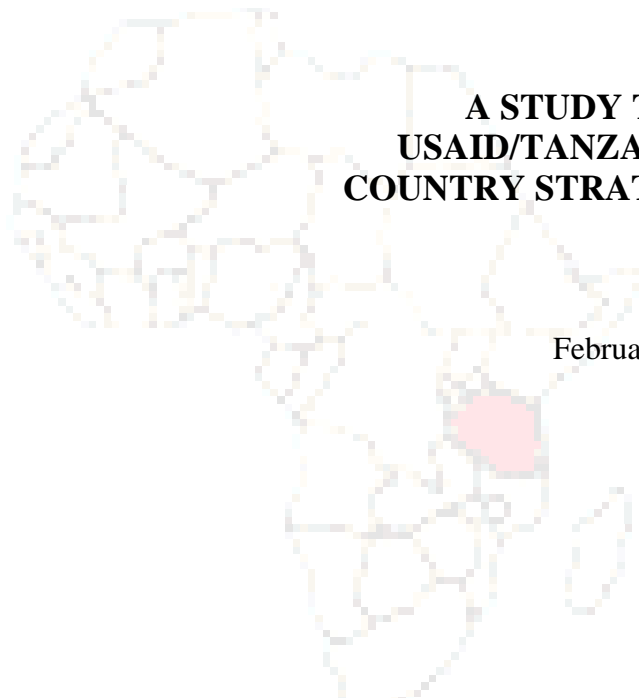


**A STUDY TO INFORM
 USAID/TANZANIA'S 2005-2014
 COUNTRY STRATEGIC PLAN (CSP)**

February, 2004



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S08 - Improved Conservation of Coastal Resources and Wildlife in Targeted Areas

AUTHORS NOTE

Under the Sections 118(e) and 119(d) of the U.S Foreign Assistance Act (FAA), all country level operating unit strategic plans must include in their CSP submissions an analysis of the actions necessary to conserve biological diversity, to achieve conservation and sustainable management of tropical forests, and the extent to which the actions proposed meet the needs thus identified. This ETOA is the result of an effort designed to meet these technical analysis requirements (per ADS 201.4.11b); and also addresses the requirements of the FAA and proposes mitigating actions for sustainable biodiversity and tropical forestry conservation in Tanzania.

FAA 118/119 requirements are substantially met by chapter 1 (the executive summary which can also stand alone as the shorter version of the ETOA) and Chapter 3 which carries out the environmental analysis and documents programming implications. Chapter 2 of the study explores the nature and extent of environmental threats facing the country's natural resources base and highlights areas which are environmentally sensitive as well as programmes with significant influence on environmental change. In Chapter 4, this ETOA goes an extra mile, beyond mere compliance with FAA 118 and 119 requirements, to serve as a practical strategic planning guide. The chapter can be used as a stand alone guide by strategic objective teams to realistically integrate environmental thinking into their activity design mainstreams. Examples of special programs supportive of what is espoused in Chapters 3 and 4 (and summarized in Chapter 1) are packaged as cases of illustrative approaches to be found in Annex A.

This document has evolved through a highly participatory process drawing participation from a diverse range of NRM stakeholders and/or practitioners in Tanzania and abroad. The ETOA team sincerely thanks everybody who contributed towards making the assessment successful. This version has been reviewed and cleared by the Regional Environmental Officer (REO) and the Regional Legal Advisor (RLA), both of whom are based at REDSO in Nairobi. Additionally it has also been reviewed by USAID's Africa Bureau Environmental Officer (BEO) based in Washington.

0.1 LIST OF ACRONYMS

ADB	African Development Bank
ADS	Automated Directive System
AGOA	African Growth Opportunities
ASP	African Stockpile Program
AU	African Union
CBA	Cost-Benefit Analysis
CBDA	Community Based Distribution Agents
CBNRM	Community Based Natural Resource Management
CBO	Community Based Organization
CEAS	Coastal Environmental Awards Scheme
CFR	Code of Federal Regulation
CS	Child Survival
CSP	Country Strategic Plan
DALYs	Disability Adjusted Life Years
DANIDA	Danish International Development Agency
DG	Democracy and Governance
E/NRM	Environmental/Natural Resource Management
ECA	Economic Commission for Africa
EG	Economic Growth
EMP	Environmental Management Planning
ERP	Economic Recovery Programmes
ETOA	Environmental Threats and Opportunities Assessment
	FAA
	US Foreign Assistance Act
FAO	United Nation Food and Agriculture Organization
FBD	Forest and Beekeeping Division
GCA	Game Controlled Areas
GDP	Gross Domestic Product
GOT	Government of Tanzania
HCV	High Conservation Value
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
ID	Infectious Disease
IEHA	Initiative to End Hunger in Africa
ILFEMP	Institutional and Legal Framework for Environmental Management

IPT	Intermittent Presumptive Treatment of Malaria
IRG	International Resources Group
IT	Information Technology
ITN	Insecticide Treated Bed Nets
IUCN	The World Conservation Union
JGI	The Jane Goodall Institute
KIWAKKUKI	Kilimanjaro Women's Group against AIDS
MCA	Millennium Challenge Account
MMP	Mangrove Management Plan
MNRT	Ministry of Natural Resources and Tourism
MOH	Ministry of Health
MSH	Micro and Small Enterprise
MTEF	Medium-term Expenditure Framework
MZP	Management Zone Plan
NAP	National Action Plan (to combat deforestation)
NBSAP	National Biodiversity Action Plan
NCSSD	National Conservation Strategy for Sustainable Development
NEAP	National Environmental Action Plan
NEMC	National Environmental Management Council
NEP	National Environmental Policy
NFP	National Forest Policy
NGO	Non-Governmental Organization
NPP	National Population Policy
NRM	Natural Resource Management
NTFP	Non-Timber Forest Products
NWP	Nature, Wealth, and Power
PA	Protected Area
PEA	Programmatic Environmental Assessment
PRSP	Poverty Reduction Strategy Paper
PSO	Program Support Objective
RCHS	Reproductive Child Health Section
RH	Reproductive Health
RPTFB Framework	Rolling Plan and Forward Budget
SAA	Strategic Assistance Areas
SAPs	Special Area Plans (Structural Adjustment Program)
SATF	Social Action Trust Fund
SD	Sustainable Development

SO	Strategic Objective
SPCC	Strategic Planning Coordinating Committee
TACARE	Lake Tanganyika Catchments, Reforestation, and Education Project
TAKAGAS	A biogas project proposal for producing electricity, fuel, and fertilizer from industrial waste in Tanzania
TANAPA	Tanzania National Parks
TAWG	Tanga AIDS Working Group
TCMP	Tanzania Coastal Management Partnership
TIST	International Small Group and Tree Planting Program
TMP	Traditional Medical Practitioners
TRADE	Trade for African Development and Enterprise
TSP	Totally Suspended Particles
UCCP	Ugalla Community Conservation Project
UNCTAD and Development	United Nations Conference on Trade USAID/Tanzania US Agency for International Development/Tanzania
USG	United States Government
WHO/EMRO	World Health Organization
WMA	Wildlife Management Areas
WPT	Wildlife Policy of Tanzania
WRI	World Resources Institute
WWF	World Wildlife Fund

SUMMARY DATA_

A. CHARACTERISTICS OF THE TANZANIAN ECOLOGICAL ZONES^{1,2}

Ecological Zone (Area in km ²)	% of total land area	Area within Protected areas (%)	Biodiversity quality	Amount of change
Zone I (43,551)	4.6	FR 1196 (2.8) GR 3589 (8.2) NP 431 1.0) 4.TO 5216 (12.0)	Rich in plant sp; poor in endemic plants; Richest zone in birds and butterflies	Heavy human pressure due to cultivation, grazing and fuelwood; More than 20% of forest species lost
Zone II (63,294)	6.7	FR 8136 (12.9) GR 5264 (8.3) TO 13400 (21.2)	Botanically rich, 3000 sp. of which 40% are endemic; Habitat fragmentation threatens species survival	Over 90% of original forest destroyed; Remaining FRs too small to be viable as Pas
Zone III (58,000)	6.1	FR 10,208 (17.6) NP 2,650 (4.6) CA 3,200 (5.5) TO 16,058 (27.7)	Rich in flora, of the 4000 plant species, 80% are endemic; one fifth of tree genera also endemic; Fairly rich in mammal species with low endemism	More than 70% of land outside PAs converted to farmland, grazing or is degraded.
Zone IV (175,161)	18.5	FR 5502 (3.1) GR 7179 (4.1) NP 18903 (10.8) NCA 8136 (4.6) GCA 32903 (18.8) TO 72623 (41.4)	Moderately rich in flora, 2500 species of plants, of which 50% are endemic; rich in mammals species	Extensive areas outside PAs converted to farmland; severe rangeland deterioration due to overstocking; heavy poaching; 2-4 animal species gone extinct
Zone V (73,223)	7.7	FR 700 (1.0) GR 2200 (2.9) GCA 19621 (26.8) NP 4786 (6.5) TO 27307 (37.2)	Moderately rich in flora, 2500 species of plants of which 50% are endemic; rich in mammal species	Extensive areas outside PAs converted to farmland; severe rangeland deterioration due to overstocking; heavy poaching; 2-4 animal species gone extinct
Zone VI (554,677)	58.7	FR 121225 (21.9) GR 80402 (14.5) NP 9907 (1.8) GCA 46901 (8.5) TO 258435 (46.7)	Very rich in flora, 8500 species of plants of which 54% are endemic; famous for fine hardwoods; interesting Itigi Thicket and <i>Commiphora</i> woodlands; very rich in fauna but low endemism; about 759 bird species of which 14% are endemic; about 450 species of butterflies	Over 20% of woodland converted to farmland, grazing or degraded; Extensive deforestation for charcoal and woodfuel and overgrazing

Zone I....Moist Forest Mosaic

Zone II...Coastal Forest/Thicket

Zone III..Afromontane Forest

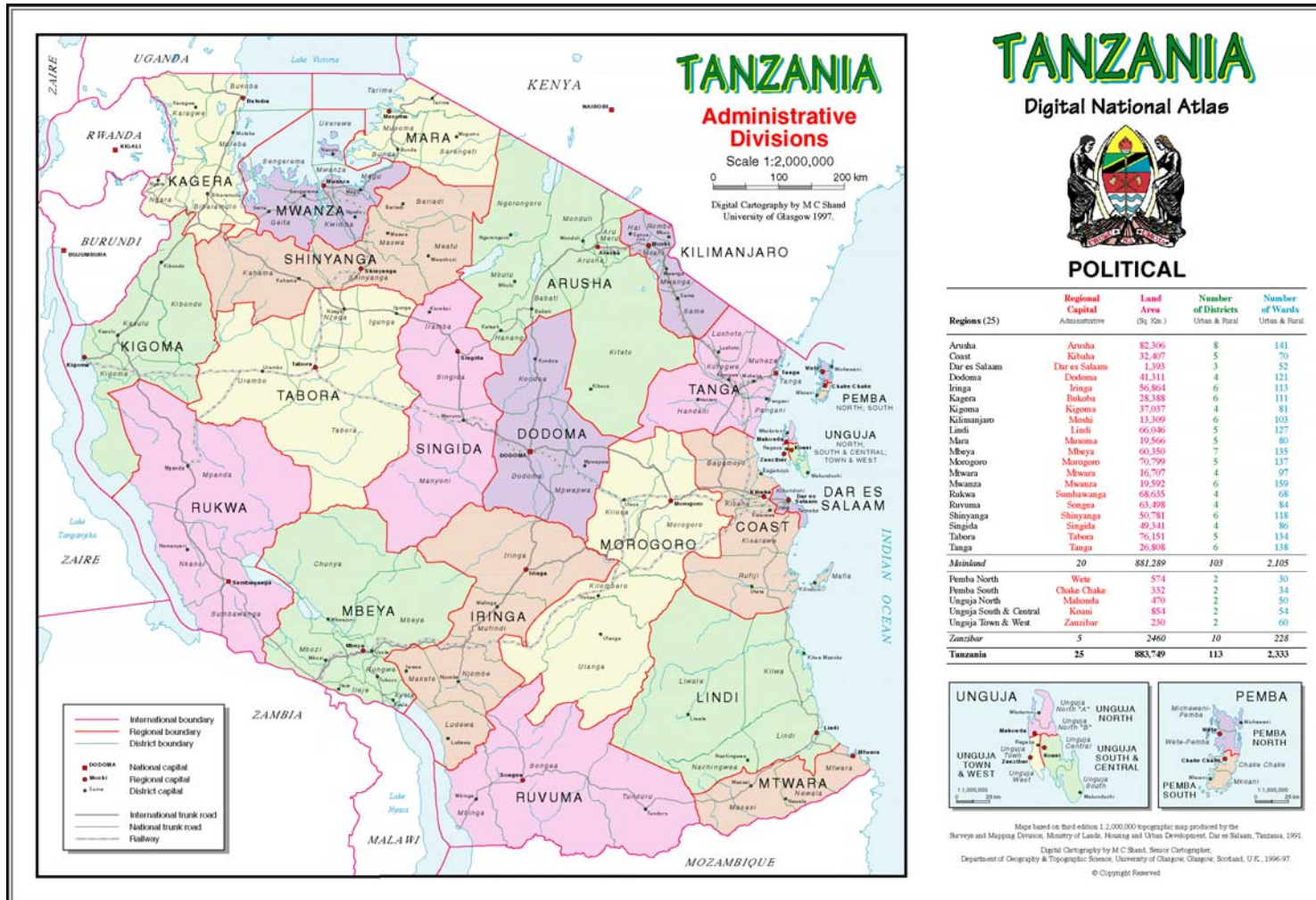
Zone IV...Acacia-Savanna Grassland Zone V....Acacia-Commiphora Thornbush Zone VI.Brachystegia-Jubernadia Woodland

Notes:;

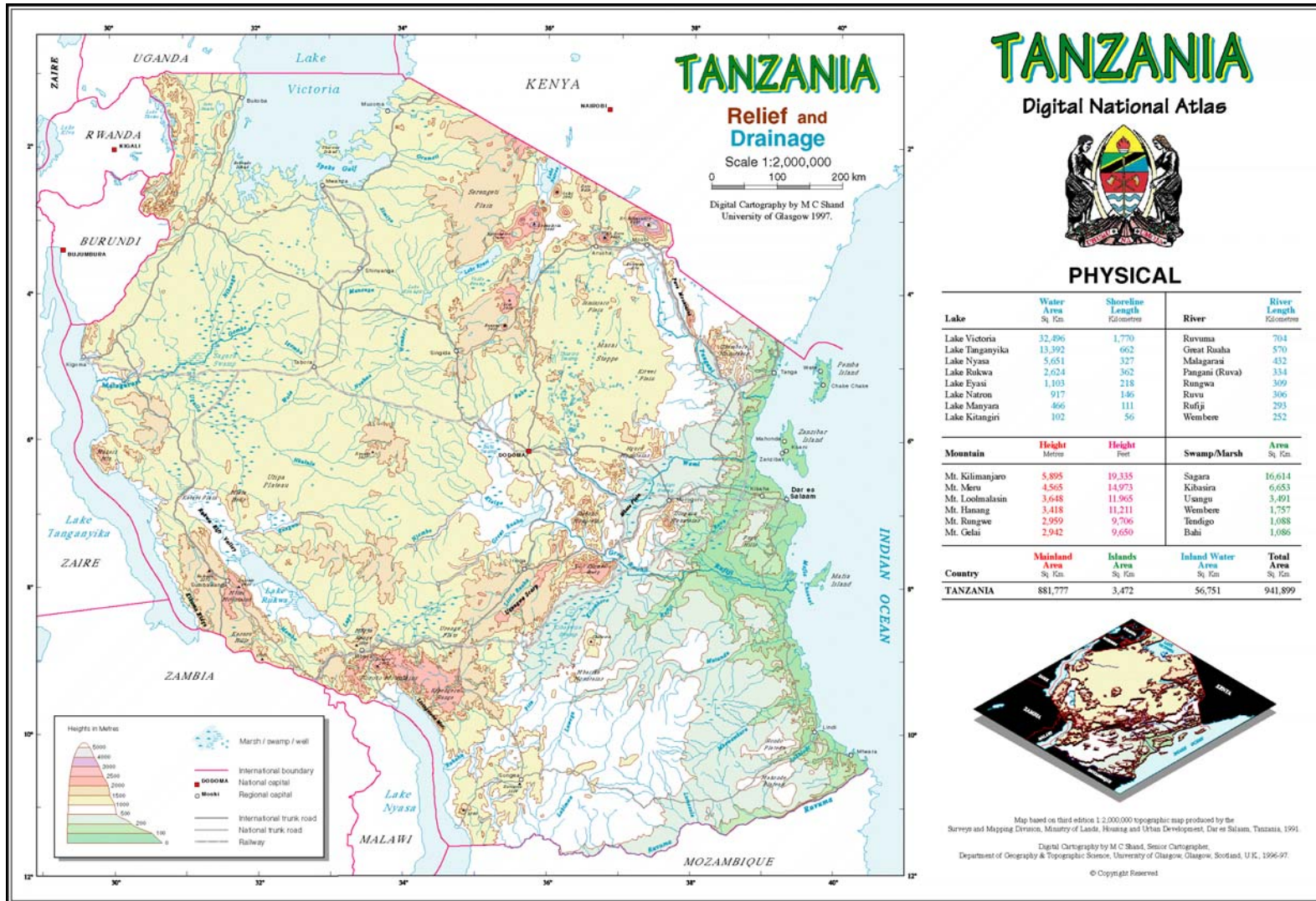
¹ Source: UNDP/UNEP/GEF BPSP - Komex September 2001 ((Stuart *et al.*, 1990).

