildlife conflicts. • Institutional challenges facing wildlife and natural resource management. • Effective diversification options for tourism and development.
MARINE	<ul style="list-style-type: none"> • Stock assessments for various priority fisheries including prawns, octopus, selected small pelagics, and selected medium pelagics. • Distribution and mapping of seagrass habitat [extent and species diversity] and associated fish and invertebrate fauna. • Hard coral [<i>Scleractinia</i>] and reef fish species diversity and distribution. (Has been completed at some sites, mostly within the 3 Mainland marine parks and 1-2 sites in Zanzibar, but not systematically surveyed and documented nationally). • Valuation of ecosystem services of ecosystems insufficiently studied, such as seagrasses and coral reefs. • Offshore marine biodiversity, specifically pelagic and benthic fish. A particular need is mapping the distribution of target fish stocks, including seasonal movements and fishing mortality, correlated with relevant bathymetry and other physical and biological oceanography. • Sharks and ray (<i>Elasmobranchii</i>) species diversity, distribution, and fishing pressure in Tanzanian waters. <ul style="list-style-type: none"> ○ Some studies are ongoing in Zanzibar [Unguja and Pemba] but similar work is needed in Mainland waters, including Latham Island. • Whale and dolphin [cetacean] diversity and distribution. Particular gaps include: <ul style="list-style-type: none"> ○ (i) cetacean diversity and distribution in southern Tanzania waters [Dar es Salaam south to Mtwara, including Latham Island]; ○ (ii) national coastal assessment of Indo-Pacific humpback dolphin <i>Sousa plumbea</i> [near threatened], known to be present in Tanzania -- to identify potential protection areas;

FOREST

- (iii) humpback whale (*Megaptera novaeangliae*) distribution and behavior, to identify potential protection zones.
- Trade in endangered marine species, including shark fins, seahorses, sea cucumbers; trade routes and volumes. (Such research could complement ongoing studies of related artisanal fisheries).
- Scale and extent of emerging marine pollution issues, in particular marine plastics and marine noise pollution (and impact on marine mammals)
- Assessing the factors for effective implementation of BMU mechanisms (e.g., effective governance structures) in fisheries/marine resources management, i.e. lesson-learning from successful BMUs and upscaling

Mangroves

- Mangrove inventory within and outside protected areas to understand and quantify the existing stock, conditions, sequestration (productive areas), and rate of off-take (rates of off-take and regeneration are not known in priority areas such as Rufiji Delta, Kilwa, and Tanga).

Miombo Woodlands

- Assessment of factors affecting quality and growth distribution pattern of miombo woodlands.
- Science-based approaches and data for conserving connectivity/corridors.
- Using biodiversity as an indicator for improved forest management (e.g., build upon use of camera traps and transects).
- Scalability of successful community-based forest management models.
- Trends and potential threats for deforestation/degradation of promoting investment of cash crops (palm oil and cashew nuts)
- Status and impacts of tree planting/plantation efforts.

Timber Trade

- Assess the scale of domestic trade in timber to understand supply (stock), demand (local) and key players.
 - Deficit for timber supply forces import from neighboring countries (while still exporting from Tanzania to other countries in the Middle East and Asia).
 - Stock from natural forests, community managed areas, and forest areas with no harvesting plans (which provide an estimate of annual allowable cut).

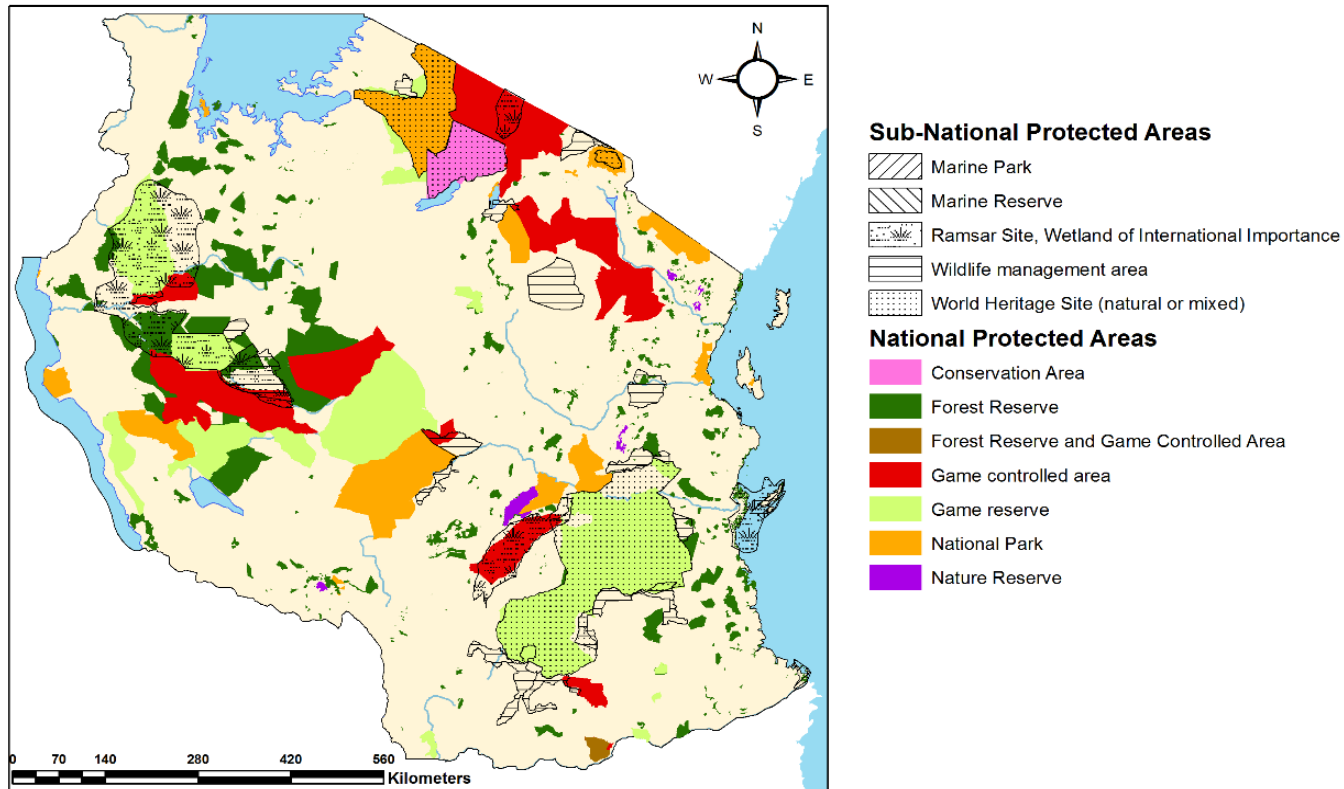
WILDLIFE	<p>Mapping for areas with management plans and harvesting plans could help inform policies.</p> <ul style="list-style-type: none"> • For trade with Zanzibar and the sourcing from Rufiji delta and other coastal forest areas, need understanding of permit process, potential for forgery, and capacity needed to counter illegal trade. <p><u>Payment for Ecosystem Services</u></p> <ul style="list-style-type: none"> • What are the necessary conditions needed for PES schemes to be successful and replicated elsewhere; examine successful and failed PES efforts. <p><u>Carbon Market Potential and Scalability</u></p> <ul style="list-style-type: none"> • Assessment of where opportunities exist based on mistakes and lessons from REDD+ pilot process. • Assessment of mechanisms needed (including available policy/legal framework to enable and scale-up) to engage private sector (local and foreign). • Capacity gaps to institutionalize local and national carbon market. <p><u>Carbon and Climate Change</u></p> <ul style="list-style-type: none"> • Sector-specific GHG inventories (e.g., agriculture, including livestock) • Emissions from forest degradation • Adding other carbon pools such as soils, litter and other non-woods in Forest Reference Emission Levels (FREL) • Estimate of emissions reduction due to sustainable forest management or fires
	<ul style="list-style-type: none"> • Distribution and abundance of big cats (lions, cheetahs, leopards). • Distribution and genetic diversity of existing rhino stock (black rhinos currently being reintroduced in, e.g., Grumeti Game Reserve. • Distribution and abundance of giraffes. • Trends in abundance of vultures (hooded vultures, white-backed vultures and Rüppell's Vulture). Needs for surveying types of common poisons and mechanisms for regulatory legislation of poison use. • Need for recurrent monitoring data of non-threatened wildlife. • Wildlife surveys of new national parks in Tanzania: Biharamulo, Burigi, Kimisi, Ibanda and Rumanyika. These new parks have not been surveyed recently and many of the existing wildlife resources are unknown. • Impacts of ongoing infrastructure projects on wildlife. • Updated wildlife corridor surveys. • Centralized database of human-wildlife conflicts.

ANNEX H: PROTECTED AREAS OF TANZANIA

Figure 13 Map of Tanzania's Protected Areas

Tanzania - Protected Areas

Protected Areas include 831 spaces classified into 12 categories: "Forest Reserve," "Forest Reserve/Game Controlled Area," "Game Controlled Area," "Game Reserve," "Marine Park," "Marine Reserve," "National Park," "Nature Reserve," "Ramsar Site," "Wildlife Management Area," and "World Heritage Site." Line-hashed areas represent protected areas with sub-national governance and solid color areas represent protected areas with national governance.



UNEP-WCMC (2018). Protected Area Profile for United Republic of Tanzania from the World Database of Protected Areas, December 2018. Available at: www.protectedplanet.net
 Coordinate System: Africa Sinusoidal
 Projection: Sinusoidal
 Datum: WGS 1984