² For detailed Ecological and Socio Economic Data see Appendix 4: trends and metrics

B. TANZANIA ADMINISTRATIVE DIVISIONS



C. TANZANIA : RELIEF AND DRAINAGE



D. THREATS TO BIODIVERSITY AND FORESTS RESOURCES IN TANZANIA:

(A Summary Of Categories And Components).

Categories	Components
Agriculture	<ul style="list-style-type: none"> • Cultivation • Encroachment • Fire • Grazing
Pressure on Forest Resources	<ul style="list-style-type: none"> • Timber • Polewood • Fuelwood • Charcoal • Carving wood • Hunting • Tourism • Salt • Mining
Pressure on Wetlands and other critical ecosystems	<ul style="list-style-type: none"> • Fishing • Irrigation • Eutrophication • Water hyacinth
Pressure on Endangered species	<ul style="list-style-type: none"> • Poaching • Desertification • Loss of habitats
Development	<ul style="list-style-type: none"> • Settlement • Urbanization • Roads • Mining • Policy/Legal framework for Env. mgt

**E. SUMMARY OF ROOT CAUSES OF THREATS:
To Environment & Natural Resources in Tanzania**

ROOT CAUSE	MANIFESTATION
Population growth	<ul style="list-style-type: none"> • Drives increased demand for resources at all levels.
Poverty	<ul style="list-style-type: none"> • Over exploitation of “free” forest resources (timber, pole wood, etc). • Lack of opportunity to think beyond immediate needs. • Vulnerability to corruption • Involvement in illegal activities
Inefficient land-use practices	<ul style="list-style-type: none"> • Low agricultural yields • Declining soil fertility • Increased demand for land • Agricultural encroachment and clearing of forests
Negative value systems re conservation and lack of environmental awareness	<ul style="list-style-type: none"> • Absence of local constituencies for conservation. • Ignorance of consequences of damage to environment • Low motivation to conserve biodiversity
Lack of experience and incentives to develop alternative livelihoods	<ul style="list-style-type: none"> • Little opportunity to change environmentally damaging lifestyles
Lack of fora for communal exchange and networking	<ul style="list-style-type: none"> • No transfer of lessons learned • No sharing of common problems • Opportunities for engaging in conservation not communicated
Lack of local mechanisms for controlling forest exploitation	<ul style="list-style-type: none"> • Absence or breakdown of traditional conservation practices • Local communities overexploit forest resources • Exploitation of forest resources by outsiders is unchecked • Unprotected forests are lost
Limited ecosystem-wide strategic focus	<ul style="list-style-type: none"> • Piecemeal conservation efforts • Short-term projects • Lack of continuity in conservation activities • Lack of co-ordination among different projects • Landscape issues not tackled
Weak forest governance	<ul style="list-style-type: none"> • Inadequate stakeholder involvement • Decision-makers inadequately informed • Lack of monitoring
Inadequate and poorly targeted fiscal resources	<ul style="list-style-type: none"> • Inadequate budgets for authorities managing forests • Most money spent on salaries with little for operational costs • Poor morale among staff managing forests
Limited effectiveness of protection regimes	<ul style="list-style-type: none"> • High levels of illegal activities in forests • Forest degradation and biodiversity loss • Corrupt practices facilitated • Low morale among forest guards

F. PROTECTED AREAS OF TANZANIA



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Chapter 1: EXECUTIVE SUMMARY

Tanzania is endowed with a diverse base of natural resources which its population relies upon for survival and livelihood. These resources include forests, agricultural lands, rangelands, wildlife, fisheries, minerals and aquatic resources. Tanzania's wildlife resources are among the richest in the world.

The Government of Tanzania is fully cognizant of the importance of conserving the natural resource base and has strategically set aside for protection a network of protected areas which covers over 25% of Tanzania's total area and is composed of 13 National Parks, 18 Game Reserves, 56 Game Controlled Areas and the Ngorongoro Conservation Area. In addition, there are 540 Forest Reserves totaling 13 million hectares (ha) – about 15% of the land area and 30% of the forested area.

The rapid growth of the human population and its increasing pressure on these resources are posing a considerable challenge to sustainable utilization. Furthermore, as these resources are the base of overall socio-economic development in the country, this dependence, aggravated by poverty, lack of appropriate utilization-technologies, and ineffective governance of natural resources, has resulted in a tendency towards irrational and inefficient utilization of resources. The inevitability of using the natural resource base to attain socio-economic development goals and the poverty of resource users combine to pose a formidable challenge to sustainable development.

As USAID/Tanzania moves to develop a 10-year Strategic Plan it fully recognizes the significance of the analysis of the supporting resource base, as it offers vital input necessary to determine a sustainable development strategy. This report takes stock of the natural resource base and analyses the major environmental problems facing Tanzania today. It examines the status of threats and opportunities to Tanzania's natural resource base and proposes strategies and approaches for consideration by the Mission in development of its new strategy. This ETOA also fulfills USAID's mandatory environmental analysis requirements for strategic plans.

1.1 METHODOLOGY, SCOPE AND STRUCTURE

This environmental analysis is part of the analytical agenda mandated by USAID/Tanzania's Country Strategic Plan (CSP) 2005-2014 process. The documentation provides a countrywide environmental threats and opportunities analysis (ETOA) in order to inform the strategic planning process and comply with sections 118/119 of the U.S Foreign Assistance Act (FAA) by assessing the mission's strategic objectives in relation to Tropical Forests and Biodiversity.

The ETOA was carried out during the period February – December, 2003, by a multidisciplinary team led by the USAID/Tanzania Mission Environmental Officer. It was carried out in phases, using an approach that emphasized stakeholder consultation and participation. (*The Scope of Work for the ETOA is attached as Annex A*).

In particular the document:

- i) Provides an overall environmental “snapshot” for Tanzania: the status, issues, problems and opportunities related to the principal elements of the environment in Tanzania (forests, land, wildlife, coastal and marine resources, air, water), and the primary causes of environmental degradation;
- ii) Evaluates Tanzania’s biodiversity and tropical forest resources and addresses potential threats thereto to meet the requirements of FAA Sections 118 and 119;
- iii) Analyzes key environmental threats and opportunities and identifies opportunities for addressing environmental threats in Tanzania;
- iv) Evaluates the extent to which required actions for conservation are satisfied by current or proposed USAID / Tanzania’s programs
- v) Describes how the new USAID/Tanzania CSP will meet the needs identified by the legal, political and social context for environmental management in Tanzania; and last but in no way least,
- vi) Highlights current interventions in the environmental sector, bilateral and multilateral donors, nongovernmental organizations (NGOs) and other institutions and draws up recommendations as to how USAID might best integrate environmental opportunities into its Strategic Objectives for Tanzania;

The current chapter summarizes the ETOA by providing background information including the latest conceptual context of USAID/Tanzania’s programming between 2005 and 2014 as well as the objectives, scope, methodology of the study and overall structure of the report. Most important, it draws a summary of key findings and recommendations for integrating environmental soundness into USAID’s programming practices in relation to the proposed 2005-2014 strategic plan. Chapters 2 and 3 present a broad analytical overview of Tanzania’s environmental assets, and the threats facing them. Chapter 3 specifically takes stock of the opportunities for improving sustainable environmental management in Tanzania, particularly within the context of USAID/Tanzania’s Country Strategic Plan. This addresses both Section 117 of the FAA and the USAID strategic planning guidelines and requirements as contained in ADS 201. This ETOA meets all technical analysis requirements for the development of USAID strategic plans (ADS 201.4.11b). It also addresses the requirements of the FAA and proposes mitigating actions for biodiversity and tropical forestry conservation in Tanzania. Under the Sections 118(e) and 119(d) of the FAA, all country level operating unit strategic plans must include an analysis of the actions necessary to conserve biological diversity, to achieve conservation and sustainable management of tropical forests, and the extent to which the actions proposed meet the needs thus identified. The relevant sections of the FAA are summarized in the Legal Requirements section below.

Opportunities for proactive integration of “environmental thinking” into the various Strategic Assistance Areas being proposed in USAID/Tanzania’s new portfolio are highlighted in chapter 4 by identifying and effectively capitalizing the conceptual environmental linkages inherent in each of the proposed SAAs. Under each of the

Strategic Assistance Areas (SAA's), an illustrative mix of potential activities that can be carried out to capitalize the conceptual linkages and enhance programming impact is developed and presented. This effort takes this ETOA an extra mile, beyond mere compliance with FAA 118 and 119 requirements, to serving as a practical strategic planning guide. Chapter 4 can operate as a blueprint to guide the teams to realistically integrate environmental thinking into their respective activity designs.

1.2 THE LEGAL REQUIREMENTS

The core environmental requirements for USAID operating unit strategic plans are spelled out in ADS 201.3.8.2 “Environmental Analysis” and accompanying Supplementary References. These requirements are derived principally from Sections 117 through 119 of the FAA. Likewise, the integration and application of USAID’s Environmental Procedures (detailed in ADS 201.3.12.2(b) “Environmental Review” and its mandatory references ADS 204 and 22 CFR Part 216) into all USAID’s obligation actions serves also to advance the environmental soundness of mission programs. 22 CFR Part 216 defines the Agency's procedures "to ensure that environmental factors and values are integrated into the A.I.D. decision making process."

1.2.1 FAA Section 117 - USAID Environmental Regulations

FAA Section 117 “Environment and Natural Resources,” dictates that efforts be made to maintain (and restore) natural resources upon which economic growth depends, and to consider the impact of USAID’s activities on the environment. This law requires USAID to include environmental sustainability as a central consideration in designing and carrying out its development programs. The legal requirements of Section 117 are referred to in USAID’s *ADS Chapter 204 “Environmental Procedures,”* which provides essential procedures and policy on the application of *22 CFR Part 216 (“Reg. 216”)*, to ensure integration of environmental considerations into decision making processes. Accordingly, USAID conducts various types of assessments to ensure that its environmental priorities are incorporated into results, planning, achieving, and monitoring. Raising the scope of assessments to a more general level, *22 CFR 216.6(d)* provides for programmatic environmental assessments applied to classes of actions. This clause allows USAID to conduct environmental assessments of strategic plans and thereby achieve an initial level of compliance. Clearly, the planning stage is the first and best opportunity to ensure that such factors are appropriately considered. This will allow a subsequent series of measures to be identified which will incorporate environmental soundness into development programming, including downstream environmental review, screening, mitigation, prevention and monitoring actions.

1.2.2 FAA Sections 118 and 119

Section 118 “Tropical Forests” and *Section 119 “Endangered Species”* of the FAA codify more specific U.S. interests in preservation of specific environmental assets (tropical forests and biodiversity) the continued loss of which constitutes a long-term threat to the global environment. These two statutes require that USAID country plans

include analyses of the actions necessary to conserve tropical forests and biodiversity and a discussion of the extent to which proposed USAID actions meet those needs. Section 118/119 analyses are specific legal requirements of all bilateral CSPs.

1.2.3 USAID Guidance

ADS Chapter 201 translates the intent of the above legal requirements into a practical strategic planning approach, and provides a priority-setting framework for missions to use in determining environmental threats and opportunities (See Supplementary References, *Guidelines for Strategic Plans, Technical Annex B: Environment*). The priority-setting process is intended to guide the setting of environmental strategic objectives, as well as to inform strategic objectives in other sectors. The priority-setting framework provides a flexible approach to evaluating environmental issues and their relevance to the Agency's strategic environmental goal:

1.3 USAID'S PROGRAM IN TANZANIA: CSP 2005-2014

USAID/Tanzania's Country Strategic Plan will embody a sustainable development strategy for the 10-year period FY 2005 – 2014. The overall CSP Goal "improve the quality of life in Tanzania" will be supported by interventions in five strategic areas, including:

- HIV/AIDS
- Health
- Environment/Natural Resources Management
- Economic Growth (with emphasis on agriculture)
- Democracy and Governance

USAID's approach in implementing its program will promote linkages across all strategic areas/objectives, as well as promotion of cross-cutting themes and approaches. Cross-cutting themes and approaches are expected to include: HIV/AIDS, gender, governance (themes), information and communication technology, public-private alliances, and capacity building (approaches).

1.4 FINDINGS AND RECOMMENDATIONS

1.4.1 General Threats in Tanzania's Development Environment

There is widespread consensus that one of the major problems facing the nation is land degradation. This takes many forms: soil erosion, deforestation, bush fires and overgrazing. The root cause often lies in the actions of the agricultural producers themselves. Land degradation results in a loss of productivity in agriculture, land use conflicts, loss of biodiversity and changes in water catchment areas which have led to both drought and floods. Desertification is looming as rampant deforestation ensues to support unchecked fuelwood and other timber products consumptive uses. There is no doubt in a country where 86% of the population is rural and the agricultural sector

contributes over 60% of the GDP that land degradation is a pressing problem. Loss of biodiversity poses a threat to the further development of the tourism sector.

Urban and industrial pollution affect a smaller proportion of the population, but are posing increasing health hazards both to the urban and rural populations. Inadequate facilities for the treatment of solid waste and industrial effluents contribute to serious pollution levels in ground and surface water sources. This type of pollution will increase significantly as the economy increasingly liberalizes towards more and more industrialization and urbanization.

Other serious problems are the continuing pollution of coastal and marine areas and the deterioration of wetlands. USAID and the GoT have been jointly working to promote sustainable use of coastal resources, including mariculture and coastal tourism, through improved environmental policies and community-based natural resources management. An historic breakthrough was the approval and signing of the National Integrated Coastal Management Strategy in December 2002 that cleared the way for an integrated coastal management program in all coastal provinces. While on one hand this presents a formidable opportunity for Tanzania's future excellence in coastal conservation, it also opens up a new chapter of management challenges to ensure effective translation of the new policy into actions in the field.

1.4.2 General Opportunities for Integrating Environmental Soundness in the CSP

USAID will work in tandem with the GOT, public and private institutions and other partners towards elimination of unplanned and damaging natural resource management practices to safeguard natural resources and enhance natural resource based livelihoods, by:

- i) Comprehensive usage of the precautionary principles throughout the entire cycle of the programs (i.e. planning through implementation); and enforcement of the agency's environmental regulations.
- ii) Proactively exercising environmental consciousness in design and implementation of all assistance programs under the forthcoming strategy, by promoting and capitalizing the conceptual environmental linkages identified in Chapter 4 of this study.
- iii) Undertaking capacity building at both the communal/local and national/policy levels for environmental management; including biodiversity assessment and monitoring.
- iv) Supporting transparent planning processes to achieve an optimal distribution of natural resource management practices and other land-uses in a given landscape. This will include well-informed negotiations among a wide range of stakeholders to balance ecological, social and economic dimensions of natural resource use across the landscape
- v) Enforcing adequate safeguards that recognize and guarantee the legal and customary rights of communities to own, use and manage their natural resources, and
- vi) Engaging with financial institutions and market actors in natural resource conservation and advocacy for the elimination of policy incentives that contribute to environmental degradation.

1.4.3 Opportunities for Incorporating Sound Environmental Management in USAID/Tanzania’s proposed Strategic Objectives

The threats and opportunities relating to each of the five Strategic Objectives proposed in USAID/Tanzania’s Concept Paper (2003) for assistance to Tanzania (up to 2014) were reviewed in relation to biodiversity and tropical forests.

Impact of HIV/AIDS reduced: HIV/AIDS prevention and management not only ensures sustainability of the human capital critical for economic growth and sustainable ecosystems management, it also alleviates the threats to the established and traditional resource management and local governance structures themselves, given the exclusive dependency of the economy on the natural resources. The current NRM target geographic areas show HIV infection rates ranging between 5% and 24%. Under such circumstances, no development program can ignore the impact that HIV/AIDS can exert on economic growth activities. To ensure its own success, the proposed Environment/NRM program must address HIV/AIDS prevention and management, in partnership with the HIV/AIDS SAA, and work to weave those efforts into sustainable NRM practices to reach vulnerable populations (such as youth and women) in the hardest hit geographic areas.

Participatory planning to identify and strengthen the benefits of the specific natural resource categories, such as watersheds and forests, to HIV/AIDS affected and infected families is highly anticipated. Non-timber forest products (NTFPs) have met and continue to meet local villagers’ needs for energy, construction, food, and health. Borrowing a leaf from the Tanzania Social Action Trust Fund’s (SATF) success story, ample opportunity exist for fostering growth of sustainable natural resources enterprises and helping HIV/AIDS victims (for example orphans) with the profits made from investments while effectively serving conservation interests. Such activities will be closely monitored to ensure that they do not cause further damage to tropical forests and biodiversity.

Increased availability of Quality health services: Better access to key health services will provide opportunities for reducing pressure on the environment since improving the health and well being of human populations will proportionately contribute to reducing poverty, thus curbing environmental degradation and ultimately leading to improved health of the environment. Recommendations are made with respect to the geographical location of targeted health zones in relation to protected areas. While on one hand functioning health centers near protected areas are likely to attract human populations (with the risk of increasing pressure on protected areas) these centers in the vicinity of protected areas will on the other hand positively impact human health and enhance livelihoods (and consequently enhance protected area / community relations for conservation interests). Further recommendations are put forward for design of programs that achieve “economies of scale” by capitalizing linkages and synergies inherent in multi-sectoral community based approaches (e.g. agriculture, family planning/health, and conservation). Through a geographical focus and use of common institutional, multipurpose extension agents/animators, and activities that combine more than one sectoral element, such as in water resource conservation (health and environment) or soil or tree conservation (agriculture and environment) a variety of objectives can be achieved. Examples of such an approach can be found in Tanzania in the Jane Goodall Institute (JGI)’s TACARE project as well as in USAID/Madagascar’s landscape-focused development program.

Increased agriculture-led rural incomes: In Tanzania poor households, especially in rural areas, derive their livelihoods from natural resources e.g. land resources for agriculture and water resources for fishing. It is also found that the poorer the household, the greater is the share of its income from environmental resources³. Work in the agriculture sector is critically important to improving the well being and economic status of those who need it the most. The objective is to eradicate poverty at Tanzania's rural household level. USAID livelihood projects have the opportunity to enhance the long term protection of biodiversity and tropical forests by promoting sustainable use. Planned economic growth activities will work to orient people away from Tanzania's critical protected areas as well as other areas highlighted as important for conservation. At the same time, livelihood projects that do not plan for possible negative environmental consequences run the risk of contributing to the degradation and/or loss of forest cover and biodiversity. The Economic Growth SAA will build into their designs adequate strategic, as well as intervention-level, capacity for proactive mitigation of any adverse impacts resulting from unsustainable agricultural practices. The range of these impacts is quite broad. The widespread use of chemical fertilizer, pesticides, and other chemicals for farming poses a formidable health hazard to the rural poor and 22 CFR 216 spells out the strict USAID policy on safe-use of pesticides. Land degradation, either natural or due to the overuse of chemical fertilizers, and the mechanization or depletion of groundwater, which increases soil salinity, could erode the most important modality of livelihood of the rural population, especially the rural poor, who do not possess the means to counter such adverse impacts. Therefore interventions under USAID's Economic Growth SO will promote best practices for ensuring environmentally sustainable agricultural production.

Democracy and Governance: Research is increasingly proving that good governance, the rule of law, and the ability to participate in the selection of individuals called upon to make policy (and decisions that both affect the quality of daily life and set the course for the future) are the key to effective management of natural resources and promoting economic growth. Environmental governance is embedded in larger governance concerns. It is essentially the distribution, exercise, and accountability of power and authority over natural resources. In Tanzania, the major governance issue is *control* and *access to natural resources*. Environmental management is political; access to resources and distribution of their benefits are often politically charged and contentious. Thoughtful implementation of governance activities should therefore enhance the long term protection of biodiversity and maintenance of forest cover. Governance activities should enhance community participation in efforts such as land use planning while at the same time help communities understand the process by which decisions are made that are in the interest of the nation but not necessarily in the short term interests of a particular group of individuals. USAID's experience with its E/NRM program to date indicate that effective integration of governance into E/NRM programs will be better driven by inclusion of activities *within sectoral programs, rather than cutting across them*. Such an arrangement is more likely to promote a continuous dialogue between implementing partners, and mainstream "governance" permanently into the implementation agenda.

³ An analogous situation exists even at the countries-level; the shares of GDP (and exports) originating from sectors whose production is directly connected with environmental resources in poor countries are higher than those in rich countries.

1.5 FAA 118/119 ANALYSIS

This section filters the in-depth analysis carried out in Chapters 3 and 4 of the ETOA to achieve a two-pronged objective:

- (1) First, it attempts to succinctly portray specific actions and/or conditions that are necessary to enhance protection of tropical forests and biodiversity in Tanzania. This is accomplished by highlighting key prevalent threats and in the due course outlining options for managing these threats.
- (2) Second, the analysis also summarizes and presents the extent to which USAID/Tanzania, by implementing the proposed mix of illustrative activities planned in the CSP under the various strategic objectives, will meet those needs.

1.5.1 Threats to Tropical Forests

The key problems presently facing Tanzania's biodiversity-rich environment, including its world class renowned mega-biodiversity sites are: degradation, fragmentation, and loss of habitat for many known (and unknown) globally threatened species. This is the result of many factors, such as growing human population exerting pressure on forest resources and land, poverty leading to unsustainable use of forest resources, under-resourced government institutions, a legacy of outdated environmental policies and legislation, and lack of political will. The socioeconomic situation is characterized by a large and expanding economically impoverished human population.

Despite the biological importance of the Tanzanian natural resources base, legal protection for important ecosystems in general is lacking, weak, or poorly enforced. Strategic management capacity and action planning generally remain weak at both the institutional and policy fronts. Currently a number of initiatives (including institutional, policy and legislative reforms) are ongoing to address the gap.

The biggest threats to Tanzania's forests derive from agricultural expansion, unsustainable fuelwood harvesting (including charcoal), and timber extraction for urban and rural industrial uses. Causal factors include increased forest access (commercial logging, roads), weak institutional capacities (inadequate resources for forest management, lack of good governance) and inappropriate management strategies. Other specific threats identified in this report include:

Agriculture

Much of Tanzania is arid, semi-arid, or has poor quality soils. Only 4.24% of the country's land is considered arable, and of that amount only a little over 1% is permanent cropland⁴. In spite of this, over 80% of the Tanzanian work force is employed in agriculture, and with continued population growth, pressure to expand agricultural production is likely to continue into the future. Commercial agriculture has been responsible for some clearance and fragmentation of forests. There are large tea estates in Iringa, Tanga and Kagera on land that was formerly forested.

⁴ CIA World Fact Book, 2003 statistics. www.odci.gov

Bush - Fires

Fires are commonly used by farmers to clear their fields prior to planting. Where population densities are high, vegetation is cleared and burned on the site of future fields. In general, few of these fires spread into forest margins or montane grasslands. Within the forests, fires are started for forest clearance for cultivation and these can get out of control and burn larger areas. Sometimes, wild honey harvesters start forest fires when they smoke the bees to get their honey. Where human population density is lower near the protected area, there is a much higher tendency for the protected area to be subject to wildfires that can have a number of causes and once started will spread into protected areas in an uncontrolled fashion. Occasionally, these fires reach the forests and during dry years they can enter the forest and cause considerable damage.

Deforestation

Virtually, all of Tanzania's wood fuel comes from forests-over 90% of all round wood harvests are for charcoal and fuelwood⁵. As can be expected, much of the demand for fuelwood is satisfied through deforestation. It is estimated that about 70% of the deforestation in Tanzania is due to fuelwood harvests, directly or indirectly, with about 30% of the deforestation being the result of agricultural land clearing. As the economy matures, deforestation associated with agricultural land use clearing is expected to grow, increasing emissions of greenhouse gases, and reducing the supply of material traditionally available to provide energy.

Deforestation is proceeding at a rate which, if not diminished, would deplete the country's resource base in little over 100 years. Tanzania's current population estimated at around 34.6 million is expected to roughly double in the next 20 years. Given the agrarian lifestyle of the population as well as its reliance on fuel wood and charcoal for cooking, rates of forest loss are likely to increase proportionally. The ability to manage population growth and agricultural expansion will therefore be essential to minimizing loss of biodiversity and forest cover.

Commercial logging

As Tanzania's forests continue to disappear, illegal commercial logging is one of the main causes of the problem. Not only does the government seem unable to address the present state of things, but forestry officials themselves have been accused of being directly involved in the illegal timber trade. Other suspects in the illegal timber business are timber product dealers, private individuals, saw millers and logging companies⁶. Timber is used in Tanzania for a variety of construction purposes, as well as for the artisanal wood carving industry for which East Africa is particularly known. Most timber used in household construction never enters the formal economy, so reliable statistics do not exist. Statistics for industrial timber use, including fabrication of wood paneling and paper products estimate that approximately 3 million cubic meters of roundwood is harvested and processed per year in Tanzania⁷. Export of timber and other forest products from Tanzania is a small contributor to the economy, however. The total value of forest product exports between 1996 and 1998 were estimated at \$4.7 million, which was outweighed by the value of forest product imports, at approximately \$6 million.

⁵ <http://www.uccee.org/c2e2/issue9s/Tanzania.htm>

⁶WRM Bulletin 27

⁷WRI, Earth trends, 2003

Roads Construction

The impact of fragmentation of ecosystems is quite an obvious one as currently being evidenced in the Makuyuni-Ngorongoro road construction which crosses some of the vital wildlife migration corridors. Roads facilitate immigration, forest fragmentation, and commercialization of the bushmeat, timber and non-timber products trade. As roads are improved, more forests become at risk because of increased access for fuelwood and charcoal merchants. For example, Rondo and Kitope Forest Reserve are threatened by the development of a new road to Dar es Salaam. Roads also fuel urbanization and peri-urbanization by attracting clusters of settlement.

1.5.2 Management Actions to Improve Tropical Forest Conservation

Specific actions that USAID is planning to do to achieve conservation and sustainable management of tropical forests in Tanzania are hereby highlighted:

- i) Policy and institutional reforms to enhance sustainable forest management including completion of ongoing reforms on the wildlife and coastal policies as well as establishment of relevant institutional structures to support effective application of the policies,
- ii) Empowerment of communities to participate in sustainable management and good governance of conservation enterprises to reduce corruption, increase accountability and derive economic benefits from sustainable operation of natural resource based enterprises such as the Wildlife Management Areas and non-timber forestry products (NFTP's).
- iii) Effective agricultural extension, more sustainable farming methods, market incentives (e.g. price) and policy controls on agricultural expansion, to help combat agricultural driven degradation of the environment in general and tropical forests in particular.
- iv) Land use planning efforts to prevent further encroachment of forested areas; including efforts to build adequate human and institutional capacity to implement such plans at the local, district and national levels.
- v) Ecological monitoring and data analysis to track the impact on forest cover and other ecological parameters using monitoring approaches such as the one being used by the TIST program.
- vi) Trans boundary collaboration for forest planning and management to ensure functional landscape level conservation regimes.
- vii) Integrated projects with a focus on watershed management, agro forestry, deforestation and other ecosystem services components.

1.5.3 Threats to Biodiversity Conservation

USAID/Tanzania has a long history of active support to Tanzania's endeavors to safeguard biological diversity while contributing to economic growth through ecotourism. USAID's funds are currently being used to improve management practices in the national park network, the national system of game reserves, the coastal and marine ecosystem, and community-based approaches in areas adjacent to protected areas. The Agency's environment program has strengthened Government of Tanzania institutions with policy analysis, strategic planning, and natural resources management approaches to halt degradation in and around national parks, reserves, and marine environments.

Tanzania's biodiversity is threatened by a variety of human activities ranging from the household micro-level to the national and global macro-levels. Foremost, Tanzania's biodiversity resources are threatened by the failure to effectively manage mounting pressures from agricultural expansion, livestock grazing, wild fires and over-exploitation of the resources. As Tanzania develops, given the strong NRM orientation of its economy, increasing, and often competing demands, will increasingly place unsustainable pressures on the natural resources, threatening the base of Tanzania's economic future. Although Tanzania has contributed about 25% of her land area to protected area networks, many of these protected areas have been created without consideration for the needs of the surrounding communities (grazing areas, fuelwood, water etc). As a result, local people lack incentives to respect protected area boundaries, frequently disturb habitats through land clearance and natural resource extraction, and take wildlife for their own uses, such as food, skin and for-profit sales.

The study has identified the following general threats:

- i) The highest percentage of terrestrial bio-diversity in Tanzania occurs in protected areas. As such conflicts over bio-diversity value may occur between the mineral sector and the natural resources sector when minerals also occur in these protected areas.
- ii) Unplanned human and livestock migrations leading to widespread deforestation and overgrazing.
- iii) Rapid growth of rural and urban populations which leads to loss of habitats due to settlement, agriculture, grazing, mining and logging.
- iv) Most bio-diversity hot spots including the Rufiji Delta, Coastal forests and Eastern Arc Mountain catchments remain unprotected and open to wanton destruction.
- v) Inadequate or lack of inventories of bio-diversity resources in protected areas hence, little knowledge of their bio-diversity potential.
- vi) Inadequate experts in the field of zoology, entomology, ecology, and botany particularly in high learning institutions, thus many species disappear unnoticed.
- vii) Not many studies have been done on ecosystems, such as wetlands and coastal forests (especially mangroves nor on traditional use of mushrooms and medicinal plants.
- viii) There is a lack of catalogue and field guides for some plant and animal families.
- ix) Improper execution of the established planning process and regulations in the country,
- x) There is lack of umbrella environmental legislation, and
- xi) Poor interaction between communities and institutions responsible for biodiversity conservation.

In addition to these general threats, the study identifies further specific threats thus:

Agricultural expansion

The greatest threats to Tanzania's biodiversity are in the areas of highest population density. These threats are likely to be compounded by globalization through intense development and international investment, bringing improvement to communications and opening up previously inaccessible areas to economic exploitation including large scale commercial agriculture.

Artisanal Mining

Unlike large-scale mining operations such as the Bulyankhulu Gold Mining etc. that are usually preceded by comprehensive environmental assessment and backed up by parallel environmental impacts mitigation plans, artisanal mining in Tanzania still has a long way to go towards environmental safety. Tanzania's biodiversity is directly threatened through the pressures exerted by the explosion of artisanal miners' populations on flora and fauna in prospective mining areas. Furthermore, lack of proper environmental health and safety procedures, adequate working tools, appropriate technology and basic infrastructural facilities in the informal gold mining sector of Tanzania have led to mercury pollution, and other forms of pollution leading to environmental degradation, and subsequently biodiversity losses. Recognizing that informal mining employs a large percentage of women, especially in downstream activities, Tanzania government is keen to devise a holistic long-term strategy for transforming artisanal mining into sustainable small mining by improving the legal and regulatory conditions of artisanal mining and ensuring that appropriate institutions are established and adequately financed. USAID's future role in the sector will seek to stem further mining-related loss of biodiversity by supporting NGO/ Private sector participation by helping with training of artisanal miners to operate in environmentally sound manner. USAID will play a catalytic role by disseminating best practices and experiences, financing policy reforms and targeted actions, and standards-setting programs.