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
CONSERVATION AREAS						
Ngorongoro Conservation Area	Inland Water Resources, Savanna-Grasslands and Shrublands	0	8257.8596	Designated	National	Federal or national ministry or agency
LOCALLY AND NATIONALLY MANAGED MARINE AREAS						
Dar es Salaam		1975	26	Designated	National	Collaborative governance
Mafia Island	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	1995	822	Designated	National	Sub-national ministry or agency
Maziwe Island		1981	2.6	Designated	National	Collaborative governance
Menai Bay	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	1997	475.5	Designated	National	Collaborative governance
Misali Island		1998	23	Designated	National	Collaborative governance
Mnazi Bay-Ruvuma Estuary	Mangroves, Southern Zanzibar-Inhambane Coastal Forest	2000	650	Designated	National	Sub-national ministry or agency
Pemba Channel Conservation Area	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	0	0	Designated	National	Not Reported
FOREST RESERVES						
Baga I (Mzinga)	Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	1963	357.5	Designated	National	Federal or national ministry or agency
Bagai	Eastern Afromontane Forests	1955	3.1815	Designated	National	Federal or national ministry or agency
Balangai West	Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	0	10.7459	Designated	National	Federal or national ministry or agency
Bamba Ridge	Savanna-Grasslands and Shrublands, Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	0	11.416884	Designated	National	Federal or national ministry or agency
Bassi	Northern Zanzibar-Inhambane Coastal Forest	0	3.1107	Designated	National	Federal or national ministry or agency
Bereku	Miombo Woodlands & Itigi-Sumbu Thicket	0	52.903737	Designated	National	Federal or national ministry or agency
Biharamulo	Miombo Woodlands & Itigi-Sumbu Thicket, Savanna-Grasslands and Shrublands	0	1462.3225	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Bombo East I	Savanna-Grasslands and Shrublands, Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	0	12.7941	Designated	National	Federal or national ministry or agency
Bombo East II	Savanna-Grasslands and Shrublands, Northern Zanzibar-Inhambane Coastal Forest	0	8.073	Designated	National	Federal or national ministry or agency
Bombo Makole	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	3.4247324	Designated	National	Federal or national ministry or agency
Bombo West	Savanna-Grasslands and Shrublands, Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	0	36.7258	Designated	National	Federal or national ministry or agency
Bondo	Miombo Woodlands & Itigi-Sumbu Thicket	1988	28.7336	Designated	National	Federal or national ministry or agency
Bujingwa	Savanna-Grasslands and Shrublands	0	0.3745046	Designated	National	Federal or national ministry or agency
Bulongwa Madehani	Southern Rift and Eastern Montane Savanna Forest	1953	2.015995	Designated	National	Federal or national ministry or agency
Bunduki 3	Eastern Afromontane Forests	0	0.0414664	Designated	National	Federal or national ministry or agency
Burko	Savanna-Grasslands and Shrublands	0	5.4341250	Designated	National	Federal or national ministry or agency
Buyange	Savanna-Grasslands and Shrublands	0	4.6239990	Designated	National	Federal or national ministry or agency
Buyonga	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.4072552	Designated	National	Federal or national ministry or agency
Bwiregi	Eastern Afromontane Forests	0	0.8131825	Designated	National	Local communities
Chala Hills	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	0	31.787457	Designated	National	Federal or national ministry or agency
Chamanyani	Northern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket	1950	8.1158	Designated	National	Federal or national ministry or agency
Chambogo	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	1958	55.2986	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Changandu	Northern Zanzibar-Inhambane Coastal Forest	1958	67.183	Designated	National	Federal or national ministry or agency
Chemi chemi	Savanna-Grasslands and Shrublands	0	0.2609519	Designated	National	Federal or national ministry or agency
Chenene East	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	228.516	Designated	National	Federal or national ministry or agency
Chilangala	Southern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket	0	18.228298	Designated	National	Federal or national ministry or agency
Chimala Scarp	Miombo Woodlands & Itigi-Sumbu Thicket, Savanna-Grasslands and Shrublands, Southern Rift and Eastern Montane Savanna Forest	1960	180.678	Designated	National	Federal or national ministry or agency
Chinene West	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	278.14259	Designated	National	Federal or national ministry or agency
Chitoa	Southern Zanzibar-Inhambane Coastal Forest	0	20.663051	Designated	National	Federal or national ministry or agency
Chome	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	142.18948	Designated	National	Federal or national ministry or agency
Chongweni	Savanna-Grasslands and Shrublands	1957	1.0217	Designated	National	Federal or national ministry or agency
Chumwa Range	Miombo Woodlands & Itigi-Sumbu Thicket	0	129.3777	Designated	National	Federal or national ministry or agency
Chuvwi	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1931	4.385026	Designated	National	Federal or national ministry or agency
Dabaga New	Eastern Afromontane Forests	0	37.66	Designated	National	Federal or national ministry or agency
Derema	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	40.21	Designated	National	Federal or national ministry or agency
Dindili	Miombo Woodlands & Itigi-Sumbu Thicket	1953	10.4815	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Disalasala	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.4317694	Designated	National	Federal or national ministry or agency
Dodoma Reservoir	Savanna-Grasslands and Shrublands	0	5.4853899	Designated	National	Federal or national ministry or agency
Essimingor	Savanna-Grasslands and Shrublands	0	57.222802	Designated	National	Federal or national ministry or agency
Fonera	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.9620608	Designated	National	Federal or national ministry or agency
Forest Reserve Name Unknown (TZA) (Mangrove) No.10	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	0	7.77	Designated	National	Federal or national ministry or agency
Forest Reserve Name Unknown (TZA) (Mangrove) No.18		0	17.853771	Designated	National	Federal or national ministry or agency
Forest Reserve Name Unknown (TZA) (Mangrove) No.19	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	0	25.517356	Designated	National	Federal or national ministry or agency
Forest Reserve Name Unknown No. 2	Southern Rift and Eastern Montane Savanna Forest	0	0.3925752	Designated	National	Federal or national ministry or agency
Garafuno	Northern Zanzibar-Inhambane Coastal Forest	0	2.8879	Designated	National	Federal or national ministry or agency
Geita	Miombo Woodlands & Itigi-Sumbu Thicket, Savanna-Grasslands and Shrublands	1953	509.2929	Designated	National	Federal or national ministry or agency
Gelai	Savanna-Grasslands and Shrublands	1988	30.2334	Designated	National	Federal or national ministry or agency
Gonja	Savanna-Grasslands and Shrublands	0	0.9439126	Designated	National	Federal or national ministry or agency
Goweko	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	1963	419.0161	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Gulosilo	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	36.703383	Designated	National	Federal or national ministry or agency
Gumbiro	Miombo Woodlands & Itigi-Sumbu Thicket	1959	2.8377	Designated	National	Federal or national ministry or agency
Gwami	Miombo Woodlands & Itigi-Sumbu Thicket	1958	58.4836	Designated	National	Federal or national ministry or agency
Hanang	Inland Water Resources, Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	58.657304	Designated	National	Federal or national ministry or agency
Handeni Hill	Savanna-Grasslands and Shrublands	1960	5.6251	Designated	National	Federal or national ministry or agency
Haraa	Miombo Woodlands & Itigi-Sumbu Thicket	0	6.7429367	Designated	National	Federal or national ministry or agency
Hassama Hill	Savanna-Grasslands and Shrublands	0	49.0148	Designated	National	Federal or national ministry or agency
Hebangwe	Northern Zanzibar-Inhambane Coastal Forest	0	0.3858758	Designated	National	Federal or national ministry or agency
Hupanga	Southern Rift and Eastern Montane Savanna Forest	0	0.2677137	Designated	National	Federal or national ministry or agency
Ibondo	Savanna-Grasslands and Shrublands	0	0.3402488	Designated	National	Federal or national ministry or agency
Idamba	Southern Rift and Eastern Montane Savanna Forest	0	0.3899573	Designated	National	Federal or national ministry or agency
Idewa	Eastern Afromontane Forests	0	2.9854983	Designated	National	Federal or national ministry or agency
Iditima	Miombo Woodlands & Itigi-Sumbu Thicket	0	5.6659388	Designated	National	Federal or national ministry or agency
Idunda	Southern Rift and Eastern Montane Savanna Forest	0	0.8754447	Designated	National	Federal or national ministry or agency
Igoma Logala	Southern Rift and Eastern Montane Savanna Forest	0	1.1644148	Designated	National	Federal or national ministry or agency
Igombe Dam	Miombo Woodlands & Itigi-Sumbu Thicket	0	68.136560	Designated	National	Federal or national ministry or agency
Igombe River	Miombo Woodlands & Itigi-Sumbu Thicket	1958	2891.8095	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Igwata	Miombo Woodlands & Itigi-Sumbu Thicket	0	1.3383887	Designated	National	Federal or national ministry or agency
Ihanga	Miombo Woodlands & Itigi-Sumbu Thicket	0	35.961064	Designated	National	Federal or national ministry or agency
Ihoho	Miombo Woodlands & Itigi-Sumbu Thicket	1935	4.736255	Designated	National	Federal or national ministry or agency
Ijogo	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1950	3.5605	Designated	National	Federal or national ministry or agency
Ikonde	Southern Rift and Eastern Montane Savanna Forest	0	1.0596557	Designated	National	Federal or national ministry or agency
Ikuru		0	3.2400093	Designated	National	Federal or national ministry or agency
Ikwamba	Eastern Afromontane Forests	0	8.7475800	Designated	National	Federal or national ministry or agency
Ilamba	Miombo Woodlands & Itigi-Sumbu Thicket	1961	49.5613	Designated	National	Local communities
Ilomero Hill	Miombo Woodlands & Itigi-Sumbu Thicket	0	282.89418	Designated	National	Federal or national ministry or agency
Ilongafipa	Savanna-Grasslands and Shrublands	0	14.404795	Designated	National	Federal or national ministry or agency
Ilonganjaula	Southern Rift and Eastern Montane Savanna Forest	0	0.5654894	Designated	National	Federal or national ministry or agency
Ilunde	Miombo Woodlands & Itigi-Sumbu Thicket	0	62.910127	Designated	National	Federal or national ministry or agency
Image	Savanna-Grasslands and Shrublands	1954	90.6856	Designated	National	Federal or national ministry or agency
Irangi Escarpment	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	158.78224	Proposed	National	Federal or national ministry or agency
Irenga	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1935	4.659718	Designated	National	Federal or national ministry or agency
Iringa	Miombo Woodlands & Itigi-Sumbu Thicket	0	25.2536	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Irunda	Miombo Woodlands & Itigi-Sumbu Thicket	0	3.9258032	Designated	National	Federal or national ministry or agency
Irunga	Southern Rift and Eastern Montane Savanna Forest	0	3.351724	Designated	National	Local communities
Irungu	Southern Rift and Eastern Montane Savanna Forest	1958	240.3173	Designated	National	Federal or national ministry or agency
Isabe	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	1954	31.2276	Designated	National	Federal or national ministry or agency
Isalala	Miombo Woodlands & Itigi-Sumbu Thicket	1957	119.4882	Designated	National	Federal or national ministry or agency
Isililo	Southern Rift and Eastern Montane Savanna Forest	0	0.9356464	Designated	National	Federal or national ministry or agency
Ito		0	1.0912892	Designated	National	Federal or national ministry or agency
Itobo Dam	Miombo Woodlands & Itigi-Sumbu Thicket	0	1.2994962	Designated	National	Local communities
Itulu Hill	Miombo Woodlands & Itigi-Sumbu Thicket	1954	4080.5867	Designated	National	Federal or national ministry or agency
Ivuna North	Miombo Woodlands & Itigi-Sumbu Thicket	0	76.490535	Designated	National	Federal or national ministry or agency
Ivuna South	Miombo Woodlands & Itigi-Sumbu Thicket	0	22.541319	Designated	National	Federal or national ministry or agency
Iyonda	Southern Rift and Eastern Montane Savanna Forest	1958	8.717526	Designated	National	Federal or national ministry or agency
Jasini	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	0	4.1322	Designated	National	Federal or national ministry or agency
Kabingo	Savanna-Grasslands and Shrublands	0	4.2392677	Designated	National	Federal or national ministry or agency
Kabungu	Miombo Woodlands & Itigi-Sumbu Thicket	0	2.0201774	Designated	National	Federal or national ministry or agency
Kagongho	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	41.0014	Designated	National	Federal or national ministry or agency
Kahama dam	Savanna-Grasslands and Shrublands	0	1.4344295	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Kahe I	Savanna-Grasslands and Shrublands	0	5.9725	Designated	National	Federal or national ministry or agency
Kahe II	Savanna-Grasslands and Shrublands	0	3.1375	Designated	National	Federal or national ministry or agency
Kakora	Savanna-Grasslands and Shrublands	0	0.135764	Designated	National	Federal or national ministry or agency
Kalambo falls	Miombo Woodlands & Itigi-Sumbu Thicket	0	5.626693	Designated	National	Federal or national ministry or agency
Kalambo River	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	0	461.6331	Designated	National	Federal or national ministry or agency
Kalangai	Miombo Woodlands & Itigi-Sumbu Thicket	0	23.8033	Designated	National	Local communities
Kambai	Eastern Afromontane Forests	1994	12.4219	Designated	National	Federal or national ministry or agency
Kambona	Southern Zanzibar-Inhambane Coastal Forest	0	1.114778	Designated	National	Federal or national ministry or agency
Kamwalla I	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	1.19	Designated	National	Federal or national ministry or agency
Kamwalla II	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	2.93	Designated	National	Federal or national ministry or agency
Kanga	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1954	71.8343	Designated	National	Federal or national ministry or agency
Kankoma	Savanna-Grasslands and Shrublands	1957	0.717	Designated	National	Federal or national ministry or agency
Kantale	Savanna-Grasslands and Shrublands	0	0.444739	Designated	National	Federal or national ministry or agency
Karitu	Miombo Woodlands & Itigi-Sumbu Thicket	0	282.4673	Designated	National	Federal or national ministry or agency
Kasanga	Miombo Woodlands & Itigi-Sumbu Thicket	0	4.3162	Designated	National	Federal or national ministry or agency
Katundu	Northern Zanzibar-Inhambane Coastal Forest	1966	61.3469	Designated	National	Federal or national ministry or agency
Kazimzumbwi	Northern Zanzibar-Inhambane Coastal Forest	1954	50.1689	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Kiamawe	Savanna-Grasslands and Shrublands	0	10.990172	Designated	National	Federal or national ministry or agency
Kiav Island		0	0.4118171	Designated	National	Federal or national ministry or agency
Kibao	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	1.1650215	Designated	National	Federal or national ministry or agency
Kibwezi	Eastern Afromontane Forests	0	0.4471668	Designated	National	Federal or national ministry or agency
Kichi Hills	Northern Zanzibar-Inhambane Coastal Forest	0	145.06	Designated	National	Federal or national ministry or agency
Kigogo	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1952	26.3658	Designated	National	Federal or national ministry or agency
Kigongkwe	Savanna-Grasslands and Shrublands	0	45.3506	Designated	National	Federal or national ministry or agency
Kihanga	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.5669460	Designated	National	Federal or national ministry or agency
Kihiriri	Miombo Woodlands & Itigi-Sumbu Thicket	0	2.9754644	Designated	National	Federal or national ministry or agency
Kikale	Northern Zanzibar-Inhambane Coastal Forest	0	11.780561	Designated	National	Federal or national ministry or agency
Kikoka	Northern Zanzibar-Inhambane Coastal Forest	0	16.633213	Designated	National	Federal or national ministry or agency
Kikongoloi	Savanna-Grasslands and Shrublands	0	12.157	Designated	National	Federal or national ministry or agency
Kikongoro	Savanna-Grasslands and Shrublands	0	0.1425535	Designated	National	Federal or national ministry or agency
Kikuru	Savanna-Grasslands and Shrublands	0	73.469158	Designated	National	Federal or national ministry or agency
Kilengwe	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	9.8033091	Designated	National	Federal or national ministry or agency
Kileo East	Savanna-Grasslands and Shrublands	0	1.7549688	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Kilindi	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1969	53.9414	Designated	National	Local communities
Kilombero	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources, Eastern Afromontane Forests	0	1377.2335	Designated	National	Federal or national ministry or agency
Kimboza	Miombo Woodlands & Itigi-Sumbu Thicket	1964	3.85	Designated	National	Federal or national ministry or agency
Kindoroko	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	1961	8.85	Designated	National	Federal or national ministry or agency
Kingoma	Northern Zanzibar-Inhambane Coastal Forest	0	13.979657	Designated	National	Local communities
Kingongoro	Savanna-Grasslands and Shrublands	0	0.586	Designated	National	Federal or national ministry or agency
Kinyerezi	Northern Zanzibar-Inhambane Coastal Forest	0	0.0412571	Designated	National	Federal or national ministry or agency
Kipembawe	Miombo Woodlands & Itigi-Sumbu Thicket	0	30.104940	Designated	National	Federal or national ministry or agency
Kipengere Range	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1958	350.77896	Designated	National	Federal or national ministry or agency
Kipo	Northern Zanzibar-Inhambane Coastal Forest	0	12.053875	Designated	National	Federal or national ministry or agency
Kiranga Hengae	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	4.878	Designated	National	Federal or national ministry or agency
Kiranzi Kitunguu	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	11.59	Designated	National	Federal or national ministry or agency
Kiriguru	Miombo Woodlands & Itigi-Sumbu Thicket	0	2.9487	Designated	National	Federal or national ministry or agency
Kisima Gonja	Savanna-Grasslands and Shrublands, Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	1961	15.8208	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Kisinga Lugaro	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	178.6087	Designated	National	Federal or national ministry or agency
Kisiwani	Savanna-Grasslands and Shrublands	1953	1.1113	Designated	National	Federal or national ministry or agency
Kitapilimwa	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	58.7855	Designated	National	Federal or national ministry or agency
Kitara Ridge	Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	1955	7.8579	Designated	National	Federal or national ministry or agency
Kitivo North	Eastern Afromontane Forests	1957	10.5214	Designated	National	Federal or national ministry or agency
Kitivo South	Eastern Afromontane Forests	0	0.3782962	Designated	National	Federal or national ministry or agency
Kitonbeine	Savanna-Grasslands and Shrublands	0	65.5842	Designated	National	Federal or national ministry or agency
Kitope Hill	Northern Zanzibar-Inhambane Coastal Forest	0	37.964938	Designated	National	Federal or national ministry or agency
Kitulanghalo	Miombo Woodlands & Itigi-Sumbu Thicket	1955	45.2168	Designated	National	Federal or national ministry or agency
Kitulio	Savanna-Grasslands and Shrublands	0	0.8661044	Designated	National	Local communities
Kitweli	Miombo Woodlands & Itigi-Sumbu Thicket	1952	2	Designated	National	Federal or national ministry or agency
Kiutu	Eastern Afromontane Forests	0	0.0958945	Designated	National	Federal or national ministry or agency
Kiverenge	Savanna-Grasslands and Shrublands	0	23.3	Designated	National	Federal or national ministry or agency
Kiwengoma	Northern Zanzibar-Inhambane Coastal Forest	0	61.4782	Designated	National	Federal or national ministry or agency
Kiwengwa Pongwe	Northern Zanzibar-Inhambane Coastal Forest	0	31.208244	Designated	National	Federal or national ministry or agency
Koko Hill	Savanna-Grasslands and Shrublands	0	0.9950302	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Kome	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	32.421438	Designated	National	Federal or national ministry or agency
Kome Island	Savanna-Grasslands and Shrublands	0	20.692110	Designated	National	Federal or national ministry or agency
Konga	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.19	Designated	National	Federal or national ministry or agency
Korogwe Fuel	Northern Zanzibar-Inhambane Coastal Forest, Savanna-Grasslands and Shrublands	0	103.51239	Designated	National	Federal or national ministry or agency
Kungwe Bay	Miombo Woodlands & Itigi-Sumbu Thicket	0	56.503795	Designated	National	Federal or national ministry or agency
Kurwirwi	Savanna-Grasslands and Shrublands	1957	18.2995	Designated	National	Federal or national ministry or agency
Kwamarukanga	Northern Zanzibar-Inhambane Coastal Forest	0	1.7663093	Designated	National	Federal or national ministry or agency
Kwamgumi	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	1955	22.6256	Designated	National	Federal or national ministry or agency
Kwamrimba	Savanna-Grasslands and Shrublands	0	9.7461	Designated	National	Federal or national ministry or agency
Kwangola	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1957	7.3972	Designated	National	Federal or national ministry or agency
Kwani	Northern Zanzibar-Inhambane Coastal Forest	1956	31.0524	Designated	National	Federal or national ministry or agency
Kwasumba	Miombo Woodlands & Itigi-Sumbu Thicket	0	29.074684	Designated	National	Federal or national ministry or agency
Kwekanda	Savanna-Grasslands and Shrublands	0	1.2398992	Designated	National	Federal or national ministry or agency
Kwembago	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	0.099666	Designated	National	Federal or national ministry or agency
Kwizu	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	30.0197	Designated	National	Federal or national ministry or agency
Kyanyari	Savanna-Grasslands and Shrublands	0	29.037566	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Kyarano	Savanna-Grasslands and Shrublands	0	1.8624585	Proposed	National	Federal or national ministry or agency
Kyejo	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1956	6.509531	Designated	National	Federal or national ministry or agency
Kyosa	Southern Rift and Eastern Montane Savanna Forest	1956	9.974078	Designated	National	Federal or national ministry or agency
Lake Duluti	Savanna-Grasslands and Shrublands	0	0.8262191	Designated	National	Federal or national ministry or agency
Ligamba	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	0.3255206	Designated	National	Federal or national ministry or agency
Lionja	Miombo Woodlands & Itigi-Sumbu Thicket	0	275.87767	Designated	National	Federal or national ministry or agency
Liteho	Southern Zanzibar-Inhambane Coastal Forest	0	13.288730	Designated	National	Federal or national ministry or agency
Litipo	Southern Zanzibar-Inhambane Coastal Forest	0	10.439549	Designated	National	Federal or national ministry or agency
Litoni	Southern Rift and Eastern Montane Savanna Forest	0	1.1371535	Designated	National	Federal or national ministry or agency
Livingstone	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	0	240.33548	Designated	National	Federal or national ministry or agency
Liwili/Kiteza/Lwekea	Southern Rift and Eastern Montane Savanna Forest	0	8.7888	Designated	National	Federal or national ministry or agency
Loasi river	Miombo Woodlands & Itigi-Sumbu Thicket	0	354.81	Designated	National	Federal or national ministry or agency
Lohombero/Luwengu	Miombo Woodlands & Itigi-Sumbu Thicket	0	403.07342	Designated	National	Federal or national ministry or agency
Loliondo I	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	38.596337	Designated	National	Federal or national ministry or agency
Loliondo II	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	78.196283	Proposed	National	Federal or national ministry or agency
Longido	Savanna-Grasslands and Shrublands	1958	20.754	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Long'isont	Miombo Woodlands & Itigi-Sumbu Thicket	0	3.0713	Designated	National	Federal or national ministry or agency
Lubaga	Savanna-Grasslands and Shrublands	0	4.4135279	Designated	National	Federal or national ministry or agency
Lugufu	Miombo Woodlands & Itigi-Sumbu Thicket	0	93.562103	Designated	National	Federal or national ministry or agency
Luiche	Miombo Woodlands & Itigi-Sumbu Thicket	0	53.832688	Designated	National	Federal or national ministry or agency
Lukoka Hill	Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	1958	3.0079	Designated	National	Federal or national ministry or agency
Lukwati	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	1958	2169.6545	Designated	National	Federal or national ministry or agency
Lungonya	Northern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket	1957	1981.3292	Designated	National	Federal or national ministry or agency
Lupa North	Miombo Woodlands & Itigi-Sumbu Thicket	1941	20.4444	Designated	National	Federal or national ministry or agency
Lushoto	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	0.034982	Designated	National	Federal or national ministry or agency
Lusungulu	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	22.3614	Designated	National	Federal or national ministry or agency
Lwenza	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	0	35.5821	Designated	National	Local communities
Lyambo Hill	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	0	212.39017	Designated	National	Federal or national ministry or agency
Maasi	Savanna-Grasslands and Shrublands	0	0.2433616	Designated	National	Federal or national ministry or agency
Mabundi Mtwange	Miombo Woodlands & Itigi-Sumbu Thicket	0	1.3841334	Designated	National	Local communities
Madenge	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	0	9.7546064	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mafi Hill	Northern Zanzibar-Inhambane Coastal Forest, Savanna-Grasslands and Shrublands	1964	44.4475	Designated	National	Federal or national ministry or agency
Mafifi	Southern Rift and Eastern Montane Savanna Forest	0	0.4160734	Designated	National	Federal or national ministry or agency
Mafleta	Miombo Woodlands & Itigi-Sumbu Thicket	0	3.5899	Designated	National	Federal or national ministry or agency
Mafwomero	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	49.898508	Designated	National	Federal or national ministry or agency
Magambazi	Miombo Woodlands & Itigi-Sumbu Thicket	0	7.0990010	Designated	National	Federal or national ministry or agency
Maganda	Savanna-Grasslands and Shrublands	1957	0.4355	Designated	National	Federal or national ministry or agency
Magombera	Miombo Woodlands & Itigi-Sumbu Thicket	1982	15	Designated	National	Federal or national ministry or agency
Magoroto	Northern Zanzibar-Inhambane Coastal Forest	0	11.21	Designated	National	Federal or national ministry or agency
Magroove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	0	1.2569534	Designated	National	Federal or national ministry or agency
Mahenge Scarp	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1954	3.87	Designated	National	Federal or national ministry or agency
Mahezangulu	Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	0	2.91	Designated	National	Federal or national ministry or agency
Mahuta	Southern Zanzibar-Inhambane Coastal Forest	1961	14.26	Designated	National	Federal or national ministry or agency
Maisome	Savanna-Grasslands and Shrublands	0	124.9766	Designated	National	Federal or national ministry or agency
Makere South	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	0	756.96202	Designated	National	Federal or national ministry or agency
Makonde Scarp I	Southern Zanzibar-Inhambane Coastal Forest	0	38.084498	Designated	National	Federal or national ministry or agency
Makonde Scarp II	Southern Zanzibar-Inhambane Coastal Forest	0	50.657351	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Makonde Scarp III	Southern Zanzibar-Inhambane Coastal Forest	0	9.5504273	Designated	National	Federal or national ministry or agency
Malehi	Miombo Woodlands & Itigi-Sumbu Thicket	0	397.0224	Designated	National	Federal or national ministry or agency
Malenga	Savanna-Grasslands and Shrublands	0	2.4045536	Designated	National	Federal or national ministry or agency
Malya stock farm	Miombo Woodlands & Itigi-Sumbu Thicket	0	1.0723038	Designated	National	Federal or national ministry or agency
Mamani	Savanna-Grasslands and Shrublands	0	7.5107135	Designated	National	Federal or national ministry or agency
Mamboto	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1962	4.303756	Designated	National	Federal or national ministry or agency
Mamboto	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1962	430.3756	Designated	National	Federal or national ministry or agency
Mamboto	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1962	4.303756	Designated	National	Federal or national ministry or agency
Mamboto	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1962	4.303756	Designated	National	Federal or national ministry or agency
Mamboto	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1962	430.3756	Designated	National	Federal or national ministry or agency
Mamboya	Miombo Woodlands & Itigi-Sumbu Thicket	0	2.3477139	Designated	National	Federal or national ministry or agency
Mamiwa Kisara South	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	70.9651	Designated	National	Federal or national ministry or agency
Manga	Savanna-Grasslands and Shrublands, Northern Zanzibar-Inhambane Coastal Forest	1955	8.6104	Designated	National	Federal or national ministry or agency
Mangala	Eastern Afromontane Forests	0	0.45	Designated	National	Local communities
Mangalisa	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu	0	58.9689	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
	Thicket, Eastern Afromontane Forests					
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	0	0.4415747	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.8962940	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.9545934	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.1967513	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.2464972	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	3.0502404	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.2364306	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.7016415	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.2449191	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	5.1082950	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.1093705	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.9370138	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.4399766	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.6419199	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	5.0574532	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.9817373	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.0077247	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.4378474	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.0073587	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.2233759	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.2751624	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.1578015	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.2725762	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.4806375	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	11.036730	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.2128099	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.2255636	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.5425975	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.9893299	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.2859253	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.9119727	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.2635911	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	6.1391568	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	21.441385	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.7923988	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	3.3595698	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.5275809	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	6.9167820	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.9978543	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	7.4029668	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.6305263	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.4090888	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.6975753	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	9.0653702	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.5701202	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.8343490	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.1577322	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.2734178	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.3477377	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.3977493	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.1264771	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	8.9532848	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.3602249	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	9.2910621	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	29.365429	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	27.345432	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.1965910	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.4290003	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.5601185	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.0414522	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	11.801765	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	5.1821655	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.2561798	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	27.183847	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.5069419	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.1929853	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.2133007	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.1279530	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	4.1089510	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	7.8585351	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	8.5505124	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	6.1723074	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	3.1045843	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.8150446	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	32.864381	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.2334689	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	16.371742	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.1330047	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.0130581	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	29.853889	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	4.4811107	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.5460679	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	16.196135	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	3.3424352	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	10.491248	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	3.5420770	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.8639101	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.4356812	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.0453455	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	3.5263502	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.4465883	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.3536605	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.5965343	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.4271096	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	13.283269	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.6155603	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	6.1522603	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.1897181	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	11.356646	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	35.198873	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.1544314	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.5925373	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	20.841103	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.3431941	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	3.9930590	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	23.183619	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	21.142273	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	11.083787	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.3426069	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.0985321	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	48.733490	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	16.010429	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.2502044	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	23.691159	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	19.967803	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	4.4085259	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	71.908569	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.9752649	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	4.3701626	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	12.003749	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.302294	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	39.627938	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	3.7579863	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.0511211	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	4.5494884	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	3.9952007	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	14.161156	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.933328	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	6.817953	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.402946	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	4.899875	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.041230	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.58788	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.145494	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	8.503677	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.47335	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.4920	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.181	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.47	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.184162197	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.102939633	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.262064422	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.574247962	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.465641017	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.737865803	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.519258183	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.331736109	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	3.9744853	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	6.441422699	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.01242266	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.762311385	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.132889807	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.177041763	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.252995486	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	5.700189105	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.003807081	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	7.415429688	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	38.37640137	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	74.25035777	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	43.46295484	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	32.08349983	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	40.33130654	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.933201691	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.843726347	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.389642995	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.347807491	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.117325524	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.609119846	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	8.669660822	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.997810291	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	5.039673676	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	8.09675795	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	11.26306954	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.307892858	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.094309321	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.117770426	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.643243954	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	5.056498606	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.160254856	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.233638221	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.356076574	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.236025979	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	3.126903842	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.313522829	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.360309033	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.035410717	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.503480358	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.462530926	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	18.41039721	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	0.239942262	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	1.492909527	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.037829506	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	5.322686191	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.125791786	Designated	National	Federal or national ministry or agency
Mangrove	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Southern Zanzibar-Inhambane Coastal Forest	0	2.721250154	Designated	National	Federal or national ministry or agency
Mangrove No.20	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	0	11.19974514	Designated	National	Federal or national ministry or agency
Mangroves (Mikindani)	Mangroves	0	10.44	Designated	National	Federal or national ministry or agency
Mangroves along Mbezi	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	0	7.693137298	Designated	National	Federal or national ministry or agency
Mangroves-Bagamoyo	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	0	4.77	Designated	National	Federal or national ministry or agency
Mangroves-Kilwa	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	0	59.88	Designated	National	Federal or national ministry or agency
Mangroves-Kisarawe	Mangroves, Southern Zanzibar-Inhambane Coastal Forest	0	17.77073446	Designated	National	Federal or national ministry or agency
Manka	Savanna-Grasslands and Shrublands	1969	28.8491	Designated	National	Federal or national ministry or agency
Manongho Hill	Savanna-Grasslands and Shrublands	0	3.828967778	Designated	National	Local communities
Maposeni	Miombo Woodlands & Itigi-Sumbu Thicket	0	32.17359254	Designated	National	Federal or national ministry or agency
Marenda	Northern Zanzibar-Inhambane Coastal Forest	0	2.130773516	Designated	National	Federal or national ministry or agency
Masagati	Miombo Woodlands & Itigi-Sumbu Thicket	1955	16.9115	Designated	National	Federal or national ministry or agency
Masanganya	Northern Zanzibar-Inhambane Coastal Forest	0	46.72936837	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Masingini Catchment Forest	Northern Zanzibar-Inhambane Coastal Forest	0	5.835496749	Designated	National	Federal or national ministry or agency
Masukulu	Miombo Woodlands & Itigi-Sumbu Thicket	1958	5.996132	Designated	National	Federal or national ministry or agency
Matapwa	Southern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket	0	339.5355544	Designated	National	Federal or national ministry or agency
Matembwe	Southern Rift and Eastern Montane Savanna Forest	0	1.757139459	Designated	National	Federal or national ministry or agency
Matogoro East	Miombo Woodlands & Itigi-Sumbu Thicket	1951	81.4362	Designated	National	Federal or national ministry or agency
Matogoro West	Miombo Woodlands & Itigi-Sumbu Thicket	1951	11.1941	Designated	National	Federal or national ministry or agency
Mayefiya	Southern Rift and Eastern Montane Savanna Forest	0	1.144121724	Designated	National	Federal or national ministry or agency
Mbagala	Southern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket	0	367.8995	Designated	National	Federal or national ministry or agency
Mbeya fuel	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	0	5.302463316	Designated	National	Federal or national ministry or agency
Mbeya Range	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1957	148.6357	Designated	National	Federal or national ministry or agency
Mbinga Kimaji / Kimate	Northern Zanzibar-Inhambane Coastal Forest	0	19.5802	Designated	National	Federal or national ministry or agency
Mbogo	Miombo Woodlands & Itigi-Sumbu Thicket	0	1.2003	Designated	National	Federal or national ministry or agency
Mbogwe Bukombe	Miombo Woodlands & Itigi-Sumbu Thicket	0	98.7296	Designated	National	Federal or national ministry or agency
Mbuga ya Goima	Savanna-Grasslands and Shrublands	0	68.26975846	Designated	National	Federal or national ministry or agency
Mbwegere	Miombo Woodlands & Itigi-Sumbu Thicket	0	4.71	Designated	National	Federal or national ministry or agency
Mchungu	Northern Zanzibar-Inhambane Coastal Forest, Mangroves	0	15.35627847	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mdando	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	0	43.86095981	Designated	National	Federal or national ministry or agency
Mfulikilo	Southern Rift and Eastern Montane Savanna Forest	0	0.648222235	Designated	National	Federal or national ministry or agency
Mfumbia	Savanna-Grasslands and Shrublands	0	7.99	Designated	National	Federal or national ministry or agency
Mgambo	Savanna-Grasslands and Shrublands, Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	0	11.0497	Designated	National	Federal or national ministry or agency
Mgololo	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	218.3467518	Designated	National	Federal or national ministry or agency
Mhalo	Savanna-Grasslands and Shrublands	0	10.1439106	Designated	National	Federal or national ministry or agency
Mhulu	Miombo Woodlands & Itigi-Sumbu Thicket	0	8.0832	Designated	National	Federal or national ministry or agency
Mienze	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	93.82178736	Designated	National	Federal or national ministry or agency
Milawilila	Eastern Afromontane Forests	0	0.19	Designated	National	Local communities
Milindo	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1950	86.4936	Designated	National	Federal or national ministry or agency
Mindu	Miombo Woodlands & Itigi-Sumbu Thicket	1954	13.8241	Designated	National	Federal or national ministry or agency
Minja	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	1955	5.204	Designated	National	Federal or national ministry or agency
Mitundumbea	Northern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket	0	92.9244	Designated	National	Federal or national ministry or agency
Mkangala	Southern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket	0	14.86	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mkangala	Southern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket	0	0.15341025	Designated	National	Federal or national ministry or agency
Mkewe	Miombo Woodlands & Itigi-Sumbu Thicket	0	6.295696538	Designated	National	Federal or national ministry or agency
Mkigagi	Savanna-Grasslands and Shrublands	0	1.53721576	Designated	National	Federal or national ministry or agency
Mkongo	Miombo Woodlands & Itigi-Sumbu Thicket	1959	5.58	Designated	National	Federal or national ministry or agency
Mkoro	Miombo Woodlands & Itigi-Sumbu Thicket	0	1.1831	Designated	National	Federal or national ministry or agency
Mkulazi	Northern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1955	661.7504	Designated	National	Federal or national ministry or agency
Mkuli Exten.	Miombo Woodlands & Itigi-Sumbu Thicket	0	31.6427	Designated	National	Federal or national ministry or agency
Mkundi	Eastern Afromontane Forests	0	7.480713264	Designated	National	Federal or national ministry or agency
Mkungwe	Miombo Woodlands & Itigi-Sumbu Thicket	1954	55.6939	Designated	National	Federal or national ministry or agency
Mkusu	Eastern Afromontane Forests	0	42.92	Designated	National	Federal or national ministry or agency
Mkuti	Eastern Afromontane Forests, Miombo Woodlands & Itigi-Sumbu Thicket	0	1027.558256	Designated	National	Federal or national ministry or agency
Mkweni Hill	Miombo Woodlands & Itigi-Sumbu Thicket	0	166.3204407	Designated	National	Federal or national ministry or agency
Mlali	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1954	64.9128	Designated	National	Federal or national ministry or agency
Mlinga	Savanna-Grasslands and Shrublands, Northern Zanzibar-Inhambane Coastal Forest	0	8.4	Designated	National	Federal or national ministry or agency
Mlola	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	0	60.08	Proposed	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mlungui	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	1.88	Designated	National	Federal or national ministry or agency
Mninga	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	1.936516054	Designated	National	Federal or national ministry or agency
Mohoro	Northern Zanzibar-Inhambane Coastal Forest	0	259	Designated	National	Federal or national ministry or agency
Mohoro River	Northern Zanzibar-Inhambane Coastal Forest	0	3.163609214	Designated	National	Federal or national ministry or agency
Mombo	Savanna-Grasslands and Shrublands	0	0.1933	Designated	National	Federal or national ministry or agency
Monduli	Savanna-Grasslands and Shrublands	0	87.7633	Designated	National	Federal or national ministry or agency
Morogoro Fuel	Miombo Woodlands & Itigi-Sumbu Thicket	1953	114.365	Designated	National	Federal or national ministry or agency
Mpagalalu	Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	0	1.356676793	Designated	National	Federal or national ministry or agency
Mpala	Southern Rift and Eastern Montane Savanna Forest	0	0.721316396	Designated	National	Federal or national ministry or agency
Mpanda Line	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	1955	4412.6679	Designated	National	Federal or national ministry or agency
Mpanda North East	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	0	4999.983271	Designated	National	Federal or national ministry or agency
Mpara	Southern Rift and Eastern Montane Savanna Forest	1958	17.91659	Designated	National	Federal or national ministry or agency
Mpembampazi	Miombo Woodlands & Itigi-Sumbu Thicket	1955	1351.9824	Designated	National	Federal or national ministry or agency
Mpunze	Miombo Woodlands & Itigi-Sumbu Thicket	1958	34.9403	Designated	National	Federal or national ministry or agency
Mramba	Savanna-Grasslands and Shrublands	1958	33.55	Designated	National	Federal or national ministry or agency
Mrema Kingarussina	Savanna-Grasslands and Shrublands	0	34.67685464	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mselezi	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1954	3.9962	Designated	National	Federal or national ministry or agency
Msingeho Hill	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.8433	Designated	National	Federal or national ministry or agency
Msitu Mkuu	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	0	0	Designated	National	Not Reported
Msumbugwe	Northern Zanzibar-Inhambane Coastal Forest	1947	25.5951	Designated	National	Federal or national ministry or agency
Mswima	Southern Rift and Eastern Montane Savanna Forest	1957	7.191951	Designated	National	Federal or national ministry or agency
Mtai	Savanna-Grasslands and Shrublands, Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	1967	32.5019	Designated	National	Federal or national ministry or agency
Mtama	Southern Zanzibar-Inhambane Coastal Forest	0	6.34	Designated	National	Federal or national ministry or agency
Mtandi	Miombo Woodlands & Itigi-Sumbu Thicket	0	15.22	Designated	National	Local communities
Mtanza	Northern Zanzibar-Inhambane Coastal Forest	1947	40.5397	Designated	National	Federal or national ministry or agency
Mtarure	Northern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket	0	622.6421	Designated	National	Federal or national ministry or agency
Mtita	Northern Zanzibar-Inhambane Coastal Forest	0	35.6471	Designated	National	Federal or national ministry or agency
Mtumbi	Eastern Afromontane Forests	0	3.120169609	Designated	National	Federal or national ministry or agency
Mtunguru	Northern Zanzibar-Inhambane Coastal Forest, Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	76.8757	Designated	National	Federal or national ministry or agency
Mufindi Scarp	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1954	394.2443	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mufindi Tea Estate Land	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	358.5553	Designated	National	Federal or national ministry or agency
Mugaberi	Eastern Afromontane Forests	0	0.192429891	Designated	National	Local communities
Muhuwesi	Miombo Woodlands & Itigi-Sumbu Thicket	1958	1757.7861	Designated	National	Federal or national ministry or agency
Muipa	Miombo Woodlands & Itigi-Sumbu Thicket	1958	1437.2664	Designated	National	Federal or national ministry or agency
Mulele Hills	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	0	861.8852	Designated	National	Federal or national ministry or agency
Musiora	Southern Rift and Eastern Montane Savanna Forest	0	3.397946317	Designated	National	Local communities
Muva/Sumbawanga Plantation	Miombo Woodlands & Itigi-Sumbu Thicket	0	1.216561465	Designated	National	Federal or national ministry or agency
Mvuha	Northern Zanzibar-Inhambane Coastal Forest	0	7.637	Designated	National	Federal or national ministry or agency
Mwakulu	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.150553224	Designated	National	Local communities
Mwaluguru	Savanna-Grasslands and Shrublands	0	24.63538516	Designated	National	Federal or national ministry or agency
Mwamakalemu	Savanna-Grasslands and Shrublands	0	0.638908348	Designated	National	Federal or national ministry or agency
Mwamapalala	Savanna-Grasslands and Shrublands	0	0.126359632	Designated	National	Federal or national ministry or agency
Mwamapalala	Savanna-Grasslands and Shrublands	0	1.819131504	Designated	National	Federal or national ministry or agency
Mwamapalala	Savanna-Grasslands and Shrublands	0	0.637175392	Designated	National	Federal or national ministry or agency
Mwamapuli	Savanna-Grasslands and Shrublands	0	0.436975873	Designated	National	Federal or national ministry or agency
Mwamayombo	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.188052726	Designated	National	Federal or national ministry or agency
Mwangilye	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.872751488	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Mwanhala	Miombo Woodlands & Itigi-Sumbu Thicket	1958	30.99	Designated	National	Federal or national ministry or agency
Mwantini Hill	Savanna-Grasslands and Shrublands	0	40.2715	Designated	National	Federal or national ministry or agency
Mwanzogisengi	Savanna-Grasslands and Shrublands	0	1.63462947	Designated	National	Local communities
Mwanzogisengi	Savanna-Grasslands and Shrublands	0	0.328658272	Designated	National	Local communities
Mwatunge Hill	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.860252388	Designated	National	Federal or national ministry or agency
Mwenga	Northern Zanzibar-Inhambane Coastal Forest	1958	10.0109	Designated	National	Federal or national ministry or agency
Myoe	Miombo Woodlands & Itigi-Sumbu Thicket	0	1.207973685	Designated	National	Federal or national ministry or agency
Mzashai	Savanna-Grasslands and Shrublands	0	0.523	Designated	National	Federal or national ministry or agency
Mzogoti	Eastern Afromontane Forests	0	1.4765	Designated	National	Federal or national ministry or agency
Nagaga	Southern Zanzibar-Inhambane Coastal Forest	1956	16.4437	Designated	National	Federal or national ministry or agency
Nagaliendele	Southern Zanzibar-Inhambane Coastal Forest	0	4.06	Designated	National	Federal or national ministry or agency
Namakutwa/Namade	Northern Zanzibar-Inhambane Coastal Forest	0	47.18893505	Designated	National	Federal or national ministry or agency
Naminga	Miombo Woodlands & Itigi-Sumbu Thicket	0	15.9352	Designated	National	Federal or national ministry or agency
Name Unknown No. 4	Miombo Woodlands & Itigi-Sumbu Thicket	0	7.379388924	Designated	National	Federal or national ministry or agency
Namikupa	Southern Zanzibar-Inhambane Coastal Forest	1962	30.3274	Designated	National	Federal or national ministry or agency
Nampekeso	Miombo Woodlands & Itigi-Sumbu Thicket	0	242.4837472	Designated	National	Federal or national ministry or agency
Nandembo	Miombo Woodlands & Itigi-Sumbu Thicket	0	42.70851438	Designated	National	Federal or national ministry or agency
Nandimba	Miombo Woodlands & Itigi-Sumbu Thicket	1958	12.5501	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Ndasha Hill	Savanna-Grasslands and Shrublands	0	12.1657	Designated	National	Federal or national ministry or agency
Ndechela	Miombo Woodlands & Itigi-Sumbu Thicket	0	69.1489	Designated	National	Federal or national ministry or agency
Ndekemai	Northern Zanzibar-Inhambane Coastal Forest	0	15.1412	Designated	National	Federal or national ministry or agency
Ndimba	Southern Zanzibar-Inhambane Coastal Forest	0	29.86416622	Designated	National	Local communities
Ndolwa	Northern Zanzibar-Inhambane Coastal Forest	1958	11.1057	Designated	National	Federal or national ministry or agency
Ndugumia	Southern Rift and Eastern Montane Savanna Forest	1957	0.7428296	Designated	National	Federal or national ministry or agency
Ndukunduku	Southern Rift and Eastern Montane Savanna Forest	0	27.19379	Proposed	National	Federal or national ministry or agency
Ndumbi Valley	Southern Rift and Eastern Montane Savanna Forest	1956	27.70998	Designated	National	Federal or national ministry or agency
Negoma	Savanna-Grasslands and Shrublands	0	6.346094423	Designated	National	Federal or national ministry or agency
Ngalijembe	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1956	3.190812	Designated	National	Federal or national ministry or agency
Ngarama North	Northern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket	0	431.8596204	Designated	National	Federal or national ministry or agency
Ngarusambu	Eastern Afromontane Forests	0	0.141317462	Designated	National	Federal or national ministry or agency
Ngezi-Vumawimbi	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	0	0	Designated	National	Not Reported
Ngogwa	Miombo Woodlands & Itigi-Sumbu Thicket	0	37.70178579	Designated	National	Federal or national ministry or agency
Ngogwa Busangi	Miombo Woodlands & Itigi-Sumbu Thicket	0	466.0106	Designated	National	Federal or national ministry or agency
Ngukumo	Miombo Woodlands & Itigi-Sumbu Thicket	0	12.0477	Designated	National	Federal or national ministry or agency
Ngulakula	Northern Zanzibar-Inhambane Coastal Forest	0	22.8566	Designated	National	Local communities