Hunting and bushmeat trade

Hunting is historically responsible for the absence of several large mammals (buffalo, rhino, elephant, leopard, and bushbuck) from large areas in the biodiversity hotspots where they used to roam. The local bushmeat trade threatens smaller mammals. Although this trade is not on the scale found in West and Central Africa, local consumption of game meat can threaten rare wildlife. For example, the endangered Aders' duiker has been reduced to very low population levels by local hunters in Jozani Forest in Zanzibar. Bushmeat hunting is also attributable to an increase of refugee populations in North Eastern Tanzania as a result of the conflicts in neighboring Burundi, Rwanda and the DRC.

Habitat loss

Biodiversity is threatened by several direct and underlying processes which have led to the clearing of forest land at a rate of 400,000 hectares per year during the past two decades. These processes relate, in part, to the conversion from forest to commercial agriculture and mining because of export-oriented policies widely applied at the national and global levels. Habitat fragmentation and loss caused principally by agriculture and infrastructure development is the greatest threat to biodiversity. Many of Tanzania's large emblematic species depend on large areas of unbroken forest. Any activity that facilitates the movement of people and establishment of agriculture will lead to habitat loss. Road building will certainly dictate the geographic direction of major habitat loss.

1.5.4 USAID's Future Actions to Improve Tanzania's Effectiveness of Biodiversity Conservation

USAID's current program has set the stage by identifying an appropriate balance between conservation and development through policy and legislative reform, capacity strengthening, and pilot activities. The proposed CSP will implement programs that will

capitalize investment in these areas, helping Tanzania to attain and maintain that balance, while achieving significant results in areas of both biodiversity conservation and improved livelihoods. USAID's new program will demonstrate ample opportunities for conserving biodiversity on the following specific targets:

- i) *Support for Improved Biodiversity/Natural Resource Management Policies at the National and Local Levels* by capitalizing on the enabling environment so far established through USAID's coastal, wildlife and other policy interventions. Particularly, field-application of key natural resource policies e.g. providing increased tenure security for community natural resources (for example through assistance to communities in drawing community natural resources management plans, etc).
- ii) *Promotion of Sustainable Livelihoods* by building on the foundation and opportunities established by USAID's previous investment and increasing the attention to improving rural livelihoods, while retaining biodiversity conservation as a core goal.
- iii) *Intensification and Improved Management for Agricultural Production* through promotion of mariculture, aquaculture, agro-forestry, pastoral techniques, and high yielding seed varieties. These interventions will be accompanied with deliberate efforts to prevent encroachment into areas of critical biodiversity and protect the health of land and the broader environment as the key means towards peoples' improved health and livelihoods.
- iv) *Inventory and improve protection of key areas of biodiversity* (in current and/or new protected areas) by establishing ecological monitoring and data/ information management capacity to support science-based management action.
- v) *Integrate protected areas with other surrounding land uses* by developing/ implementing management plans for protected areas and creating multiple use buffer zones where local populations participate in sustainable management of natural resources.
- vi) *Curb poaching and illegal bush-meat hunting* – through both protection and incentives.
- vii) *Strengthen institutions* and public-private-community linkages to establish the needed human, institutional and financial capacity for sustainable management of biodiversity in Tanzania.

Chapter 2: THE STATE OF TANZANIA'S ENVIRONMENT

This chapter presents the most important resources of the country followed by a description of the most significant environmental problems. The nature and extent of environmental threats facing the country's natural resources base are described. The chapter also highlights areas which are environmentally sensitive and programmes with significant influence on environmental change.

2.1 THE BIOPHYSICAL ENVIRONMENT

2.1.1 Geographic setting

Tanzania is located on the eastern coast of the African continent south of the equator between latitudes 1° 00' S and 11° 48' S and longitudes 29° 30' E and 40° 30' E. Eight countries--Kenya and Uganda in the north, Rwanda, Burundi, Democratic Republic of Congo and Zambia in the west, Malawi and the Republic of Mozambique to the south--share boundaries with Tanzania. The eastern side of Tanzania is a coastline of about 800 Km long marking the western side of the Indian Ocean.

Tanzania, with an area of 942,784 Km², is the largest country of the three East African Community member countries, the others being Kenya and Uganda. Out of the land mass area, water bodies cover 61,495 Km² (6.52% of the total area), 88% of which is made up of the three big lakes of Victoria, Tanganyika and Nyasa. Other major water bodies include Lake Rukwa and the soda lakes, Natron, Manyara, Burunge and Eyasi. There are several inland major wetlands including the Malagarasi/Moyowosi and Lake Manyara, both of which have been declared Ramsar sites of international significance under the international Ramsar Convention.

2.1.2 Climate

As a consequence of a diversity of landscapes and land features, Tanzania experiences a variety of climatic conditions ranging from humid coastal to alpine deserts crowning the high peaks of Mt. Kilimanjaro and Mt. Meru mountains to highland montane forest and moist tropical forest. The coastal area and all of the islands in the Indian Ocean experience a tropical climate, and most of the country is sub-tropical except for the areas at higher altitudes. The coastal areas are influenced by two monsoon winds, which comprise of the northeast and southeast monsoons. The northeast monsoons blow southwards from December to March and bring with them hottest temperatures; the southeast monsoons blow northwards from March to September bringing with them heavy intermittent rains. June and July are the coolest months and sometimes temperatures become so low as to result in frost around higher altitude and highlands areas (like Kitulo in Mbeya and Iringa regions).

There is a considerable variation in temperatures influenced by altitude; it ranges between below 0° C on top of Mountains Kilimanjaro and Meru and in the higher altitude highlands and the Kitulo plateau in the southern highlands to above 29° C along the coast. Rainfall in about 75% of the country is erratic and only 21% of the country can expect an annual rainfall of more than 750 mm with a 90% probability. The mean annual rainfall varies considerably, ranging from less

than 400 mm to over 2,500 mm per annum. The driest areas in the country are found in a 100 to 250 km wide strip, which runs from the Kenyan border through portions of Arusha, Manyara, Singida, Dodoma, Iringa regions and to the northern part of Mbeya region bordering Singida where rainfall ranges from less than 400 mm to 800 mm per annum. These areas also have very high evapo-transpiration rates that exceed precipitation rates for most of the year. However, in the highlands and higher altitude parts of the country in Morogoro, Kilimanjaro, Mbeya, Arusha, Manyara, Kagera, Kigoma and Tanga regions, the Ukerewe and Kara islands in Lake Victoria and the northern shores of Lake Nyasa average annual rainfall is more than 1,500 mm (Country Study, 1998).

2.1.3 Physiography and Agro-ecology

As evident from the physiographical map on page viii, Tanzania is a very physically diverse country, with both the lowest and highest points in Africa (Uhuru Peak, summit of Mt. Kilimanjaro at a height of 5,865 m above sea level and the floor of Lake Tanganyika which has a depth of 1,470 m below sea level). Topographically, the continental margin has a dissected continental slope with a narrow continental shelf within the 200 meters depth contour between four and 60 Km from the coastal shoreline. With a spectacular landscape, the country can be classified into mainly three physiographic regions: the islands and the coastal plains to the east; the inland saucer-shaped plateau; and the highlands. The Great Rift Valley of Africa, whose escarpment runs from Malanje Mountain in Malawi through Tanzania, Kenya, and Ethiopia into Saudi Arabia, divides Tanzania into three distinct masses of land. The eastern arm of the Great Rift Valley runs from Lake Natron through Lake Manyara to Lake Nyasa while the western arm forms a distinctive ridgeline along the eastern shores of Lake Tanganyika extending through western shores of Lake Rukwa and again converging to Lake Nyasa in the south west of the country.

Most of the country is part of the Central African plateau (1,000 – 1,500 m a.s.l.) with gently sloping plains and plateaus broken by scattered hills and low-lying wetlands. The coastal belt and the islands are of much lower altitude (0 – 250 m a.s.l.) and the landscape differs markedly from

Nine physiographically stratified regions described by a 1994 joint study of World Bank – Tanzania have been further refined. This refinement divides the country into four main physiographic regions⁸ namely:

a) *The lowland coastal zone*

This zone comprises the coastal plain and low lands with altitude ranging from 0 to 1000 m.

b) *The highland zone*

This zone is comprised of the dissected highlands, up to 2100 m, which flank the deep trough of Lake Tanganyika to the west, including the southern portion of the Albertine Rift, which extend from the north in Uganda. The Eastern Arc Mountains of Uluguru, Nguu, Usambara and Pare mountains mark the eastern boundary. In the northeast, tectonic and volcanic activity produced spectacular mountain peaks and highlands in the Eastern Rift Zone including the snow-capped Mt. Kilimanjaro, Mt. Meru, the Ngorongoro crater and Ol Donyo

⁸ National CBD Implementation Report, 2001

Lengai. The Southern Highlands include the Livingstone ranges as well as Rungwe, Poroto, Umalila, Mbisi and Mbeya Mountains, and Kitulo and Ufipa plateaus.

c) *The Plateau zone*

This zone with average altitude of 1200 m above sea level is comprised of gently undulating countryside over much of the western half of Tanzania and includes certain areas around Lake Victoria.

d) *The semi-arid zone*

Throughout much of central Tanzania, the country is characterized by generally flat topography, undulating, isolated hills, and inselbergs or rock outcrops. The altitude is between 1200 and 1500m.

2.1.4 Status and Management of Protected Areas

In preserving its rich biodiversity Tanzania has made tremendous achievements through policy and legislative frameworks and initiatives which result in areas being set aside and established as protected lands with varying restrictions in respect of access and use. Control and use of restrictions are geared at supporting the country's endeavor to protect its natural heritage and to preserve the natural endowments and the biodiversity there in. About 38% of the Tanzania's 886,000 km² total land area is protected, covered by forests and woodlands that provide for wildlife habitat, unique natural ecosystems, biological diversity, and water catchments. The protected area network is comprised of 12 national parks (with additional two more in the pipeline), 31 game reserves, 43 game controlled areas (GCAs), one multiple land use area (the Ngorongoro Conservation Area), more than 500 forest reserves (from national, regional, local and village), and one marine park.

The national park category accords the highest protection status of all protected areas in the country where human settlement, consumptive utilization of natural resources, hunting, grazing of domestic animals, and felling of trees are prohibited. The game reserves category is managed like a national park but access and utilization of wildlife resources through hunting is allowed by permission. Under the government decentralization policy management of forests is implemented under six categories namely: Forest Reserves, Local Authority Forest Reserve, Monuments, Village Forest Reserves, Private Forest Reserves and Public Lands/Public Forests. Under these categories of management status, biodiversity values of the indigenous forests are recognized as an important attribute by management and, as such, harvesting of indigenous hardwoods has been banned now for the last 10 years.

The Ngorongoro Conservation Area is a multiple use land area where biodiversity conservation and pastoral grazing go hand in hand. However, agricultural cultivation is strictly controlled and only very basic subsistence cultivation around households by local Maasai pastoralists is permitted.

The game controlled areas (GCA) category of protected area in Tanzania offer very little protection of biodiversity because the majority of them are located on village lands and in practice have been settled by humans where little or no control of what type of land use is being exercised. It is in such GCAs that hunting concessions are offered by the government to hunting companies. However, the new government policy on wildlife has allowed communities to participate in the management of such areas through the promulgation and of the Wildlife Management Area (WMA) (2002) Regulations. Through the Wildlife Management Area Regulations local communities are empowered to make decisions regarding management, access,

and utilization of the wildlife resources within their WMA, and to ensure benefits accruing from such utilizations contribute towards their socioeconomic development efforts.

The new government thrust and focus on poverty alleviation is to make sure that its agencies collaborate and work in partnership with local communities in planning on how communities adjacent to or within protected areas can equitably share the benefits, which accrue from these resources. This will also make them part and owners of the resources and provide incentives to care and protect resources. Through renewed government commitment recognizing local communities' expertise, the country may be able to assure the use and protection of local community indigenous knowledge and genetic property rights. Through such approaches, government efforts in protecting natural resources in these areas from constant pressures of human activities as a result of agricultural expansion, livestock grazing, wild fires, over-exploitation and unsustainable utilization of wood resources may be successful.

2.1.5 Soils

Tanzania has typical tropical soils with a generally low nutrient content particularly in regard to nitrogen and phosphorus. Despite the presence of a great variety of soils, the most suitable for agriculture occur in a few highland places like Arusha, Manyara, Kilimanjaro, Tukuyu and Mbeya. Only 9% of Tanzanian soils are of medium to high fertility, 23% of low to medium fertility and the remaining soils (more than 60%) are generally of lower fertility (FAO-UNESCO, 1977). The coastal zone is mainly covered with deep, sandy to heavy textured soil with moderate to high water content. Sandy loams of a low nutrient content and low water holding capacity mantle most of the central and western plateau areas. The northern portions of the country including extensions in Kagera, the Maasai Steppes and the southeastern plateau have moderate to low fertility soils that are dominated by *Ferric Luvisols*. Well drained volcanic soils of high ash content are found in the northern and southwestern rift zones and volcanic areas. The principal and most common soil type are the *Ferric Acrisols* characterized by a subsurface horizon of clay accumulation, relatively low pH and cation exchange capacity. *Chromic Luvisols* are dominant in areas of very high biodiversity encompassing the eastern arc crystalline mountains with relatively fertile soils and structurally well-developed subsurface horizon. The soils around Lake Victoria especially south-east and east of the lake are *Pellic Vertisols* type that although characterized as normally fertile, are poorly drained and comprised of expanding clays that are seasonally inundated with water and crack when dry. Among the most infertile soils present in certain areas of the country, particularly in certain parts of Kagera, Lindi and Mtwara regions are *Orthic Ferralsols*.

2.1.6 Vegetation

Tanzania possesses a very diverse vegetation cover encompassing coastal forests, savannah, montane forests, moist tropical forests and alpine desert relic vegetation. Tanzania has about 33.5 million ha of forests and woodlands, two thirds of which is located on public lands. Only about 13 million ha of this total forest area have been gazetted as forest reserves and about 1.6 million ha are classified under a water catchment category with total protection management. Forests and woodlands occupy less than 50% of the total land surface of Tanzania mainland. Mangrove forest covers a stretch of about 800 km along the coast, mainly in brackish water. In addition to natural forests, there are about 150,000 ha of softwood and hardwood forest plantation.

Tanzania is one of 25 global “Biodiversity Hotspots” of international significance and is ranked among the 12 mega-diversity countries on earth. It has more than 11,000 plant species with more than a quarter of them endemic. Based on the physiognomy of the dominant vegetation, Tanzania’s vegetation is classified into the following types:

- Forests

Comprised of vegetation types with an interlaced canopy of woody plants exceeding 8 m height and is estimated to cover slightly over 16,000 km² of the land area of the country. Most of the forest is dry savannah and highland forest. The most important forest type is the latter, which occur in the “eastern arc” mountains, the southern highlands, the Mahale Mountains in Kigoma, and the northeastern highlands. Common tree species include: *Afrocrania volkensii*, *Abizia schimperiana*, *Balthasaria schliebenii*, *Celtis spp.*, *Dracaena spp.*, *Ilex mitis*, *Mannea usambarensis*, *Podocarpus spp.*, *Prunus Africana*, *Sorindeia madagascariensis*, *Syzygium guineense*, *Tabernaemontana spp.*, and *Zanthoxylum spp.* Dry savannah forest are present in the central and northern parts of the country. Dominant tree species include: *Commiphora zimmermannii*, *Lannea welwitschii*, *Macaranga capensis*, *Acacia tortilis*, *Ficus spp.*, *Parinari excelsa*, *Vitex spp.*, *Terminalia spp.*, *Adansonia digitata*.

- Woodlands

The woodland vegetation occurs as stand of trees up to 2 m in height with an open or continuous, but not interlaced, canopy with tree cover of at least 20%. Miombo is the dominant woodland foliage in Tanzania supplemented by the following species of plants: *Julbernadia spp.*, *Brachystegia spp.*, *Pterocarpus spp.*, *Kigelia africana*, *Kigelia aethiopicus*, *Isobertinia spp.*, *Tamarindus indica*, *Commiphora pilosa* and other deciduous trees.

- Bushlands and thickets

These are comprised of dense vegetation communities that are dominated by woody, often multi-stemmed, relatively short plants that grow in semi-arid and arid areas of the country. Their distribution is controlled by precipitation and soil conditions. This type of vegetation mostly occurs in the central regions of the country encompassing large areas of Dodoma and Singida regions and eastern areas of Tabora. These also occur in patches throughout the other semi arid and arid regions of the country. The bushlands, thickets, and woodland vegetation types have adapted to water stress, which allows them to survive in extremely water deficient parts of the country.