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Nguluka	Southern Rift and Eastern Montane Savanna Forest	0	0.605165852	Designated	National	Federal or national ministry or agency
Nguru North	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	140.97	Designated	National	Federal or national ministry or agency
Nguru ya Ndege	Miombo Woodlands & Itigi-Sumbu Thicket	1962	24.9245	Designated	National	Federal or national ministry or agency
Ngwasi	Miombo Woodlands & Itigi-Sumbu Thicket	0	20.54287151	Designated	National	Federal or national ministry or agency
Nindo	Savanna-Grasslands and Shrublands	1958	273.2	Designated	National	Federal or national ministry or agency
Njilikwa	Southern Rift and Eastern Montane Savanna Forest	0	8.050260611	Designated	National	Federal or national ministry or agency
Njogi	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	6.07	Designated	National	Federal or national ministry or agency
North East Undendeule	Miombo Woodlands & Itigi-Sumbu Thicket	1905	44000	Designated	National	Federal or national ministry or agency
North Makere	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	0	115.3465766	Designated	National	Federal or national ministry or agency
North Makere	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	0	727.6411236	Designated	National	Federal or national ministry or agency
North Mamiwa Kisara	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	86.50005166	Designated	National	Federal or national ministry or agency
Nou	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	305.1904266	Designated	National	Federal or national ministry or agency
Nshinde Hill	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.703000682	Designated	National	Federal or national ministry or agency
Ntazu	Miombo Woodlands & Itigi-Sumbu Thicket	1958	6.7239	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Nyabasi	Eastern Afromontane Forests	0	0.301565307	Designated	National	Local communities
Nyaganje	Miombo Woodlands & Itigi-Sumbu Thicket	0	190.8605	Designated	National	Federal or national ministry or agency
Nyahua Mbuga	Miombo Woodlands & Itigi-Sumbu Thicket	1954	7360.779	Designated	National	Federal or national ministry or agency
Nyamilanga Hill	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.893767624	Designated	National	Federal or national ministry or agency
Nyandiduma	Eastern Afromontane Forests	0	1.01	Designated	National	Federal or national ministry or agency
Nyandira	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	0.866119509	Designated	National	Federal or national ministry or agency
Nyantakara	Miombo Woodlands & Itigi-Sumbu Thicket	0	293.0688335	Designated	National	Federal or national ministry or agency
Nyera/Kiperere	Miombo Woodlands & Itigi-Sumbu Thicket	0	1071.3004	Designated	National	Federal or national ministry or agency
Nyonga	Miombo Woodlands & Itigi-Sumbu Thicket	0	5838.6652	Designated	National	Federal or national ministry or agency
Nyumburuni	Northern Zanzibar-Inhambane Coastal Forest	0	45.78532718	Designated	National	Federal or national ministry or agency
Pagale	Miombo Woodlands & Itigi-Sumbu Thicket	1958	179.2725	Designated	National	Federal or national ministry or agency
Pala Mountains	Miombo Woodlands & Itigi-Sumbu Thicket	0	108.3364	Designated	National	Federal or national ministry or agency
Pangawe East	Miombo Woodlands & Itigi-Sumbu Thicket	1963	7.4726	Designated	National	Federal or national ministry or agency
Pangawe West	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1963	1.9845	Designated	National	Federal or national ministry or agency
Pindiro	Miombo Woodlands & Itigi-Sumbu Thicket	0	47.0515	Designated	National	Federal or national ministry or agency
Pongwe	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	5.2773	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Poroto Ridge	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1937	111.65352	Designated	National	Federal or national ministry or agency
Puge North	Miombo Woodlands & Itigi-Sumbu Thicket	1956	30.1906	Designated	National	Federal or national ministry or agency
Puge South	Miombo Woodlands & Itigi-Sumbu Thicket	1956	26.1458	Designated	National	Federal or national ministry or agency
Pugu	Northern Zanzibar-Inhambane Coastal Forest	0	24.23904032	Designated	National	Federal or national ministry or agency
Pumula	Miombo Woodlands & Itigi-Sumbu Thicket	0	11.6012	Designated	National	Federal or national ministry or agency
Ras Kiuyu	Northern Zanzibar-Inhambane Coastal Forest	0	0	Designated	National	Not Reported
Rau	Savanna-Grasslands and Shrublands	0	15.37605033	Designated	National	Federal or national ministry or agency
Rondo	Southern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket	0	117.0782381	Designated	National	Federal or national ministry or agency
Ruamagazi	Miombo Woodlands & Itigi-Sumbu Thicket	0	277.5930398	Designated	National	Federal or national ministry or agency
Ruande	Miombo Woodlands & Itigi-Sumbu Thicket, Savanna-Grasslands and Shrublands	1956	175.1556	Designated	National	Federal or national ministry or agency
Ruawa	Southern Zanzibar-Inhambane Coastal Forest	0	30.3229	Designated	National	Federal or national ministry or agency
Rudewa South	Miombo Woodlands & Itigi-Sumbu Thicket	0	5.8083	Designated	National	Federal or national ministry or agency
Ruhoi River	Northern Zanzibar-Inhambane Coastal Forest	0	799.4408	Designated	National	Federal or national ministry or agency
Ruiga River	Miombo Woodlands & Itigi-Sumbu Thicket, Savanna-Grasslands and Shrublands	0	1206.945	Designated	National	Federal or national ministry or agency
Rukwa	Miombo Woodlands & Itigi-Sumbu Thicket	1961	3234.9895	Designated	National	Federal or national ministry or agency
Rungo	Miombo Woodlands & Itigi-Sumbu Thicket	1956	231.0527	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Runzewe	Miombo Woodlands & Itigi-Sumbu Thicket	0	282.0440003	Designated	National	Federal or national ministry or agency
Rupiage	Northern Zanzibar-Inhambane Coastal Forest	0	24.2716	Designated	National	Federal or national ministry or agency
Rushwezi	Savanna-Grasslands and Shrublands	0	1.69079	Designated	National	Federal or national ministry or agency
Ruvu	Miombo Woodlands & Itigi-Sumbu Thicket	1955	38.6788	Designated	National	Federal or national ministry or agency
Ruvu North	Northern Zanzibar-Inhambane Coastal Forest	0	333.2815925	Designated	National	Federal or national ministry or agency
Ruvu South	Northern Zanzibar-Inhambane Coastal Forest	0	302.2012793	Designated	National	Federal or national ministry or agency
Sakaranyumo	Southern Rift and Eastern Montane Savanna Forest	0	9.285524188	Designated	National	Federal or national ministry or agency
Sakila	Savanna-Grasslands and Shrublands	0	0.529407818	Designated	National	Federal or national ministry or agency
Salanga/Bereku	Miombo Woodlands & Itigi-Sumbu Thicket	0	74.3573	Designated	National	Federal or national ministry or agency
Sali	Miombo Woodlands & Itigi-Sumbu Thicket	0	10.72366963	Designated	National	Federal or national ministry or agency
Sambasha	Eastern Afromontane Forests	0	0.177484438	Designated	National	Federal or national ministry or agency
Sao Hill	Miombo Woodlands & Itigi-Sumbu Thicket	1962	510.7726	Designated	National	Federal or national ministry or agency
Sasajila	Savanna-Grasslands and Shrublands	0	12.65877145	Designated	National	Federal or national ministry or agency
Sasawara	Miombo Woodlands & Itigi-Sumbu Thicket	1957	420.5567	Designated	National	Federal or national ministry or agency
Sawago	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1937	8.313275	Designated	National	Federal or national ministry or agency
Sayaka	Savanna-Grasslands and Shrublands	0	54.21205598	Designated	National	Federal or national ministry or agency
Semdoe/Msige	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	9.87	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Sengoma	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	1955	12.2808	Designated	National	Federal or national ministry or agency
Shagayu	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	80.4754	Designated	National	Federal or national ministry or agency
Shambalai	Eastern Afromontane Forests	0	0.223767384	Designated	National	Federal or national ministry or agency
Shinkurufumi	Eastern Afromontane Forests	0	3.0428	Designated	National	Federal or national ministry or agency
Silupati	Southern Rift and Eastern Montane Savanna Forest	0	6.213098483	Designated	National	Federal or national ministry or agency
Sima	Miombo Woodlands & Itigi-Sumbu Thicket	0	15.67690704	Designated	National	Local communities
Simbo	Miombo Woodlands & Itigi-Sumbu Thicket	0	12.2872	Designated	National	Federal or national ministry or agency
Simbo_Bagamoyo	Northern Zanzibar-Inhambane Coastal Forest	0	5.583393057	Designated	National	Federal or national ministry or agency
Sisu	Savanna-Grasslands and Shrublands	1958	18.9179	Designated	National	Federal or national ministry or agency
Sola	Savanna-Grasslands and Shrublands	0	0.68514088	Designated	National	Federal or national ministry or agency
Sola Dam	Savanna-Grasslands and Shrublands	0	0.997944246	Designated	National	Federal or national ministry or agency
Songa	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	1954	374.4437	Designated	National	Federal or national ministry or agency
Songa	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	74.739776	Designated	National	Federal or national ministry or agency
Songea Fuel	Miombo Woodlands & Itigi-Sumbu Thicket	1956	53.072	Designated	National	Federal or national ministry or agency
Soni Public Land	Northern Zanzibar-Inhambane Coastal Forest	0	0.36550588	Designated	National	Federal or national ministry or agency
South Gendagenda	Northern Zanzibar-Inhambane Coastal Forest	0	32.31691333	Designated	National	Federal or national ministry or agency
Talaga	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.538314732	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Talagwe	Miombo Woodlands & Itigi-Sumbu Thicket	0	197.7465	Designated	National	Federal or national ministry or agency
Tambulu	Northern Zanzibar-Inhambane Coastal Forest	0	50.77226894	Designated	National	Federal or national ministry or agency
Tarime	Savanna-Grasslands and Shrublands	0	0.847057433	Designated	National	Local communities
Tongomba New	Northern Zanzibar-Inhambane Coastal Forest	0	39.26	Designated	National	Federal or national ministry or agency
Tongwe	Northern Zanzibar-Inhambane Coastal Forest	0	13.66	Designated	National	Federal or national ministry or agency
Tongwe East	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	0	6696.9095	Designated	National	Federal or national ministry or agency
Uduka	Miombo Woodlands & Itigi-Sumbu Thicket	0	0.868101271	Designated	National	Federal or national ministry or agency
Ufiome	Savanna-Grasslands and Shrublands	0	54.35560698	Designated	National	Federal or national ministry or agency
Ugalla North	Miombo Woodlands & Itigi-Sumbu Thicket	0	1645.285654	Designated	National	Federal or national ministry or agency
Ugalla River	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	0	3915.9948	Designated	National	Federal or national ministry or agency
Ugunda	Miombo Woodlands & Itigi-Sumbu Thicket	1957	1551.965	Designated	National	Federal or national ministry or agency
Ukamba	Miombo Woodlands & Itigi-Sumbu Thicket	0	30.35375041	Designated	National	Federal or national ministry or agency
Ukanga	Miombo Woodlands & Itigi-Sumbu Thicket	0	1130.744	Designated	National	Federal or national ministry or agency
Ukune	Miombo Woodlands & Itigi-Sumbu Thicket	0	111.601345	Designated	National	Federal or national ministry or agency
Ukwiva	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1954	358.363	Designated	National	Federal or national ministry or agency
Ulyankulu	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	0	2463.1559	Designated	National	Federal or national ministry or agency
Umalila	Southern Rift and Eastern Montane Savanna Forest	1949	41.5864	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Unyambyu North	Savanna-Grasslands and Shrublands	0	293.0361513	Designated	National	Federal or national ministry or agency
Uponera	Miombo Woodlands & Itigi-Sumbu Thicket	0	3.445638903	Designated	National	Federal or national ministry or agency
Urumwa	Miombo Woodlands & Itigi-Sumbu Thicket	0	130.3551954	Designated	National	Federal or national ministry or agency
Ushetu Ubagwe	Miombo Woodlands & Itigi-Sumbu Thicket	1958	310.8451	Designated	National	Federal or national ministry or agency
Usindikwe	Miombo Woodlands & Itigi-Sumbu Thicket	0	4.12562766	Designated	National	Federal or national ministry or agency
Uvinza	Miombo Woodlands & Itigi-Sumbu Thicket	1954	165.5276	Designated	National	Federal or national ministry or agency
Uyovu	Miombo Woodlands & Itigi-Sumbu Thicket	0	189.9979068	Designated	National	Federal or national ministry or agency
Uyui - Kigwa	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	0	1433.9628	Designated	National	Federal or national ministry or agency
Uzigua	Miombo Woodlands & Itigi-Sumbu Thicket	1954	252.9362	Designated	National	Federal or national ministry or agency
Vigoregore	Northern Zanzibar-Inhambane Coastal Forest	0	5.463948601	Designated	National	Federal or national ministry or agency
Vigoza	Eastern Afromontane Forests	0	0.4809	Designated	National	Federal or national ministry or agency
Vikindu	Northern Zanzibar-Inhambane Coastal Forest	0	17.43354078	Designated	National	Federal or national ministry or agency
Vikonje	Miombo Woodlands & Itigi-Sumbu Thicket, Savanna-Grasslands and Shrublands	0	2.513260731	Designated	National	Federal or national ministry or agency
Vugiri	Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	1962	1.3552	Designated	National	Federal or national ministry or agency
Vumari	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	1953	18.533	Designated	National	Federal or national ministry or agency
Wala River	Miombo Woodlands & Itigi-Sumbu Thicket	1956	1602.1248	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Wotta	Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	0	11.6035	Designated	National	Federal or national ministry or agency
Zaraninge	Northern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket	2005	170.763	Designated	National	Federal or national ministry or agency
Ziba	Savanna-Grasslands and Shrublands	0	0.211409565	Designated	National	Local communities
Zinge	Eastern Afromontane Forests	1958	0.0951	Designated	National	Federal or national ministry or agency
Ziwani	Southern Zanzibar-Inhambane Coastal Forest	1961	6.4563	Designated	National	Federal or national ministry or agency
FOREST RESERVE AND GAME CONTROLLED AREAS						
Mwambesi	Miombo Woodlands & Itigi-Sumbu Thicket	1956	1021.4626	Designated	National	Federal or national ministry or agency
GAME CONTROLLED AREAS						
Gombe GCA	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	0	2721.037132	Designated	National	Federal or national ministry or agency
Handeni GCA	Inland Water Resources, Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	2062.936329	Designated	National	Federal or national ministry or agency
Inyonga GCA	Miombo Woodlands & Itigi-Sumbu Thicket	0	7985.935125	Designated	National	Federal or national ministry or agency
Kilombero GCA	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	0	5817.658615	Designated	National	Federal or national ministry or agency
Kitwai GCA	Inland Water Resources, Savanna-Grasslands and Shrublands	0	4418.251478	Designated	National	Federal or national ministry or agency
Lake Natron GCA	Savanna-Grasslands and Shrublands, , Inland Water Resources	0	7756.756453	Designated	National	Federal or national ministry or agency
Landanai GCA	Savanna-Grasslands and Shrublands	0	1297.163992	Designated	National	Federal or national ministry or agency
Loliondo GCA	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	6221.735847	Designated	National	Federal or national ministry or agency
Lolkisale GCA	Savanna-Grasslands and Shrublands, Inland Water Resources	1974	15	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Lunda Nkwambi GCA	Savanna-Grasslands and Shrublands	0	0	Designated	National	Federal or national ministry or agency
Mlele GCA	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	1974	30	Designated	National	Federal or national ministry or agency
Msima GCA	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	1974	20	Designated	National	Federal or national ministry or agency
Mto wa Mbu GCA	Inland Water Resources, Savanna-Grasslands and Shrublands	0	1214.698869	Designated	National	Federal or national ministry or agency
Muhuwesi GCA	Miombo Woodlands & Itigi-Sumbu Thicket	0	1757.796641	Designated	National	Federal or national ministry or agency
Mwambesi GCA	Miombo Woodlands & Itigi-Sumbu Thicket	0	1082.732672	Designated	National	Federal or national ministry or agency
Rungwa River GCA	Miombo Woodlands & Itigi-Sumbu Thicket	0	3342.727295	Designated	National	Federal or national ministry or agency
Ruvu Masai GCA	Inland Water Resources, Savanna-Grasslands and Shrublands	0	2481.595418	Designated	National	Federal or national ministry or agency
Simanjiro GCA	Savanna-Grasslands and Shrublands	0	4295.286387	Designated	National	Federal or national ministry or agency
Wembere GCA	Miombo Woodlands & Itigi-Sumbu Thicket	0	8846.811813	Designated	National	Federal or national ministry or agency
GAME RESERVES						
Grumeti G.R.	Savanna-Grasslands and Shrublands	1993	411.8861	Designated	National	Federal or national ministry or agency
Ikorongo G.R.	Savanna-Grasslands and Shrublands	1993	602.74	Designated	National	Federal or national ministry or agency
Kizigo G.R. (C)	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	1972	4000	Designated	National	Federal or national ministry or agency
Lake Rukwa G.R.	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	0	1988.00699	Designated	National	Federal or national ministry or agency
Liparamba G.R.	Miombo Woodlands & Itigi-Sumbu Thicket	0	570	Designated	National	Federal or national ministry or agency
Lukwika-Lumesule G.R.	Miombo Woodlands & Itigi-Sumbu Thicket	0	0	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Lwafi-Nkamba G.R.	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	0	3388.568549	Designated	National	Federal or national ministry or agency
Maswa G.R. (N)	Savanna-Grasslands and Shrublands	1969	2200	Designated	National	Federal or national ministry or agency
Maswa Kimali	Savanna-Grasslands and Shrublands	1969	2200	Designated	National	Federal or national ministry or agency
Mlele G.C.A.(S)	Miombo Woodlands & Itigi-Sumbu Thicket	0	1255.177498	Designated	National	Federal or national ministry or agency
Moyowosi G.R (N)	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	1969	6000	Designated	National	Federal or national ministry or agency
Msanjesi GR/Kipitimbi/Lionja FR	Miombo Woodlands & Itigi-Sumbu Thicket	0	0	Designated	National	Federal or national ministry or agency
Muhesi G.R (W)	Miombo Woodlands & Itigi-Sumbu Thicket, Savanna-Grasslands and Shrublands	0	0	Designated	National	Federal or national ministry or agency
Piti O.A.(E)	Miombo Woodlands & Itigi-Sumbu Thicket	0	2242.753777	Designated	National	Federal or national ministry or agency
Rungwa Mwamagembe G.R.	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	9056.753313	Designated	National	Federal or national ministry or agency
Rungwa River G.C.A.	Miombo Woodlands & Itigi-Sumbu Thicket	1951	9000	Designated	National	Federal or national ministry or agency
Selous G.R	Northern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	1905	44000	Designated	National	Federal or national ministry or agency
Swagaswaga G.R	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket	0	893.5664774	Designated	National	Federal or national ministry or agency
Ugalla G.R. (N)	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	1965	5000	Designated	National	Federal or national ministry or agency
NATIONAL PARKS						