- Wooded grasslands and grasslands

This is a grass-dominated vegetation type with less than 20% woody plant cover. Areas covered by this type of vegetation provide some of the most important grazing land of the country, home to the majority of herbivores. The grass lands are found in Arusha, Manyara, Shinyanga, Mara (in the north) and Iringa region in the south. Dominant woody species include different *Acacia spp.* and *Combretum spp.* Common grass species include *Themeda triandra*, *Sporobolus spp.*, *Kylinga nervosa*, *Pennisetum spp.*, *Andropogon spp.*, *Digitaria spp.*, and *Panicum spp.* The vegetation type forms the cradle of protected areas in the country including unique ecosystems like the Serengeti and Tarangire National Parks.

- Permanent swamps/wetlands, marshes and aquatic resources

Tanzania’s wetlands are some of the most diverse in the world and contain vital resources. Represented by marine and freshwater ecosystems, rivers, deltaic mangroves, and swamps, the dominant vegetation in freshwater swamps includes *Cyperus papyrus* and *Phragmites spp.* Further details are available in the Freshwater and Wetland Resource Section below.

2.1.7 Freshwater and Wetland Resources

Tanzania has a diverse range of national (and international) wetland resources. These include the great lakes system, major river networks, and deltaic mangroves. Wetlands in Tanzania support an extensive trading and transport system, rural and urban domestic water supply systems, fishing grounds, mariculture, agro pastoral activities, hydrological processes, irrigation, and hydropower generation. Constituting about 10% of the country's land surface, wetlands have major socio-economic functions in addition to aesthetic, cultural and religious values that are often taken for granted. The diverse offerings of the wetlands provide the livelihoods for large numbers of people, ranging from rice cultivation, to foraging for fish and other livestock, to the weaving of baskets, mats, and rafts from native papyrus and palm. Additionally, strong historic and cultural/ritual importance is attached to certain wetlands by ethnic groups. Currently fishing is the most important activity associated with aquatic resources, with fresh water fisheries accounting for over 80% of total fish catches (*National Report, 2001*).

Lake	Water Area Sq. Km.	Shoreline Length Kilometres	River	River Length Kilometres
Lake Victoria	32,496	1,770	Ruvuma	704
Lake Tanganyika	13,392	662	Great Ruaha	570
Lake Nyasa	5,651	327	Malagarasi	432
Lake Rukwa	2,624	362	Pangani (Ruva)	334
Lake Eyasi	1,103	218	Rungwa	309
Lake Natron	917	146	Ruvu	306
Lake Manyara	466	111	Rufiji	293
Lake Kitangiri	102	56	Wembere	252

Tanzania's fresh water lakes include Tanganyika, Rukwa, Victoria, Malawi, Eyasi, Natron, Kitangiri and Manyara. Inland lakes cover 7% of the country. Major rivers include Rufiji, Ruvuma, Pangani, Ugalla, Great Ruaha, Rungwa, Ruvu, Wembere and Malagaras.

Swampy areas cover 5.8% of Tanzania. Together these resources constitute an intertwined network of transportation, culture, livelihoods, power, trade, and biodiversity.

These resources have over the last few years have become progressively threatened by over utilization and inadequately planned management, augmented by a lack of basic information and public awareness of their intrinsic values, functions and products.⁹ Check footnote #s; To alleviate the radical trends of these threats, various national and regional programmes are in place geared towards conservation and the wise use of resources. Implementation is being done at national and landscape levels and through interaction with neighboring countries with similar resources and problems. As Tanzania's economy and the livelihoods of its progeny substantially rely on these resources the need to work towards a rational balance between conservation and sustainable utilization for livelihoods and economic growth is becoming increasingly clear. Fisheries and general aquaculture practices are a vital source of food that translates into valuable economic benefits to the local communities involved in these activities.

2.1.8 Wildlife Resources

Tanzania has a unique natural heritage which includes a rich and diverse spectrum of wildlife, including many endemic species and sub-species. The country ranks among the top five African biologically rich countries with 310 species of mammals, 1060 species of birds and 273 species of reptiles (Stuart and Adams 1991). Such high biological diversity is also associated with a high degree of endemism for example, primates, (20 species and 4 endemic), antelopes (34 species and 2 endemic) fish (with many endemic in Lake Victoria, Tanganyika and Nyasa and other small lakes and rivers), reptiles (290 species and 75 endemic), amphibians (40 endemic) and

⁹ G Kamukala, Wetlands of Tanzania

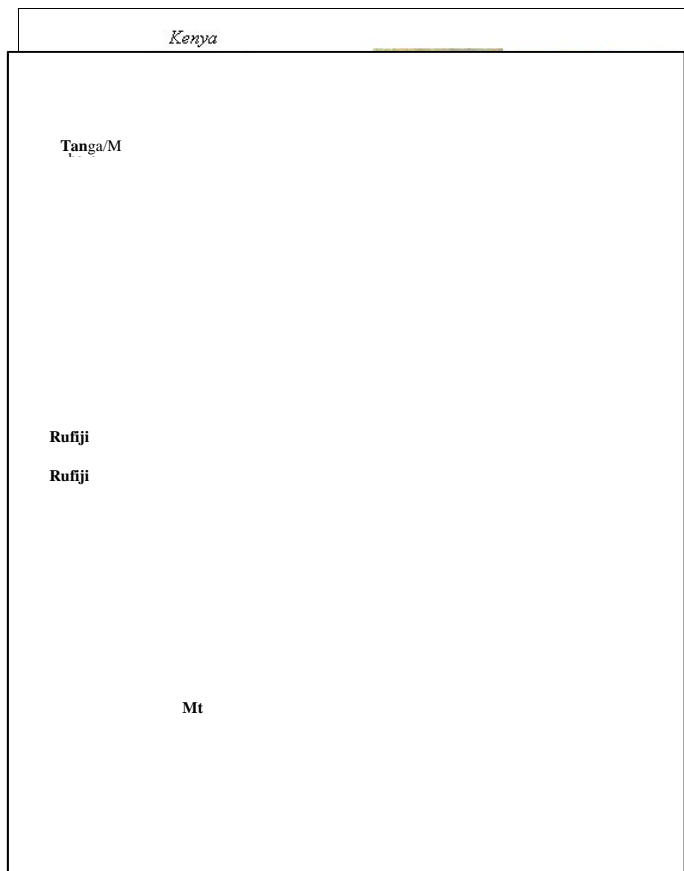
invertebrates. Limited studies on invertebrates have shown that several species of swallow-tail butterflies and dragon flies are endemic to the Eastern Arc montane forests.

In Africa, Tanzania boasts the third largest population of elephants, and probably the largest population of wild dogs and hippopotamuses. The country also possesses the largest, and only surviving, wildlife migration spectacle involving well over one and a half million wildebeest, zebra, Thompson's gazelles and their attendant predators anywhere in the world. Nationally wildlife is regarded as one of the key natural endowments of Tanzania, contributing to biological, economic, and spiritual values. Further detail on Tanzanian wildlife is available under the Biodiversity section, according to flora, fauna, mammals, avifauna, ichthifauna, and insects.

2.1.9 Coastal Resources

Mangroves are salt tolerant trees or shrubs that form the major component of the complex tropical and subtropical mangrove ecosystems. These ecosystems occupy the inter-tidal zone, primarily in muddy, sheltered areas of the coast such as bays, inlets, estuaries, channels and the leeward sides of islands. They sometimes cover vast areas in large river deltas. Other components of mangrove ecosystems include algae, marine fauna, and terrestrial animals living in the tree canopy.

Mangrove forests occur in the coastal districts of Tanzania. There are nine species of mangroves in mainland Tanzania and a tenth species on Zanzibar. The largest continuous mangrove areas are found in the districts of Rufiji, Kilwa, Tanga-Muheza, and Mtwara.



Mangrove coverage has declined in the districts of Rufiji, Kilwa and Mkuranga during the last decade and slightly increased in other districts. The area covered by mangroves in mainland Tanzania was approximately 109,593 ha from 1988-1990 and about 108,138 ha in 2000 (Wang, Y. Q. et al. 2002).

Importance of Mangrove Ecosystems

Similar to coral reefs, mangrove forests are considered critical habitats with great ecological and socio-economic value. They are keystone ecosystems because they have high productivity, producing large quantities of organic matter that serve as food for many organisms. This includes those living within the forest and also outside it, since much of the organic matter produced is exported to other areas of the marine environment. Mangroves also serve as feeding, breeding, and nursery grounds for a great variety of invertebrates and fish, many that move out

into the ocean during the adult stages. In addition, mangroves filter river water and facilitate the settlement of sediments, which would otherwise be detrimental to surrounding sea grass beds and coral reefs. Mangroves also play an important role in stabilizing the coastline, preventing shoreline erosion. Economically, mangroves are a source of firewood, charcoal, building poles, materials for boat construction, tannin, and traditional medicines. Moreover, mangrove forests serve as great tourist attractions and have important scientific value.

2.1.10 Current Threats (as of 2001)

During past decades, degradation of mangroves occurred in many parts of the country. Besides a decrease in the area covered by mangroves, there was also considerable decrease in the density, height and canopy cover of the mangroves. The areas hardest hit were those near urban centres, such as Maruhubi in Zanzibar, Kunduchi, Mbweni and Mtoni in Dar es Salaam and forests around Tanga town. Less accessible areas such as Rufiji remained largely pristine.

A causal chain analysis¹⁰ of the loss and modification of marine ecosystems in Tanzania revealed that the major immediate causes of the past degradation of mangrove forests were the over-harvesting of mangroves (46%) for firewood, charcoal-making, building poles and boat-making and the clear-cutting of mangrove areas (30%) for aquaculture, agriculture, and solar salt water.

During the past decade, increased awareness and conservation efforts, facilitated particularly by the Mangrove Management Plan (MMP), have resulted in some recovery of mangrove forests, especially in Tanga (with collaboration from Tanga Coastal Zone Conservation and Development Programme), Lindi and Mtwara.

2.2 POLITICAL AND SOCIOECONOMIC ENVIRONMENT

2.2.1 The Economy

Tanzania is progressively recovering from a prolonged period of economic decline and social imbalance. With the Structural Adjustment Programs (SAPs) of the 1980s, Tanzania has been transforming into a market economy apparently in a state of growth. In 1986, Tanzania undertook a major review of the country's development strategy and started building a liberalized economy based on the market and private sector. This change in government's economic management and development strategy facilitated the country's negotiations with the Bretton Woods institutions and the Economic Recovery Programmes (ERP) were established and implemented until 1992. ERPs were replaced by the medium-term three-year Rolling Plan and Forward Budget Framework (RPF), now in operation as Medium-Term Expenditure Framework (MTEF).

Though the implementation of ERP, the economy began to emerge from deep under utilization of production capacity caused by the availability of foreign exchange through import-support and other donor assistance; it did not stabilize until 1995. Between 1986 and 1990 the growth of the economy ranged from 1.8 percent per year in 1986 to 7 percent in 1987, with an average growth rate of 4.4 percent per year over the period. The period 1991 to 1995, the economy experienced a much slowed growth with growth rates ranging from 0.4 percent in 1993 to 3.6 percent in 1995 with an average of 2.0 percent over the period. The impact of the slow trend in the growth of the

¹⁰ Francis et al. 2001

economy manifested itself in very low collection in government revenue and decline in the quality of social services including health and education.

Table : TRENDS OF KEY MACRO ECONOMIC INDICATORS								
<i>Source: President's Office, Planning and Privatization</i>								
	Real GDP Growth - %	Inflation annual average (%)	Merchandise Exports (mil. US \$) – fob	Merchandise Imports (mil US \$)	Export/Import ratio (Good) - %	Overall Bal. of Pyt (mil. US \$)	Current Account Balance (mil. US \$)	Foreign Reserves (months of imports)
1995	3.6	27.1	682.9	1340.5	50.9	-329.5	-589.9	1.6
1996	4.2	21	763.8	1212.6	63	-146.9	-265.1	2.4
1997	3.3	16.1	752.6	1148	65.6	-220	-403.6	3.8
1998	4	12.9	588.5	1382.2	42.6	-461.9	-505.8	3
1999	4.7	7.8	543.3	1415.4	39.7	-111.8	-109	4.1
2000	4.9	6	663.3	1367.6	49.6	-57.7	68	5.6
2001	5.7	5.2	776.4	1560.3	52	-14.9	-50.9	6.3
2002	6.2	4.5	877	1511.3	58	-132.4	285.3	8.9

The period after 1995, except 1997, has seen a sustained increase in the annual growth rate of the economy from 3.3 percent in 1997 to 6.2 percent in 2002. This performance of the economy is attributable to the intensified and sustained implementation of economic reforms, especially the increase in the pace of divesting publicly owned enterprises, increasing investment and the encouraging performance of the agriculture sector.

Poverty is largely a rural phenomenon with 51% of the population having an average income that falls 16 percent below the poverty line. As for food security, the national rate has declined from 21.6 percent in 1991/92 down to 18.7 percent in 2000/01. For the basic-needs-poverty, the rate also declined from 38.6 percent in 1991/92 to 35.7 percent in 2000/01.

Increased rates of unemployment and under-employment, especially for youth, has reduced purchasing power of most families and increased the number of poverty stricken families. The health of an increasing number of Tanzanians is being threatened by diseases such as malaria, typhoid, and HIV/AIDS. These are a few indicators of poverty in Tanzania.

Poverty eradication is considered the top priority in Tanzania. Suggested measures as outlined in the GOT Development Vision 2025 include: optimal mobilization, utilization, and control of both local and international resources (land, labor, technology, finance, etc), greater democracy and more political maturity among Tanzanians for assurance of national peace, security, and participatory development initiatives.

Table : POVERTY INDICES IN TANZANIA (%)				
<i>Source: Household Budget Survey 2000/01</i>				
	Food		Basic Needs	
	1991/92	2000/01	1991/92	2000/01
Dar es Salaam	13.6	7.5	28.1	17.6
Other Urban	15	13.2	28.7	25.8
Rural	23.1	20.4	40.8	38.7
National	21.6	18.7	38.6	35.7

2.2.2 Demography

The Population Dynamics:

The population of Tanzania is 34.6 million according to the 2002 census report, with the overall sex ratio of 96 men per 100 women. About 44% of the entire population is under the age of fifteen. The national average growth rate remains a steady 2.8 % per year as recorded in the two prior censuses. Local growth rates, however, vary considerably ranging from 4.8 % per annum in Kigoma Region to 1.4 % in Lindi. Other than Kigoma, where much of the growth may be due to the recent influx of refugees, the regions that show high rates of growth are dominated by large urban areas (Dar es Salaam and Zanzibar's Urban West), strongly suggestive of increasing rural-urban migration. However Tanzania remains among Africa's least urbanized countries with over 85% of its population in rural areas. The main features of population distribution are:

- (i) Sharp discontinuities in density, with a number of densely populated areas separated from each other by zones of sparse population;
- (ii) The comparatively low population density in much of the interior of the country; and
- (iii) In most parts of the country, rural settlements tend to consist of scattered individual homesteads rather than nuclear villages.

This translates into a relatively low overall population density of about 39 persons per km². However, the spatial distribution is uneven with some regions, such as Dar es Salaam, hosting over 1500 inhabitants per km² (Bureau of Statistics 2003); while others such as Lindi, Rukwa, Ruvuma, and Tabora, remain sparsely populated, partly due to the presence of the tse-tse fly, infertile soils, unreliable rainfall or lack of infrastructure.

Implication of population growth on sustainability:

The population involved in agriculture has traditionally settled in areas suitable for crop production and mixed farming. Indigenous knowledge of trees and grasses as indicators of land suitability were used. Today, rainfall and soil fertility remain the key decisive factors governing population distribution and density.

About 10% of the country receives adequate rainfall (over 1000 mm per annum) and carries 60% of the population; 8% is fairly well watered and carries 18% of the population; 20% is poorly watered and carries 18% of the population; and 62% is poorly watered and carries 1% of the population. Thus over 80% of Tanzania's population today is concentrated on only about 20% of its land.

Rapid population growth is an environmental concern for several reasons including:

- (i) Increased imbalance between the natural resources and people who need them to survive;
- (ii) Shortening of fallow cycles, exhausting soil nutrients in agricultural activities; and
- (iii) Increasing the demand for food, environmental services and land.

The National Population Policy:

Key NPP Goals: The National Population Policy (NPP, adopted in 1992) recognizes that there is no simple one-size-fits-all relationship between population, resources and environment, and governance. Promotion of a more harmonious relationship between urban and rural development in order to achieve a spatial distribution of the population conducive to the optimal utilization of resources.

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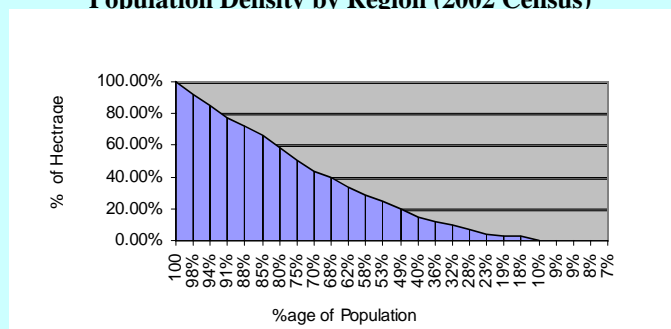
Population growth may not be the primary obstacle to development. Nevertheless, it is widely recognized that a high population growth rate aggravates the economic situation and difficult. At the macro-level, a rapid and high population growth rate results in increased outlays

on private and public consumption, drawing resources away from savings for productive investment.

Specifically the policy recognizes that:

- (i) the impact of population growth on natural resources and the environment is significant;
- (ii) due to rapid population growth and the increased number of livestock there has been increased pressure on natural resources, leading to their over-utilization and degradation;
- (iii) demand on the environment is evident by the expansion of land for agricultural purposes and to meet housing requirements and recreational amenities; and
- (iv) Capacity building, advocacy and population education through information, education and communication are essential to control future growth.

Population Density by Region (2002 Census)



Region	Spatial Area (Sq. K ms)	No. per Sq. km (Y:2002)	Regional population	% pop.	% Area
Dar es Salaam	1,393	1793	2,497,649	7%	0.16%
Urban West	230	1700	391,000	8%	0.18%
South Pemba	332	531	176,292	9%	0.22%
North Pemba	574	324	185,976	9%	0.29%
North Unguja	470	291	136,770	10%	0.34%
Mwanza	19,592	150	2,938,800	18%	3%
South Unguja	854	111	94,794	19%	3%
Kilimanjaro	13,309	104	1,384,136	23%	4%
Kagera	28,388	72	2,043,936	28%	7%
Mara	19,566	70	1,369,620	32%	10%
Mtwara	16,707	68	1,136,076	36%	11%
Tanga	26,808	61	1,635,288	40%	15%
Shinyanga	50,781	55	2,792,955	49%	20%
Kigoma	37,037	45	1,666,665	53%	24%
Dodoma	41,311	41	1,693,751	58%	29%
Arusha	36,486	35	1,277,010	62%	33%
Mbeya	60,350	34	2,051,900	68%	40%
Pwani	32,407	27	874,989	70%	44%
Iringa	56,864	26	1,478,464	75%	50%
Morogoro	70,799	25	1,769,975	80%	58%
Tabora	76,151	23	1,751,473	85%	67%
Manyara	45,820	23	1,053,860	88%	72%
Singida	49,341	22	1,085,502	91%	78%
Ruvuma	63,498	18	1,142,964	94%	85%
Rukwa	68,635	17	1,166,795	98%	93%
Lindi	66,046	12	792,552	100%	100%
Total Tanzania	883,749	39	34,589,192		

2.2.3 Policy / Legal Framework for environmental management

Environmental degradation in Tanzania was noticed as early as the late 1920s. In certain parts of the country, land degradation has significantly reduced the productivity of land, creating desert-like conditions, potentially threatening the health and viability of human and wildlife populations.

This alarming situation has been the driving force behind various initiatives that have been attempted to alleviate the situation. The National Environment Policy (NEP) passed in 1997 has been a useful umbrella policy, addressing a broad spectrum of environmental concerns. Additionally, there have been a number of other policy initiatives that have had particular bearing on the access of communities, and the poor, to natural resources. The Forestry Policy and the Wildlife Policy, both passed in 1998, acknowledge communities as important stakeholders in natural resource management.

These new policies represent a deliberate shift of perspective; local communities are seen more and more as potential natural resource managers rather than abusers. The recent Land and Village Land Acts define individual and community property rights in relation to land, and the Village Land Act in particular ensures access to land by women at the village level. This clarification of property rights should, in principle, provide greater incentives for individuals to undertake improvements to their land and encourage more sustainable management.

Despite these policy initiatives environmental problems have continued to escalate. Cognizant of the dangers which these conditions pose, Tanzania has taken every opportunity to join hands with the international community, by signing and ratifying a number of environmental treaties and conventions. Locally, Tanzania has legislated considerable amounts in the environmental field, but enactment of that legislation has generally been ad-hoc and piece-meal. Effective laws and regulations are among the most important instruments for transforming environment and development policies into action because such policies not only 'command and control', but create a normative framework for economic planning.

Currently, legislation is reactive to current problems rather than taking a longer-term view and trying to prevent potential problems. Thus, legislation places emphasis on the punishment of the culprits and the compensation of the victims of environmental degradation rather than on the restoration of environmental quality. Furthermore, responsibility for the enforcement of environment-related legislation has been entrusted to many specialized agencies with expertise in the management of a particular aspect of an environmental problem. This reflects the fragmentary approach to solving environmental problems.

There is no statutory expression of the national environment policy or a legal regime for the Environmental Impact Assessment (EIA) in the planning process. Without a mandatory EIA process, no one is obliged to assess and monitor the effects of projects and GOT activities on the environment. However, a legal regime requiring mandatory EIA for major development activities with a significant impact on the environment has been recommended in some detail in the recently completed National Conservation Strategy for Sustainable Development (NCSSD) and the first step document of the National Environment Action Plan (NEAP).

Preparation of an Environmental Framework Law is currently underway and should include a statement of the country's highest principles of conservation and guidelines to direct

environmental management activities including the assignment of institutional responsibilities to facilitate greater coordination and control by the Tanzanian agencies involved. The vision is that these coordinating agencies will derive regulatory powers to ensure that executive agencies and line ministries implement environmental policy.

Despite such a challenging background, the government of Tanzania has made remarkable strides towards achieving a successful policy and an institutional environmental management framework. Key achievements include:

- Increase of political will—in recognition of the importance of environment issues; the Parliament established a Parliamentary Committee on Environment in 2001. Its establishment is a clear testimony to the Government's commitment on issues related to environment, particularly land degradation.
- Formulation and completion of the National Biodiversity Strategy and Action Plan (NBSAP) in 2000 to address aquatic, terrestrial and agro-biodiversity management issues
- Several NGOs/CBOs were assisted to take part in the implementation of priority programmes of the National Action Plan (NAP) to combat deforestation
- Inter-sectoral thinking has enabled mainstreaming of environmental issues into the Poverty Reduction Strategy Paper 2001; and integration of the NAP into the 2001 Development Strategies for the Rural and the Agricultural sectors.
- Policy harmonization efforts are seeking to enhance synergy and complementarities. This will reduce duplication of efforts and better allocate the meager resources. Furthermore, various policies are being updated so that they take into consideration socio economic changes that have occurred. One notable outcome is the formulation of the National Policy on Non-Governmental Organizations (NGOs) adopted in 2001. The overall objective of this policy is to create an enabling environment for the NGOs to operate effectively and efficiently in the social and economic transformation of the country. The government recognizes the significant role and contributions of NGOs in the society and considers them as important partners in the development process.

These achievements constitute a set of opportunities that support improved environmental management in Tanzania.

2.2.4 Institutional Framework for environmental management

Environmental issues which cut across several sectors have in the past been sectoralized themselves¹¹. The distances among sectors are wide and, in several cases even related sectors are not effectively coordinated. This has been the root cause for the overlapping responsibilities, conflicts, and subsequent misuse of scarce human and financial resources. The biggest challenge has been ensuring sectoral integration without greatly affecting administrative efficiency and convenience. Attempts to address the challenge of sectoral integration have been made by creating coordinating institutions (The Act establishing NEMC) and locating such institutions within the office of the Vice President.

¹¹ Mwalyosi R.B. (1996)

Executive Branch

The Vice President's Office is the organ of overall policy-making, co-ordination, and planning. This Ministry has overall responsibility for the environment and has a mandate to oversee wider environmental concerns. In addition the private sector, NGOs, and various professional bodies all play a role in activities which have an impact on the environment or have an environmental management function. A number of key sector policies have recently been reviewed to ensure that they reflect an increasing focus on environmental quality objectives. These include the Mineral Sector Policy, the Wildlife Policy, the Fisheries Policy, the Forestry Policy, the Tourism Policy, and the Land Policy. Several sectors are currently formulating or reviewing their policies and laws, taking into account, among other concerns, environmental quality.

Ministries

While the aim was to provide capacity to ensure that environmental concerns are followed within all sectors, operationalisation of relevant institutions both vertically and horizontally has not been smooth. A project on identifying an appropriate Institutional and Legal Framework for Environmental Management (ILFEMP) was begun in 1998 for the operationalisation of the National Environmental Policy; a report on institutional options has only just been completed. Part of ILFEMP's main objective is to recommend an institutional framework that brings together all government actors with environmental functions in a coordinated and balanced manner, with an effective distribution of responsibilities and well-defined supervisory powers. A clear definition of the responsibilities of each institution in a particular sector of the environment is essential for effective implementation of the National Environmental Policy and for guaranteeing good environmental coordination and cooperation, horizontally across sectors, and vertically, from implementation to policy-making levels. ILFEMP's Phase I was completed with its findings confirming many prior concerns, including poor inter-sectoral coordination and linkages between local and national government, weak institutional linkages, conflicting mandates, and a lack of implementing capacity.

District Governance

The Government Agenda for Reform has redefined the role of central and sectoral ministries restricting their responsibilities to policy-making, regulation, monitoring, performance assessment, and interventions to ensure legality of public service provision. The Reform adopts the principle of subsidiarity which has resulted in an increased role for local authorities. Most services, including environmental management, will now be delivered at the district level or below. Environmental Management Committees are being created at district level and are in need of support to carry out their planning and service delivery functions. Plans are also being discussed to set up environmental units within key line ministries. All these changes put more pressure on the coordination of environmental activities.

2.3 THE BUILT ENVIRONMENT

The trends of population growth highlighted earlier in this study are very likely to adversely impact the sustainability of biotic populations and the subsequent natural processes and functions that support all life, both human and non-human. This section examines Tanzania's immediate and long-term infrastructural development plans in relation to the environmental protection imperative, with a particular focus on how Tanzania is deliberately aligning its Built Environment with ecosystems' integrity in a manner that demonstrates a strategic shift from reactive to proactive environmental protection.

In 2002, the construction sector grew by 11 percent compared to 8.7 percent in 2001. This increase was mainly due to more construction of non-residential buildings such as primary school buildings and road construction, and land development, including construction of residential houses. The sector's contribution to Gross Domestic Product increased slightly to 4.1 percent in 2002 from to 3.9 percent in 2001.

2.3.1 Environmentally sustainable urban planning and development

In the past, the growth and development of Tanzania's urban centers was guided by comprehensive plans known as "Master Plans". These were prepared to cover a period of about 20 years, indicating the anticipated growth direction of the cities and townships through land-use zoning with development standards. The 1979 Dar es Salaam Master Plan, for example, provided the framework to manage the future growth and development of the city. However, implementation of the development policies, programmes, and projects proposed in the plan was severely limited because:

- the plans were comprehensive in nature, proposing optimal but unaffordable infrastructure, social-service development, and budgetary requirements;
- they were control-oriented with rigid standards and conditions that could not be enforced in the context of the rapid urbanization;
- implementation was limited by a sectoral approach to development;
- The plans were prepared by expatriates, with limited participation of nationals which reduced local understanding and commitment to implement the proposals.

The 1979 Dar Master Plan has failed miserably in terms of guiding the growth and development of the Dar es Salaam city. There were no institutional mechanisms to co-ordinate the parties involved in managing growth or to encourage investments. The plan was not representative of the interested parties in urban development, as there was no participatory mechanism to involve them in either plan preparation or its subsequent implementation. By 1990 the demands for water, good communications, serviced land, sanitary management of solid and liquid wastes remained unmet, resulting in deteriorating environmental conditions. The streets were full of potholes; the garbage was rarely collected, and half of the population lived in unplanned settlements. Water supply, sewerage and sanitation systems were dilapidated, and a maze of restrictive by-laws prohibited the local authority from entering into any private sector partnerships.

However, the concept of sustainable urban planning and development of human settlements in urban settings has evolved and gained wide ranging recognition and acceptability among Tanzania's policy making, planning, and governance ranks, as well as the general urban populace. As a result a state of rampant ecological chaos, in which the people of Dar es Salaam and other urban centers in Tanzania used to live, has been significantly alleviated.

In collaboration with HABITAT the City Council of Dar es Salaam has managed to initiate an Environmental Management Planning (EPM) system. All participants – slum dwellers, non-

governmental organizations and the private sector – were consulted by the local authority. Care was taken to ensure that input from the grass roots was considered and given due weight and that all groups were allowed to participate in an effective manner. As a result, partnerships among public, private and community sectors have improved the delivery of services. Additionally, squatter settlements and slums have been upgraded – a contribution to national goals on poverty alleviation. Due to the success of the sustainable Dar es Salaam Programme, it has been replicated in 12 other municipalities country-wide.

2.3.2 Utilities and resource uses in urban areas

Water sources and uses: Ground water is a key source of water for both rural and urban areas. It is the source of water for the municipalities of Arusha, Dodoma and Mtwara. Shallow aquifers, or surface water, are emphasized for water supply because they are less costly, but, at the same time, their vulnerability to pollution is high. The increased utilization pressure on surface water is due to a number of factors. Surface water levels are reported to have been decreasing because of loss of vegetation cover and changes in land use patterns, resulting from the increases in population. Rivers which used to be perennial have become intermittent. While irrigation is expected to increase, unregulated abstraction of water is already a source of concern in all major river basins. The demand for water in a number of major urban centers is increasing because the population is also increasing at a fast rate.

A recent study by WaterAid¹² establishes that in urban areas the largest use of water that survives leakages¹³ and other losses through the dilapidated pre-independence era distribution network of pipes is for the household sector.

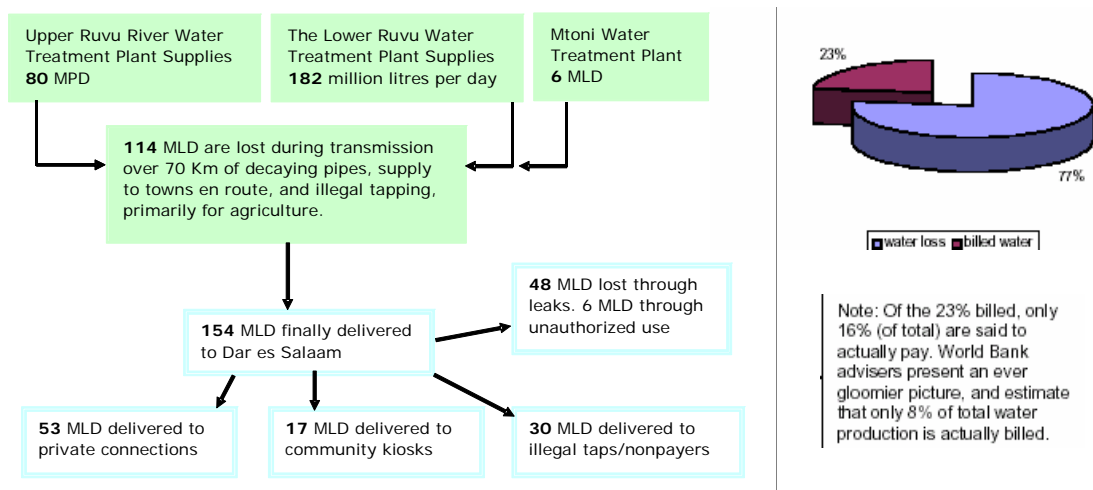


Figure : *The Water Loss Chain of Dar es Salaam*

In Dar es Salaam for example, domestic consumption accounts for approximately 70 percent of total water consumption. Industry typically accounts for about 10-20 percent of total consumption. The demand for water exceeds supply in most urban centers. Barely 65% of urban

¹² WaterAid, 2002, Private sector participation in Dar es Salaam, Tanzania

¹³ See the Water Loss Chain Of Dar es Salaam

and 43% of rural populations have access to potable water within 400 meters; safe drinking water and environmentally acceptable sanitation and sewage treatment also remain issues of priority concern.