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Arusha National Park	Savanna-Grasslands and Shrublands, Southern Rift and Eastern Montane Savanna Forest	1960	111.7821674	Designated	National	Federal or national ministry or agency
Gombe National Park	Eastern Afromontane Forests, Miombo Woodlands & Itigi-Sumbu Thicket	1968	34.409077	Designated	National	Federal or national ministry or agency
Jozani-Chwaka Bay	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	2004	50	Designated	National	Federal or national ministry or agency
Katavi National Park	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	1974	4207.573545	Designated	National	Federal or national ministry or agency
Kilimanjaro National Park	Savanna-Grasslands and Shrublands, Southern Rift and Eastern Montane Savanna Forest	1973	1831.81	Designated	National	Federal or national ministry or agency
Kitulo Plateau National Park	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	2005	465.4	Designated	National	Federal or national ministry or agency
Lake Manyara National Park	Inland Water Resources, Savanna-Grasslands and Shrublands	1960	108.0084598	Designated	National	Federal or national ministry or agency
Mahale Mts.National Park	Eastern Afromontane Forests, Miombo Woodlands & Itigi-Sumbu Thicket	1980	1465.017538	Designated	National	Federal or national ministry or agency
Mikumi National Park	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources, Eastern Afromontane Forests	1964	3233.875722	Designated	National	Federal or national ministry or agency
Mkomazi National Park	Savanna-Grasslands and Shrublands	1951	3445.654189	Designated	National	Federal or national ministry or agency
Ruaha National Park	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	1964	14506.69308	Designated	National	Federal or national ministry or agency
Rubondo Island National Park	Savanna-Grasslands and Shrublands	1977	210.8233101	Designated	National	Federal or national ministry or agency
Saadani National Park	Mangroves, Northern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket	1969	1062	Designated	National	Federal or national ministry or agency
Saanane Island National Park		0	0.378068584	Designated	National	Federal or national ministry or agency

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Serengeti National Park	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	1951	13039.4881	Designated	National	Federal or national ministry or agency
Tarangire National Park	Savanna-Grasslands and Shrublands, Inland Water Resources	1970	2615.796722	Designated	National	Federal or national ministry or agency
Udzungwa Mountains National Park	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	1992	2088.692161	Designated	National	Federal or national ministry or agency
NATURE RESERVE						
Amani	Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	1997	83.8	Designated	National	Federal or national ministry or agency
Kilanga (Nilo)	Savanna-Grasslands and Shrublands, Northern Zanzibar-Inhambane Coastal Forest, Eastern Afromontane Forests	0	60.25	Proposed	National	Federal or national ministry or agency
Kilombero	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources, Eastern Afromontane Forests	2007	1345.11	Designated	National	Federal or national ministry or agency
Rungwe	Miombo Woodlands & Itigi-Sumbu Thicket, Southern Rift and Eastern Montane Savanna Forest	1940	154.507	Designated	National	Federal or national ministry or agency
Shume Magamba	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	0	132.6152	Proposed	National	Federal or national ministry or agency
Uluguru	Eastern Afromontane Forests	2009	250	Designated	National	Federal or national ministry or agency
RAMSAR WETLAND OF INTERNATIONAL IMPORTANCE						
Kilombero Valley Floodplain	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	2002	7967.35	Designated	International	Not Reported
Lake Natron Basin	Inland Water Resources, Savanna-Grasslands and Shrublands	2001	2247.81	Designated	International	Not Reported
Malagarasi-Muyovozi Wetlands	Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	2000	32500	Designated	International	Not Reported
Rufiji-Mafia-Kilwa	Mangroves, Northern Zanzibar-Inhambane Coastal Forest	2004	5969.08	Designated	International	Not Reported
SANCTUARY AND CLOSED FOREST RESERVE						