Agricultural activity: Despite the general myth that urban agriculture (which broadly includes animal husbandry—dairy, piggery, poultry etc) is environmentally unsound, there is substantial consensus among the urban public that the promotion of urban agriculture based on strategic urban planning is justified on the basis of the following aspects:

1) *Economic:*

- Urban agriculture generates employment and income to urban poor men and women; Enhances urban economy by recycling goods;
- Saves transportation costs; and
- Urban agriculture makes land productive, i.e. land that is either vacant or idle within the city and in peri-urban areas.

2) *Social:*

- Most urban agriculture is carried out by women. It enables women to access resources to provide food close at home and learn techniques in urban agriculture practice;
- Urban agriculture promotes technology transfer e.g. food preserving, cooking, processing and animal and plant husbandry, and broadens community networking to develops skills;
- Institutionalizing urban agriculture may stimulate NGOs and CBOs to contribute to poverty alleviation because urban agriculture contributes directly to household food security, and income from sales can pay for children's education, purchase of medicine etc.

3) *Environmental:*

- Urban agriculture is linked to waste recycling which has potential use in tree planting, gardening in parks and recreational areas, without use of chemical fertilizer;
- Urban floriculture encourages young girls and boys along with men and women farmers towards greening the city and promote confined space management by container farming;
- Roadside urban agriculture conserves soil;
- Planting trees and grass in valleys & flood plains protects hazard areas from human encroachments for housing in hazard prone areas. Terracing reduces erosion hazards on steep slopes; and
- Urban agriculture helps reduce the "urban heat island" through effects of trees and green zones.

Agricultural pollution associated with elevated concentrations of nutrients and pesticides in soils and water bodies, acute soil erosion and human-livestock disease dynamics are some of the key threats that urban farmers and general public have to deal with strategically.

In coastal settings elevated concentrations of both nitrate and phosphorous in agricultural run-off can lead to eutrophication of freshwater and near-shore coastal waters. The problems associated with eutrophication include rapid increases in phytoplankton (algal) biomass leading to changes in the physical and chemical composition of water, including a decline in dissolved oxygen concentrations. Increases in nutrient concentrations and reductions in water clarity can have deleterious effects on coral health. In addition, algal blooms release toxins that poison shellfish. Pesticides in agricultural run-off have resulted in the destruction of mangrove ecosystems.

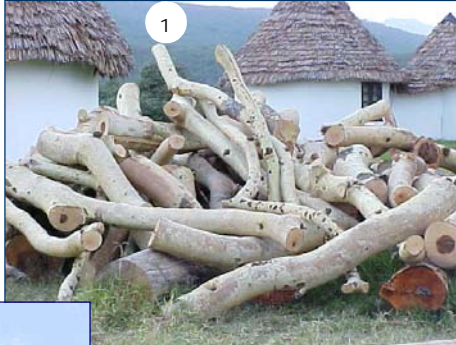
Intensive use of agricultural land leads to the mobilization of sediment, which reduces water clarity and damages sensitive coral habitats.

Urban use of Charcoal: In his recent article for the East African, Journalist Zephaniah Musendo writes of deforestation trends in Tanzania, warning that if they continue, water catchment areas will be reduced by 50 percent, leading to a quadrupling of the cost of water by the year 2020. Musendo's article is based on an independent study entitled "The True Cost of Charcoal," produced by Norconsult Tanzanian Limited. The report was commissioned by the Tanzania Association of Oil Marketing Companies in hopes that Tanzanian officials would opt, as Senegal did, to solve its deforestation problem by substituting charcoal with liquefied petroleum gas as an urban fuel.

According to the report, 15,000 to 20,000 bags of charcoal enter Dar es Salaam every 24 hours, every day of the year, and an equal amount enters the other major towns combined. That adds up to nearly one million tons of charcoal per year, for which trees have to be cut from 3,320 square kilometers of forest. Some of the forest cleared will regenerate, but much of it never will because it is converted to farmland and/or is cut again for charcoal before it has fully recovered. Abundant evidence of the charcoal trade is visible throughout Tanzania. A visit to almost any forest reveals the presence of charcoal makers. Highways are lined with charcoal bags for sale in the production areas and outskirts of towns. The forestry sector contributes heavily to the Tanzanian economy, with a 10 to 15 percent share of the country's gross domestic product (GDP) being comprised of forest products. Trees provide around 75 percent of building materials, 100 percent of indigenous medicinal and supplementary food products, and 95 percent of Tanzania's energy.

But all this is at risk. The United Nations Conference on Trade and Development (UNCTAD) reports forest cover declines from 48 percent in 1980 to 46 percent in 1989; and 37 percent in 1994. The report says Tanzania is set on a dangerous course, as every year more people try to burn more charcoal taken from less woodland. The diminished and degraded woodland sends less water down stream except during storms. Cutting down trees to produce charcoal also increases wasteful water run-off, erosion risks, flash floods, mudslides, and the silting up of water reservoirs. According to the report, rivers run dry for part of the year primarily because of deforestation rather than climate change. Totally substituting charcoal with liquefied petroleum gas would confer an annual environmental benefit on Tanzania worth something between US\$12 million and US\$160 million, according to the report.

Gross Externalization of Environmental Costs



1



2

At one of the Lodges in Arusha; the Manager thinks that the piles¹ of fuelwood extracted en-mass from the nearby indigenous forest and stored at his lodge, before being shoved alive into the glaring boiler², and burned³ to extinction are, in his own words, “*absolutely free*”.



3

All pictures: G Kajuma, 2003

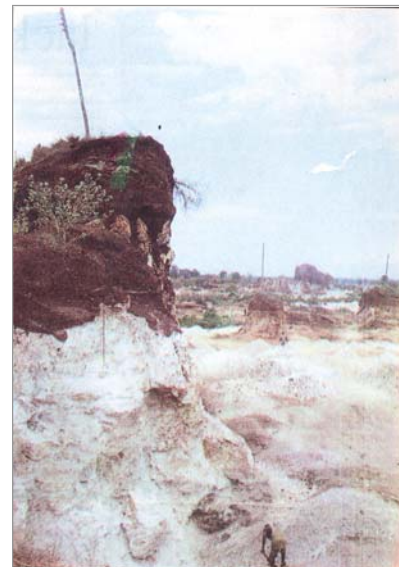
¹ Storage of fuelwood at the lodge, comprising mostly of trees that are over 30 years old; such a pile will last for 3 days.
² The fire-wood boiler used to boil water. The lodge has 6 of them.
³ The boiler at work

ecological challenges. Sand mining along the rivers in almost all major townships and cities in Tanzania is one of the major causes of soil erosion. In a recent article Journalist Pastory Nguvu for the Guardian, reported that all the pillars supporting the bridge along Mandela Road in Riverside area, Dar es Salaam, have been excavated. An alarm was raised that the bridge might cave in when heavy rains arrive. The bridge is a landmark in the transportation industry, enabling the passage of heavy duty trucks from the port to upcountry.

In a study by Jambiya et al (1996), it was established that sand mining and limestone quarrying were common because of the relative ease of exploitation and abundant availability. Continuing growth in the construction industry makes this reality even more valid to date. Most urban mining activities have negative environmental effects, such as the over-exploitation of land which reduces its future potential, soil erosion, habitat destruction, altering stream courses, water pollution, deforestation, beach erosion, not to mention the health effects on miners themselves (eye, lung and skin diseases; accidents leading to injuries and death) and the community (water-borne diseases, pollution, dangerous areas).

Deforestation is reducing the availability of water in Tanzania, which will increase the price of water. The report calculates that the Tanzanian forest cover is declining at a rate of 11.5 percent a year, of which 99.2 percent is for fuelwood and charcoal. Up to 500,000 hectares may be lost annually. It is more likely that Tanzanian town dwellers will pay more for less water and will forego the development, health, and convenience benefits of an adequate water supply for the foreseeable future if upland deforestation continues, the report warns.

Mining and quarrying Activities: Mining of stones and sand for the construction industry in urban environs is increasingly posing wide-ranging environmental threats. As a result of urban expansion some sand/stone quarries that were once outside towns are gradually being surrounded by new settlements and ending up right in the middle of towns posing a host of architectural, social, and



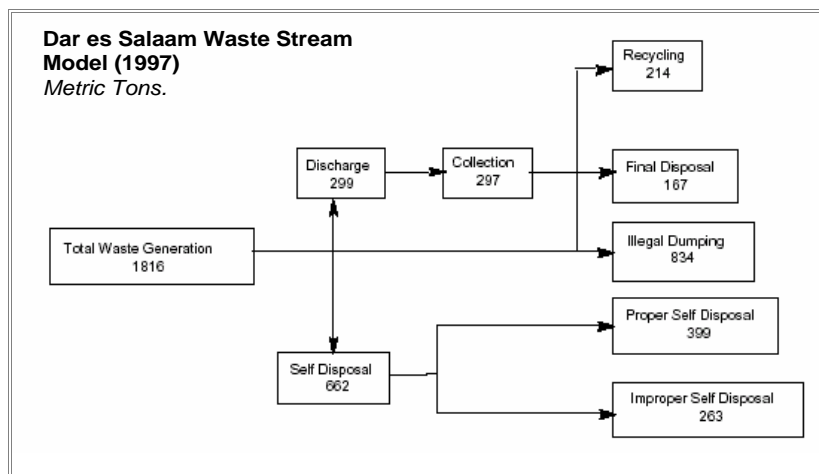
Electric poles stand precariously on mounds of what had previously been part of the stone quarry at Kunduchi in Dar es Salaam. No prizes for guessing what would happen if, or rather when, it rains

In coastal environments such as mines, if not effectively planned and managed, can lead to short term, site specific and often catastrophic effects due to the mobilization of sediment and damage to coral reefs.

2.3.3 Solid and liquid waste management

The provision of environmentally acceptable sanitation and sewage treatment, together with access to safe drinking water remain priority issues in Tanzania. Specific environmental objectives of the Water Policy include the promotion of efficient use of water, the promotion of efficient water treatment, the promotion of water recycling institution of water charges that reflect full value of water resources, and the prevention of water pollution.

Poor management of urban waste represents one of the most serious urban environmental and public health problems in Tanzania. Public-health-wise, the presence of waste in residential areas, at markets, roadsides, etc. poses grave health hazards to people in general and children in particular. At the same time poor urban waste management is primarily due to the lack of sufficient resources to collect and properly dispose of municipal waste. Energy (and other resources) recovery from wastes, or recycling in more general terms, has the potential to greatly alter the situation – turning an environmental liability into a socio-economic and poverty alleviation asset. Municipal wastes, which are always proportionally related to increases in population, can provide more feedstock for the energy and other resource production.



Exploitation of energy from wastes not only greatly reduces (by over 60%) the amounts of urban wastes that need to be disposed, but also greatly alleviates urban environmental pollution, communicable disease incidences, and urban poverty while at the same time creating employment. A case study of Dar es Salaam¹⁴ shows the techno-socio-economic viability of the municipal waste

to energy conversion option not only as a sustainable waste management tool but also as a poverty alleviation one. Estimates show that in the year 2000, Tanzania could have generated about 60 MW of electricity from municipal solid waste alone, substituting about a million tons of fossil (petroleum and coal) fuels. However, the policy and institutional frameworks have to be adapted to incorporate recycling options into urban waste management strategies. The lessons of experience gained in Dar es Salaam can easily be adopted by other urban centers, not only in Africa, but also the rest of the developing world.

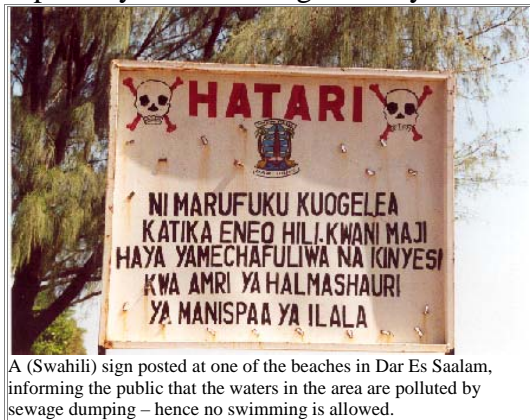
An illustrative recycling approach for energy recovery from municipal waste in African urban setting is the TAKAGAS project-- a pilot plan to generate electricity, biogas for fuel, and fertilizer from garbage in Dar Es Salaam. It has been stopped, having failed to get off the ground since its 1993 inception. Its implementation was shelved by its main sponsor the Danish

¹⁴ M.A. Kishimba, 2003, Energy Recovery from Municipal Waste: Making Cities More Productive and Cleaner; Converting an Environmental and Public Health Liability into a Social-Economic and Poverty Alleviation Asset,

International Development Agency (DANIDA) until further notice due to delays and red tape on the part of Tanzania. Had all gone well from the beginning, way back in 1993, TAKAGAS would have provided a daily net scale of 9.9 MW of electricity to the national power grid.

2.3.4 Point source, and chemical pollution

Pollution and associated health problems are prevalent in urban Tanzania, especially Dar es Salaam and Zanzibar Town. Only seven towns have any sewage system at all, and existing facilities are inadequate and improperly planned. Tourism development in coastal areas could also exacerbate aquatic pollution, as untreated sewage is emptied into the ocean. Tanzania's UNCED report¹⁵ assesses Tanzania's natural resource endowment, summarizes development trends and resource use, identifies environmental and development issues, and describes public and private sector responses. Additional sections focus on the roles of both women and nongovernmental organizations in promoting sustainable development. In addition to pollution, the report cites the following key issues. Desertification is occurring, primarily as the result of expanding agriculture (rather than overgrazing by pastoralists). Coastal areas are under pressure from intensive cultivation and fuelwood gathering. Deforestation is proceeding at a rate which, if not diminished, would deplete the country's forest resource base in little over 100 years. Destructive fishing methods, such as dynamiting, destroy corals and coral-based marine life. Coastal erosion is a problem both in parts of the mainland and on Zanzibar, and will be aggravated by any rise in global sea levels. Treatment of industrial effluent is inadequate, especially in the mining industry



A (Swahili) sign posted at one of the beaches in Dar Es Saalam, informing the public that the waters in the area are polluted by sewage dumping – hence no swimming is allowed.

2.3.5 Infrastructure development in protected areas

Development initiatives in Tanzania's protected areas are generally governed by stringent precautionary principles that encourage minimizing construction and civil works in protected areas. TANAPA, for example, at strategic level has a clear policy of integrating all infrastructural development initiatives inside the parks into the parks' management plans. At operational level, design and implementation of these projects is guided by the

development/action/lease procedures (DALP) where after the plans especially the Management Zonation Plan (MZP) has identified the project and its site, the process will screen and guide stepwise development. The document is provided to the investors who have to ensure as a priority that ground water (use of surface water is prohibited) is available on a selected site. TANAPA approves the terms of reference for conducting an independent environmental impact assessment for the development proposal thereafter.

TANAPA policies are encouraging; all developments are to be located near the periphery or outside the park boundaries in order to minimize overuse of the park resources, and at the same time encourage partnerships with the affected and other interested parties. Recognizing that most people around protected areas in Tanzania live in poverty, TANAPA is working with the private

¹⁵ Tanzania national report for the 1992 United Nations Conference on Environment and Development (UNCED)

sector; district councils, and non-governmental organizations in promoting community based tourism ventures and other income generating activities around these areas to alleviate poverty. TANAPA participates in developing strategies to secure markets for local products, traditional artifacts, and raw materials for construction of the accommodation facilities. TANAPA also has a PEA¹⁶ and its supporting procedures to guide road maintenance and construction in national parks.

In the absence of a national environmental law to govern these activities, sectoral policies such as the ones cited above are playing a key role of balancing economic and environmental interests embodied in infrastructural development in protected areas.

2.3.6 Air Pollution

Urban atmospheric pollution is mainly caused by poor sanitation, inadequate solid waste disposal, and poor effluent discharge and treatment systems for domestic and industrial establishments. While manufacturing industries accounted for 17% of Tanzania's foreign exchange earnings in 1997, inadequate environmental management systems and practices in Tanzania's industrial sector still pose significant environmental threats – including air pollution.