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Chumbe Island Coral Park (CHICOP)		1994	0.717	Designated	National	Non-profit organisations
WILDLIFE MANAGEMENT AREA						
Burunge WMA	Inland Water Resources, Savanna-Grasslands and Shrublands	2006	617	Designated	National	Local communities
Enduimet WMA	Savanna-Grasslands and Shrublands, , Eastern Afromontane Forests	2007	751	Designated	National	Local communities
Ikona WMA	Savanna-Grasslands and Shrublands	2007	242	Designated	National	Local communities
Ipole WMA	Miombo Woodlands & Itigi-Sumbu Thicket	2006	2406	Designated	National	Local communities
Liwale WMA	Miombo Woodlands & Itigi-Sumbu Thicket	2009	4515	Designated	National	Local communities
Makame WMA	Savanna-Grasslands and Shrublands, Inland Water Resources	2009	5372	Designated	National	Local communities
Mbarang'andu WMA	Miombo Woodlands & Itigi-Sumbu Thicket	2010	2471	Designated	National	Local communities
Ngarambe-Tapika WMA	Northern Zanzibar-Inhambane Coastal Forest	2006	767	Designated	National	Local communities
Pawaga-Idodi WMA	Savanna-Grasslands and Shrublands, Miombo Woodlands & Itigi-Sumbu Thicket, Inland Water Resources	2007	777	Designated	National	Local communities
Tunduru WMA	Miombo Woodlands & Itigi-Sumbu Thicket	2009	1391	Designated	National	Local communities
Ukutu WMA	Northern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests	2010	750	Designated	National	Local communities
Uyumbu WMA	Miombo Woodlands & Itigi-Sumbu Thicket	2006	839	Designated	National	Local communities
Wami Mbiki WMA	Miombo Woodlands & Itigi-Sumbu Thicket	2007	2400	Designated	National	Local communities
WORLD HERITAGE SITE (NATURAL OR MIXED)						
Kilimanjaro National Park	Savanna-Grasslands and Shrublands, Southern Rift and Eastern Montane Savanna Forest	1987	753.53	Inscribed	International	Not Reported

TABLE 31. PROTECTED AREAS

NAME	ECOSYSTEMS	YEAR EST.	AREA IN SQ. KM	STATUS	DESIGNATION TYPE	MANAGED BY
Ngorongoro Conservation Area	Inland Water Resources, Savanna-Grasslands and Shrublands	1979	8094.4	Inscribed	International	Not Reported
Selous Game Reserve	Northern Zanzibar-Inhambane Coastal Forest, Miombo Woodlands & Itigi-Sumbu Thicket, Eastern Afromontane Forests, Inland Water Resources	1982	44800	Inscribed	International	Not Reported
Serengeti National Park	Savanna-Grasslands and Shrublands, Eastern Afromontane Forests	1981	14763	Inscribed	International	Not Reported

ANNEX I: KEY GOT POLICIES AND INSTITUTIONS

TABLE 32. KEY GOVERNMENT OF TANZANIA AND ZANZIBAR POLICIES

WILDLIFE MANAGEMENT STRATEGIES AND REGULATIONS	
NATIONAL WILDLIFE POLICY (1998)	The National Wildlife Policy seeks to ensure the sustainability of wildlife ecosystems through: 1) the establishment of Protected Areas on the basis of systems planning; 2) the maintenance and development of a Protected Areas network in order to enhance biological diversity; 3) the conservation of wildlife and its habitats outside the core areas by establishing WMAs; 4) the conservation of biological diversity by administering wetlands; 5) the transfer of WMA management to local communities and ensuring that local communities obtain tangible benefits from wildlife conservation; and, 6) the prevention of illegal wildlife use by improving law enforcement.
THE WILDLIFE CONSERVATION ACT NO 5 (2009)	The Wildlife Conservation Act (WCA) makes provisions for the conservation, management, protection, and sustainable utilization of wildlife and wildlife products; WMAs, wildlife impact assessments, environmental auditing and monitoring; and other related matters.
THE NATIONAL PARKS ACT, 2003 (CAP 282) AND NATIONAL PARK REGULATIONS, 1970 AND 2017	The National Parks Act 2003 prohibits hunting, capture, killing, wounding, molesting any animal (including fish) or disturb any egg, or nest within a national park or be in possession or control of any animal, egg, or nest within the confines of such park; to remove animal, egg or nest from such park; to dig, lay, construct any pitfall, net trap, snare or use other devices whatsoever capable of killing, capturing or wounding any animal; or to carry weapons into the park unless one can prove that such weapon was to be used for other purposes apart from killing animals.
THE NGORONGORO CONSERVATION ORDINANCE NO. 413 OF 1959	The Ngorongoro Conservation Ordinance established the Ngorongoro Conservation Area (NCA) in 1959. The Ordinance was created in order to: control entry into and residence within the Ngorongoro Conservation Area, to make provision for the conservation of natural resources and development of NCA indigenous residents living therein and other purposes. Primary responsibility for the administration of the NCA is vested in the Ngorongoro Conservation Area Authority (NCAA), a Parastatal organization now directly under the Ngorongoro Conservation Ordinance.
FORESTRY MANAGEMENT & RELATED STRATEGIES/ REGULATIONS	
NATIONAL FOREST POLICY (1998) AND FOREST ACT (2002) FOR MAINLAND TANZANIA	<p>The 1998 Forest policy aims to: 1) enhance the forest sector's contribution to the sustainable development, conservation, and management of natural resources; 2) ensure sustainable supply of forest products and services through maintaining sufficient forest area under effective management; 3) support increased employment through sustainable forest-based industries; and, 4) enhance national capacity to manage and develop the forest sector.</p> <p>The Forest Act provides provisions for establishment and institutional arrangement in management of forest reserves, nature forest reserves, village land forest reserves, community forest reserves, and private forest reserves. In the establishment, management, and utilization of these forest areas, the Act sets legal provisions to promote and facilitate participation of citizens, and to promote decentralization of management responsibilities to the lowest possible level of local management.</p>

TABLE 32. KEY GOVERNMENT OF TANZANIA AND ZANZIBAR POLICIES

	<p>As of May 2018, an updated National Forest Policy is under revision to address the following identified gaps: lack of clarity regarding tenure of privately owned and village forest reserves; inadequate measures to address landscape restoration; and, inadequate emphasis on forest assessments, monitoring, and valuations. The policy also calls for non-timber forest products (e.g. gums, resins, bark, tannin, aromatics, latex, natural dyes) to be incorporated into forest inventories and resource assessment for forest management. Further, the policy will promote the commercialization of non-timber forest products through research, training, product development, and marketing.</p>
<p>NATIONAL BEEKEEPING POLICY (1998) + BEEKEEPING ACT (2002)</p>	<p>The National Beekeeping Policy, part of the National Forest Policy, aims to 1) enhance the contribution of the beekeeping sector to the sustainable development, conservation, and management of natural resources; 2) build capacity to manage and develop the beekeeping sector; 3) promote the establishment of beekeepers associations and cooperatives in public land with the provision of extension services, and joint agreements for managing apiary establishments in game reserves between local communities and government agencies; and 4) ensure ecosystem stability by requiring Integrated Pest Management (IPM) plans and Environmental Impact Assessments (EIA) for investments inside or around bee reserves.</p> <p>The Beekeeping Act provides provisions for: 1) the promotion, management and, strengthening of the beekeeping sector; 2) the improvement of beekeeping products; 3) the prevention and eradication of diseases and pests amongst bees; 4) the establishment of an environmental management plan and IPM for eliminating and minimizing that impact on the beekeeping environment; 5) the establishment and management of beekeeping zones within the national or local authority forestry reserves and general lands; and, 6) the devolution of management and development of the beekeeping sector to the 'lowest possible level of Government' authorities.</p>
<p>ZANZIBAR FOREST POLICY, (1999)</p>	<p>This policy emphasizes social, economic, and environmental dimensions of 1) alleviating poverty and increasing equity in resource management; 2) promoting economic development, access to forest products, creating income and increasing national revenues efficiently; and, iii) protecting and conserving forest resources including wildlife and flora, and enhancing the role of forest resources in maintaining soil and water conservation and other environmental benefits.</p>
<p>NATIONAL STRATEGY FOR REDD+ (2013)</p>	<p>The goal of this strategy is to facilitate coordination and implementation of REDD+ related policies, processes, and activities across the country in response to climate change and the economic development agenda. Specifically, among other objectives, the strategy aims to enable mechanisms that will address drivers of deforestation and forest degradation, and to improve and establish monitoring and reporting systems to determine forest carbon changes.</p>
<p>THE NATIONAL FISHERIES ACT (2003), THE FISHERIES REGULATIONS (2009), AND THE NATIONAL FISHERIES POLICY (2015)</p>	<p><u>The National Fisheries Act</u> aims to 1) provide for the sustainable development, protection, conservation, aquaculture development, regulation, and control of fish, fish products, aquatic flora and its products, and for related mandates; 2) adopt appropriate measures to maintain or restore fish stocks at levels capable of producing Maximum Sustainable Yield pursuant to relevant environmental and economic factors including the conservation and protection of biodiversity of aquatic habitats, ecosystems and endangered species, avoidance of excessive fishing capacity, and over-exploitation of the stocks in order to maintain an economically viable fishery; 3) creates the legal framework for the development of the fishing industry by involving various stakeholders to promote, encourage, and support initiatives for the sustainable use of the fish stock and aquatic resources; 4) establishes Beach Management Units (BMUs) to enter into management agreements with local authorities on how to derive the whole or part of their livelihoods from water bodies; 5) regulates aquaculture activities to ensure aquaculture development is ecologically sustainable and allows for the rational use of the resources shared by aquaculture and other activities; and, 6) manage and control the fishing industry (e.g., entry restriction of foreign fishing vessels in territorial waters;</p>

TABLE 32. KEY GOVERNMENT OF TANZANIA AND ZANZIBAR POLICIES

	<p>fishing vessels and fishers registration and licensing requirements; number, size, and age restrictions; vessel and gear prohibition etc.).</p> <p><u>The Fisheries Regulations</u> involve 1) the registration and licensing of fishing vessels, fishers and fish dealers; 2) the development of the fishing industry (development and sustainability of resources, investment guidelines, etc.); 3) aquaculture development and management; 4) the management and control of the fishing industry (e.g., control of illegal fishing practices, compounding offences, seizure and disposal); 5) the control of fish and fishery product standards (e.g., inspections, consignment recall); 6) the provisions for penalties for offences; and 7) the registration of fishing vessels that dispose of fish/fishery products.</p> <p><u>The National Fisheries Policy:</u> 1) promotes effective and sustainable management of fisheries resources through conservation, protection, and rational utilization; 2) obliges the country to ensure effective management and sustainability of fisheries resources, the aquatic environment, and mainstreaming environment in fisheries development; 3) recognizes that management of fisheries resources in Tanzania is hindered by illegal, unregulated, and unreported fishing activities and trade and calls for elimination of unsustainable/illegal fishing practices; 4) recognizes local resource control by traditional resource owners and users is critical to the success of the conservation of coastal and marine resources, and thus supports establishment and support of community user rights in fishery resources management; 5) recognizes inadequate alternative livelihoods for fishermen as a main factor affecting fishery management; 6) calls for the establishment of Marine Parks and Reserves for conservation and protection of marine environment and fisheries; 7) calls for the promotion of public awareness on environmentally friendly fisheries and aquaculture practices; 8) calls for the strengthening of compliance to laws and regulations; and, 9) calls for striving to improve adaptation measures to climate change effects.</p>
<p>THE MARINE PARKS AND RESERVES ACT (1994)</p>	<p>The Marine Parks and Reserves Act provides for 1) the establishment, management and monitoring of marine parks and reserves; 2) the establishment of the Board of Trustees for Marine Parks and Reserves that formulates marine park policies; 3) the management of marine reserves and the approval, revision, and amendment of marine parks’ general management plans; 4) the establishment and oversight for the use of a Marine Parks and Reserves Revolving Fund to serve as a repository of all funds received for the preservation of marine parks and reserves; 5) the legal and institutional mechanisms under which the sustainable utilization of marine resources is guaranteed; 6) the power of the Minister to declare any area within territorial waters, EEZ, or any island or coastal area as a marine reserve; and 7) the creation of several operational mechanisms, including the formulation of the General Management Plans, to regulate activities within marine parks and reserves.</p>
<p>THE DEEP-SEA FISHING AUTHORITY ACT (1998)</p>	<p>The Deep-Sea Fishing Authority Act of 1998 compliments the Territorial Sea and Exclusive Economic Zone Act of 1989, providing for the establishment of the Deep-Sea Fishing Authority (DSFA) to regulate deep sea fishing. Specifically, the Act bestows the DSFA with the powers to promote, regulate and control fishing in the EEZ of the United Republic of Tanzania; to regulate the licensing of persons and ships intending to fish in the EEZ; initiate, implement, and ascertain the enforcement of policies on deep sea fishing vessels; formulate and coordinate programs for scientific research in respect to fishing in the EEZ; to formulate fisheries policies; and to negotiate and enter into any fishing or other contract, agreement or any kind of fishing cooperation with any government, international organization, or other institution.</p>

FRESHWATER AND MARINE WATER MANAGEMENT

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<p>NATIONAL WATER POLICY (2002)</p>	<p>The National Water Policy recognizes the role of water resources in fostering national economic development and aims to develop a comprehensive framework for sustainable development and management of the Nation’s water resources, including wetlands. This policy aims at 1) ensuring that various beneficiaries participate fully in the planning, construction, operation, maintenance, and management of community-based domestic water supply schemes; 2) addressing cross-sectoral interests in water and watershed management; 3) laying a foundation for sustainable development as the government changes from a service provider role to that of policy coordination and guiding the formulation of regulations; and, 4) addressing three sub-sector issues namely: water resources management; rural water supply; and urban water supply and sewerage (e.g., water allocation mechanisms, water conservation, water quality management, pollution control, linkages between water and the general environment, water resources assessment, planning and development, research and technological development, training and human resources development, disaster management, transboundary water resources, and institutional and legal frameworks).</p>
<p>THE WATER RESOURCES MANAGEMENT ACT (2009)</p>	<p>The Water Resources Management Act provides for 1) an institutional and legal framework for sustainable management and development of water resources; 2) principles for water resources management; 3) the prevention and control of water pollution; and, 4) the participation of stakeholders and the general public in the implementation of the National Water Policy. The Act establishes the Water Basin Board, Catchment and Sub-catchment water committees, the National Water Resources Management Plans, and Water Users Associations.</p>
<p>NATIONAL WATER POLICY FOR ZANZIBAR (2004)</p>	<p>The objective of this Policy is to enable Zanzibar to achieve access to clean and safe water for all people and other water users responding to the needs of expanding social and economic activities while considering the nature conservation.</p>
<p>LAND TENURE, LAND USE MANAGEMENT, AND OTHER POLICIES INFORMING NATURAL RESOURCE MANAGEMENT</p>	
<p>2ND NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN (2015)</p>	<p>Per the requirements of Article 6 of the Convention on Biological Diversity (CBD), the second National Biodiversity Strategy and Action Plan (NBSAP), covering the period 2015-2020, addresses among other things emerging issues such as climate change and variability, invasive species, GMOs, biofuel development, mining, oil and gas exploration and the continuous anthropogenic impacts that were not sufficiently addressed in the 1st NBSAP of 2001.</p>
<p>NATIONAL LAND POLICY (1995)</p>	<p>The Land Policy protects land resources from degradation for sustainable development purposes. The policy also addresses the protection of sensitive areas, village land demarcation, unplanned settlements, protection of public open spaces and other urban land for public use, urban agriculture, village land use planning, conflict in land uses, overlapping land use areas (pastoralism and wildlife), coastline land use, and protection of fragile and sensitive lands. The Land Policy considers wetlands as wastelands not useful for social economic development. It calls for wetlands to be properly studied, for proper land uses to be determined, and for wetlands to be allocated to appropriate users.</p>
<p>NATIONAL HUMAN SETTLEMENT POLICY (2000)</p>	<p>The policy notes that environmental protection is a strategic issue for human settlement development. Thus, environmental planning and management ensure that settlements are habitable and sustainable.</p>
<p>NATIONAL TOURISM POLICY (1999)</p>	<p>The policy aims to ensure that tourism development considers carrying capacities of tourism products and ensures enhancement and improvement of special environmental features so that tourism development does not conflict with</p>

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	indigenous forests, beaches, mountains, and other sensitive areas. The policy emphasizes the need for all tourism development projects and recreational activities to 1) develop EIA guidelines and to ensure that EIAs are carried out; 2) monitor and review environmental protection measures in tourism; and 3) enforce laws governing land use along the coast, rivers, and lakes.
ZANZIBAR TOURISM DEVELOPMENT POLICY (1997)	The Zanzibar Tourism Development Policy aims to establish a sustainable, quality, and diversified utilization of the sector's potential while protecting the environment, culture, and traditions.
ZANZIBAR TOURISM ACT NO. 6 (2009)	The Act emphasizes the business operations of tourist facilities, i.e. accommodation and health and safety standards, with little reference to protection of biodiversity, although the policy advocates for eco-tourism. Clause 76 is the only section referring to a specific species for protection (dolphins).
NATIONAL SCIENCE AND TECHNOLOGY POLICY (1996)	Among the objectives of the Policy is promotion of the rational utilization of natural resources, including energy resources and environmentally sound technologies, in order to maintain sustainable ecological and social balance.
NATIONAL ENERGY POLICY (2003)	The overall policy in the energy sector aims to ensure adequate and sustained energy supplies for continued economic growth and development. The Energy Policy aims to 1) promote an EIA as a requirement for all energy programs and projects; 2) promote energy efficiency and conservation as a means towards cleaner production and pollution control measures; 3) promote development of alternative energy sources including renewable energies and wood fuel end-use efficient technologies to protect woodlands; 4) promote disaster prevention, response plans, and introduce standards for exploration, production, conversion, transportation, distribution, storage and fuel end-use.
ZANZIBAR ENERGY POLICY (2009)	The policy notes that access to reliable supplies of energy is a prerequisite for development and prosperity of the people of Zanzibar. The policy aims to meet energy needs of the Zanzibar population for social and economic development in an environmentally sustainable manner.
ZANZIBAR ENVIRONMENTAL MANAGEMENT ACT NO. 3 (2015)	The Act makes special provisions for coastal management whereby biodiversity conservation is emphasized due to the significance of the resource for social wellbeing and economic wealth of the state.
THE NATIONAL PARKS ACT NO 11 (2013)	The National Parks Act stipulates the management of National Parks through a board of trustees and their responsibilities and the role of the Minister for Natural Resources and Tourism to ensure protection and promotion of the biodiversity rich areas.
THE VILLAGE LAND ACT NO 4 (1999)	The Land Act forms the principal Act guiding land matters in the country. The Act divides land into public land (Village land), reserved land (land set aside for conservation e.g. National Parks) and hazardous land (land that poses danger if developed e.g. 60 m from rivers, mangroves, and so on). The Act makes no specific reference to biodiversity, but the protective measure afforded to the various land types implies inclusion.
ZANZIBAR LAND TENURE ACT NO. 12 (1992)	Section IV of the Land Tenure Act emphasizes the ownership of trees. The Act gives rights to ownership by inheritance and or sale in rural settings whilst ensuring protection of urban trees as a public good.

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THE PLANT PROTECTION ACT NO. 13 (1997)	The purpose of the Act is to: 1) prevent the introduction and spread of harmful organisms; 2) ensure sustainable plant and environmental protection; 3) control the importation and use of plant protection substances; 4) regulate export and imports of plants and plant products; and, 5) entrust all plant protection regulatory functions to the Government.
NATIONAL CLIMATE CHANGE STRATEGY (2012) & ZANZIBAR CLIMATE CHANGE STRATEGY (2014)	These strategies comprehensively elaborate adaptation and mitigation actions. These strategies aim to, among goals, enhance adaptive capacity to climate change, thereby ensuring long term resilience; increase the resilience of ecosystems to climate change; and, enhance participation in climate change mitigation activities to contribute to international efforts while ensuring sustainable development.
CENTRAL GOVERNMENT	
PRESIDENT'S OFFICE REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT (PO-RALG)	Oversees all matters related to regional and local governments, as well as coordination of development and the implementation of various government policies at the local level. The implementation of the Environmental Management Act, 2004 at local level falls under the jurisdiction of this office.
VICE PRESIDENT'S OFFICE (VPO) – UNION AFFAIRS AND THE ENVIRONMENT	Responsible for policy formulation, coordination, and implementation of all matters related to the environment. Placing this portfolio under the VPO was a deliberate decision to give the environment the highest political recognition, as well as powers to enforce the Environmental Management Act.
VPO - DIVISION OF ENVIRONMENT (DOE)	Oversees implementation and coordination of all policy and related work under the Environmental Management Act. Provides strategic guidance and leadership on environmental management programs, including the implementation of all international conventions and agreements to which Tanzania is a signatory.
MINISTRY OF AGRICULTURE	Responsible for agriculture; has direct implications to environmental issues as one of the key drivers of natural resource change.
MINISTRY OF LIVESTOCK AND FISHERIES	Responsible for livestock and fisheries; has direct implications to environmental issues through managing development of livestock and fisheries resources for sustainable achievement of food safety and security without compromising animal welfare and environmental conservation.
MINISTRY OF WORKS, TRANSPORT AND COMMUNICATION	Oversees construction and transport works, including those that have direct or indirect impacts on key biodiversity areas, Biodiversity Hotspots, or other ecologically important or sensitive areas.
MINISTRY OF FINANCE AND PLANNING	Manages overall GoT revenue, financing, and expenses and provides governmental advice on financial matters to inform pursuit of economic and social objectives.

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MINISTRY OF MINERALS	Oversees and monitors development and implementation of mining and resource exploration policies, surveying, industry, development, and related matters.
MINISTRY OF ENERGY	Oversees regulation relating to the development of various energy options.
MINISTRY OF LAND, HOUSING AND HUMAN SETTLEMENT DEVELOPMENT	Provides various land related services to individuals and institutions in the country and provides advice to government and the public on matters pertaining to human settlements development. It is also involved in the definition of tenure systems and tenure rights of communities, especially in community owned forests and village lands. Also oversees settlement of land and tenure disputes.
MINISTRY OF INDUSTRIES, TRADE AND INVESTMENT	Facilitates reporting to local and international stakeholders on Industry, Trade, Marketing, Small Industries and Small Business and Investment issues. Connects stakeholders with industries trade investors of activities (e.g. extractive industries) that have implications on the environment.
MINISTRY OF WATER AND IRRIGATION	Deals with all water related issues and issues permit for irrigation works. Ensures that water resources are developed and managed sustainably in collaboration with all stakeholders. Water resources are facing degradation from various human activities including unsustainable agricultural practices and population growth. Some agro-pastoral groups are pushed out of homelands in search of food security.
MINISTRY OF NATURAL RESOURCES AND TOURISM	Responsible for natural resources such as wildlife, forests, and cultural heritage, this ministry plays a central role in the protection of those resources. The development and growth of the population will have direct implications to the environment and may act as drivers of change.
MNRT WILDLIFE DIVISION (WD)	Works to prevent poaching of wildlife and ensure effective law enforcement, supports applied research concerning biodiversity and environmental protection, develops and administers policies related to wildlife management, and supports environmental and conservation education and training of wildlife management staff.
MNRT FOREST AND BEEKEEPING DIVISION (FBD)	Responsible for development of policy in matters pertaining to forestry and beekeeping
TANZANIA FOREST SERVICE (TFS)	Executive agency mandated to manage national forest reserves (natural and plantations), bee reserves, and forest and bee resources on unprotected land
PARASTATALS	
TANZANIA NATIONAL PARKS (TANAPA)	Responsible for the management of Tanzania's National Parks
NGORONGORO CONSERVATION AREA AUTHORITY (NCAA)	Responsible for the management of Ngorongoro Conservation Area
TANZANIA WILDLIFE AUTHORITY (TAWA)	Organization responsible for the management of Game Reserves, Game Controlled Areas, and all wildlife outside protected area boundaries and wetlands

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MARINE CONSERVATION UNIT - DEPARTMENT OF FISHERIES DEVELOPMENT (ZANZIBAR)	Coordinates the management of all marine conservation areas in Zanzibar and promotes coordination with other forms of marine managed areas (MMAs) such as privately managed sanctuaries
DEPARTMENT OF FORESTS AND NON-RENEWABLE RESOURCES ZANZIBAR (DFNR)	Manages and conserves Zanzibar’s protected parks and reserves
MARINE PARKS AND RESERVES UNIT (MPRU)	Semi-autonomous governing body responsible for the formulation of policies, management and administration of Marine Protected Areas (MPAs) in Tanzania.
SUB-NATIONAL	
REGIONAL ADMINISTRATIVE SECRETARIATE	Coordinate the integration of district level land use plans to help underpin district development plans. If this top-down management is implemented in a consultative manner, they can in turn support village level land use planning.
DISTRICT COUNCIL	Directly supports the implementation of village council goals through funding and services of village activity and Wildlife Management Areas (WMA). Responsible for developing a grazing land inventory, assessing the trends in grazing conditions, and to devise a plan for sustainable grazing. District councils often suffer from a lack of funding to support all village level activities and may have divergent goals from village council. District councils also manage District Forest Reserves (DFR) and Coastal Fisheries Management Areas (CFMA)
VILLAGE COUNCIL	Land administration at the village level is democratized to empower village members to own land. Village council can administer and govern village lands that serve as vital resources, formally plan the use of its village land area, and delineate boundaries to include forests used by villages. Several villages and agree to form Community Based Organizations (CBO)s that operate separately from WMAs. Village councils also manage Village Land Forest Reserves (VLFRs) and Beach Management Units (BMUs)
LOCAL GOVERNANCE AUTHORITY	A combination of village and district councils, community and ward representatives, and NGO staff involved in the land use planning process of respective areas.
COMMUNITIES	In charge of the management or co-management (with GoT) of Community Forests, Forest Reserves & WMAs
PRIVATE ORGANIZATIONS / INDIVIDUALS	Some private organizations or individuals run estates managed for conservation benefits, e.g. Grumeti Reserve