Out of the 57 major industries surveyed in the Dar es Salaam region, 37% of them have been identified as sources of air pollution. Domestic combustion in Dar es Salaam city accounts for 96% of the entire CO discharge into the atmosphere and 93% of all the total suspended particles (TSP). Tanzania Portland Cement Ltd at Wazo Hill accounts for most of the air pollution. The industry accounts for: 2,185 tons of TSP (i.e. 40%); 323 tonnes (51%) of the total SO₂ and 323 tonnes (i.e. 60%) of the total nitrogenous oxides per year discharged by industries into the atmosphere. Land transport produces 16,758 tonnes of CO annually, i.e. 11% of that discharged into the atmosphere annually. Most of the industrial establishments in Tanga Municipality are small- to medium-sized. The only large firms are the Tanga Cement Factory at Pongwe, and the Amboni Plastics factory. The major polluter is the Tanga Cement Factory which emits 2,355 tonnes (i.e. 37%) of the total TSP emissions in Tanga per year. The Factory accounts for 342 tonnes (i.e. 73%) Of SO₂ and 720 tonnes (i.e. 49%) of NO_x emissions per year taking place in Tanga municipality. Exposure to excessive concentrations of industrial emissions increases the frequency of human respiratory ailments such as colds and influenza, and exacerbates existing respiratory diseases such as asthma, tuberculosis and pneumoconiosis.

¹⁶ The Programmatic Environmental Assessment (PEA) for construction of roads in National Parks in Tanzania jointly carried out by TANAPA and USAID/Tanzania to guide USAID funded road works in Tarangire and Lake Manyara

Chapter 3: ENVIRONMENTAL ANALYSIS AND PROGRAMMING IMPLICATIONS

This chapter specifically takes stock of the opportunities for improving sustainable environmental management in Tanzania, particularly within the context of USAID/Tanzania’s Country Strategic Plan. This addresses both Section 117 of the FAA and the USAID strategic planning guidelines and requirements as contained in ADS 201. This ETOA meets all technical analysis requirements for the development of USAID strategic plans (ADS 201.4.11b). It also addresses the requirements of the FAA and proposes mitigating actions for biodiversity and tropical forestry conservation in Tanzania. Under the Sections 118(e) and 119(d) of the FAA, all country level operating unit strategic plans must include an analysis of the actions necessary to conserve biological diversity, to achieve conservation and sustainable management of tropical forests, and the extent to which the actions proposed meet the needs thus identified.

3.1 SPECIFIC REQUIREMENTS (FAA SEC. 118 & 119 AND HOST COUNTRY REGS)

3.1.1 Tropical Forest Conservation: FAA Section 118 Requirements:

In response to the accelerated worldwide loss of tropical forests, the U.S. Congress enacted Section 118 of the FAA, which acknowledges the important role tropical forests and tree cover play in the economies of developing countries and in the lives of their people. Section 118 recognizes the value of tropical forests for their potential financial contribution to the economy, but also cites the ecosystem benefits they offer: protection against erosion and resultant siltation of water bodies and loss of soil fertility, flood protection, wildlife habitat, and a diverse genetic resource pool.

Section 118 states that US support to developing countries shall, to the fullest extent feasible: help end destructive agricultural practices, help conserve forests that have not yet been degraded, support activities that will conserve and rehabilitate forested watersheds, support training, research, and other activities which will lead to sustainable practices for timber harvesting, and support research to develop alternatives to forest destruction.

3.1.2 Biodiversity Conservation: FAA Section 119 Requirements

The U.S. Congress enacted Section 119 of the FAA in response to the irreparable loss of plant and animal species occurring in many developing countries and the environmental and economic consequences of this loss. Section 119 addresses biodiversity conservation concerns by encouraging USAID to furnish assistance to protect and maintain wildlife habitats, develop sound wildlife management and plant conservation programs, establish and maintain wildlife sanctuaries, enforce anti-poaching measures, and identify and study animal and plant species.

Section 119 states that ongoing and proposed actions of USAID shall not inadvertently endanger wildlife or critical habitats, harm protected areas, or have other adverse impacts on biological diversity, and that USAID programs shall, to the fullest extent feasible, support policies, training and education, and long-term agreements and other types of cooperation efforts that will result in the conservation of biodiversity.

3.1.3 Compliance with Tanzania's environmental management policies

Implementation of USAID's new strategy will be undertaken in conformity to the provisions of Tanzania's National Environment Policy (NEP) of 1997 and other sectoral policies applicable in the various sectors of USAID's engagement. Also relevant is the National Environment Management Council Act (no. 19 of 1983) which principally provided for the establishment of the National Environment Management Council (NEMC). Among others; the Act also stipulated the following functional roles and responsibilities for NEMC:

- i) To advise government on all environmental-related issues (i.e. including impacts of USAID's activities in its various strategic assistance areas)
- ii) To formulate environment policy
- iii) To establish multi-sectoral/multidisciplinary coordination among institutions and other entities that deal with environmental management issues. This incorporates aspects of participation and other community based approaches for improved livelihoods, which is espoused in USAID's proposed new program.

Also of relevance are the 1995 National Land Policy; the Land (and village land) Acts of 1999 and 2000 respectively. These make far-reaching provisions for environmental management and natural resources because they provide for categorization of lands into three areas:

- i) general (i.e. unreserved or public lands)
- ii) reserved (i.e. protected/conserved lands)
- iii) village lands (i.e. lands to be administered by village government authorities; as opposed to lands to be administered by central government)

The Land Acquisition Act no. 47 of 1967: that provides for compulsory acquisition of land in the interest of the public is also of relevance to USAID's future program.

Furthermore, the GoT with USAID's and other donors' assistance has been seriously committed to the reforms of the Wildlife Policy of Tanzania, aimed at devolving authority and conservation responsibility to local levels. The key emphasis in this policy is ensuring that local communities start benefiting from the conservation proceeds and commit to stewardship of conservation and sustainable utilization of natural resources. The policy supports establishment of Wildlife Management Areas on village land and as an indicator of success in this regard, WMA Guidelines were approved in 2002. This policy coupled with the Tanzania Coastal Resources Management Strategy approved in 2002 (also supported by USAID since 1998) forms the cornerstone of USAID's future interventions in the wildlife sector to promote self-sustaining conservation schemes.

3.2 TROPICAL FOREST ECOSYSTEMS CONSERVATION STATUS

3.2.1 Tropical Forests of Tanzania

There is a great deal of variety in Tanzania's forest cover. It ranges from coastal mangroves to afro-montane forests to miombo woodlands. Tanzania has also engaged heavily in the establishment of plantation forests as a way to meet continuing demands for fuel and construction wood.

U.N. Food and Agricultural Organization (FAO) and World Resources Institute (WRI) statistics from the year 2000 have estimated Tanzania's total forest cover to be in the range of 39,000 hectares, or 41% of the country's total land area. The definition of "forest cover" for the purposes of these statistics are areas where tree crowns cover over 10% of the ground, and where forests are the predominant land use.

Other valuable statistics relating to Tanzania's forest resources are provided in the Table below. All data are derived from Year 2000 FAO and WRI statistics.

Table : Year 2000 Tanzania Forest Statistics	
• Total Forest Cover (1000 ha)	38,811 ha
• % change in total forest cover, 1990-2000	-2%
• Area of Natural Forest Cover (1000 ha)	38,676 ha
• Area under Tropical Forest Cover (1000 ha)	14,356 ha
• Tropical Forests under Protection (% of total)	15.8%
• Sparse Trees and Parkland under Protection (% of total)	3.3%
• Area under Plantation Forest Cover (1000 ha)	135 ha
• Closed Forests as a % of Original Forest Cover	9.1%
• Number of Threatened Tree Species	317
• Annual Fuelwood Production (000 cubic meters)	35,947 m ³
• Avg Value of Trade in Forest Product Exports (000 \$US)	4,797

3.2.2 Types of Forests in Tanzania

Closed Forests: Tanzania's remaining closed canopy forests can be classified into two groups: highland (montane or submontane) and lowland. The bulk of the closed canopy montane forests can be located in the area of the Eastern Arc Mountains of southern Tanzania, the northern highlands of Mt. Kilimanjaro and Mt. Meru, and the Mahale Mountains of the Kigoma region. Dominant tree species to be found in these montane forests are *Ocotea usambarensis*, *Juniperus procera*, and *Cassipourea malosana*. The forests of the Eastern Arc Mountains are particularly notable as they have been influenced by the climate of the Indian Ocean, creating a unique and isolated ecosystem. This area has been named one of 25 biodiversity hotspots in the world.

Lowland closed canopy forests are located primarily in the northwest, along the Ugandan border, and along the coast. Dominant lowland closed canopy species include: *Azelia quanzensis*, *Albizia glaberrima*, *Bersana abyssinica*, and *Podocarpus usambarensis*.

Woodlands: Woodlands differ from closed forests in that they are characterized by mature trees located in open stands, that is, without an interlaced canopy. A dominant type of woodland to be found in Tanzania is *Miombo Woodlands*. These ecosystems consist of a continuous layer of herbaceous plants under a semi-closed canopy of trees. Miombo woodlands differ from acacia woodlands in that they tend to have a higher level of species diversity. Miombo woodlands are located throughout western and southern Tanzania. Common species to be found in these open canopy forests are: *Julbernadia spp.*, *Brachystegia spp.*, *Pterocarpus angolensis*, *Tamarindus spp.*, *Commiphora pilosa*, *Kigelia aethiopica*, and *Isobertinia spp.*

Shrublands: Shrublands are characterized by a preponderance of short, woody vegetation, and are often found in arid and/or semi-arid regions. Some of the prevailing species to be found in Tanzania's shrublands include: *Terminalia spp.*, *Combretum spp.*, and *Commiphora spp.*

Coastal and Mangroves: Most of the forests located along the coast are mangroves, of which very few remain. In 1996 it was estimated that mangrove forests occupied only 1% of Tanzania's land area.¹⁷ They play an extremely important role in coastal stabilization and water filtration, in addition to providing a specialized habitat for a variety of species. Dominant tree species to be found in mangroves are: *Sonneratia alba*, *Avicennia marina*, and *Ceriops tagal*.

3.2.3 Policy Environment for Forest Management in Tanzania

In 1998 the Government of Tanzania drafted a new National Forest Policy (NFP). This legislation replaces the pre-existing 1953 Forest Policy of Tanzania. In line with many other recent Tanzanian legislative initiatives, the NFP devolves significant authority to local and private entities. Specifically, the NFP accomplishes the following¹⁸:

- 1) Allows for the creation of village forest reserves to be managed by communities (with demarcation and management plans in place);
- 2) Villages are given secure tenure and use rights over village forest reserves;
- 3) Forest management responsibilities were delegated from forest authorities to executive agencies, the private sector, NGO's, and/or Community Based Organizations (CBO's)

Although it is too early to tell whether the NFP is having a positive impact on sustainable forest management in Tanzania, many initiatives that have devolved forest management

¹⁷ De Queiroz, Joao, "USAID Tanzania Environmental Threat Assessment", May 1996, p. 12

¹⁸ Mniwasa, Eugene and Vincent Shauri, "Review of the Decentralization Process and Its Impact on Environmental and Natural Resources Management in Tanzania", *Lawyers' Environmental Action Team (LEAT)*, November 2001, pp. 13-15

authority to the local level in other countries have realized improvements in forest stewardship. Often improved management has been due to changes in the incentive structure which eliminate rent-seeking behavior on the part of underpaid government forest agents. This is enhanced by community interest in sustainable management for improved livelihoods, and locally effective monitoring and enforcement traditions.

3.2.4 Threats to Tanzania's Tropical Forests

Tanzania's forests are valued and used locally for a variety of purposes, many of which are sustainable if conducted in moderation. These uses include harvesting of non-wood forest products for medicinal uses and consumption, both human and animal. Some of the non-wood forest products commonly harvested include honey, beeswax, and wattle bark extract.

The biggest threats to Tanzania's forests derive from agricultural expansion, unsustainable fuelwood harvesting (including charcoal), and timber extraction for urban and rural industries.

Agricultural Expansion:

Much of Tanzania is arid, semi-arid, or has poor quality soils. Only 4.24% of the country's land is considered arable, and of that amount only a little over 1% is permanent cropland¹⁹ In spite of this, over 80% of the Tanzanian work force is employed in agriculture, and with continued population growth, pressure to expand agricultural production is likely to continue into the future.²⁰

Extensive agriculture clearly has an impact on forest cover. Few reliable statistics on deforestation rates exist, however. FAO statistics estimate a 0.2% deforestation rate per year, which is significantly less than the annual expansion rate of land under cultivation, estimated at 2.5%.²¹ Therefore it is clear that while agricultural production is spreading, it is less clear that this is directly responsible for loss of forest cover.

Fuelwood and Charcoal Production:

A much more significant threat to Tanzania's remaining forests is the extremely high reliance on wood as a source of energy for cooking, heating, and drying of tea, tobacco, and other products. Nearly all of Tanzania's energy consumption—92%--is derived from fuelwood and agricultural residues.²² Recent FAO and WRI statistics estimate annual fuelwood harvesting in Tanzania to be on the order of 36 million cubic meters. This over-reliance is unlikely to change in the future. In fact the FAO has estimated that demand for fuelwood throughout East Africa will increase by more than 40% over the next 30 years.²³

¹⁹ CIA World Fact Book, 2003 statistics. www.odci.gov

²⁰ Ibid

²¹ World Bank, *World Facts Book*, 1994

²² Mniwasa and Shauri, *op cit*, p. 3

²³ UNEP, *Africa Environment Outlook: Past, Present and Future Perspectives*, 2002, p. 141

Charcoal production is a particularly intensive use of wood, in that wood is used both as the raw material and in charcoal processing. Because of its ease in transport and higher heating quality over fuelwood, demand for charcoal is increasing, particularly in urban areas.

Timber Extraction:

Timber is used in Tanzania for a variety of construction purposes, as well as for the artisanal wood carving industry for which East Africa is particularly known. Most timber used in household construction never enters the formal economy, so reliable statistics do not exist. Statistics for industrial timber use, including fabrication of wood paneling and paper products estimate that approximately 3 million cubic meters of roundwood is harvested and processed per year in Tanzania.²⁴ Export of timber and other forest products from Tanzania are a small contributor to the economy, however. The total value of forest product exports between 1996 and 1998 were estimated at \$4.7 million, which was outweighed by the value of forest product imports, at approximately \$6 million.

The wood carving industry can also have a negative impact on natural forests through selective logging, particularly of tropical hardwoods. Favored species for wood carving include *Dalbergia melanoxylon*, *Brachylaena huillensis*, *Combretum schumannii*, and *Olea Africana*. Public awareness campaigns, particularly by environmental NGOs such as the World Wildlife Fund, have led to increased use of fast growing, cultivated tree species such as neem, jacaranda, grevillea, and mango as preferable alternatives.

Undervaluation of Forest Resources:

Government accounting and planning procedures do not capture the true value of forested ecosystems. Emphasis is placed on direct and immediate monetary benefits that accrue primarily from timber extraction. Traditional products, such as medicinal plants and foods, are ignored. More importantly, the ecological role that forests play in the hydrological and nutrient cycle, and their role in maintaining biodiversity are ignored. Thus, the true value of forest ecosystems and cost of degradation are underestimated in government accounting and planning procedures.

3.3 BIODIVERSITY CONSERVATION STATUS

3.3.1 Protected Areas and Terrestrial Diversity (Flora and Fauna)

Tanzania is classified as one of the global “mega-diversity” sites with numerous biological hotspots and unique ecosystems of high diversity of species in a variety of habitats, species and genetic levels. However, these high value resources are not quantified and not reflected in the economy. The state’s initiative to conserve terrestrial biodiversity have been made through policy and legal frameworks that establish network of protected areas with varying levels of protection and imposition of restrictions to access and resource utilizations. Altogether, Tanzania has allocated about 25% of its total area to national parks, game reserves, and game controlled areas. The network of protected areas range from those that enforce total protection in national parks to game reserves where access to and resources utilization through hunting by permits is allowed

²⁴ FAO, WRI, *EarthTrends 2003*, www.earthtrends.wri.org

to multiple land use category where local communities whose land use pattern is compatible with biodiversity and natural resources conservation share same areas with biodiversity conservation management area. The network of protected areas in Tanzania presents some of the key terrestrial biodiversity areas and represents a major asset not only to the country but also contributes significantly to the international biodiversity conservation community as a whole. Currently those protected areas of international significance are designated as either Biosphere Reserves (2) or as World Heritage sites (3) or even Ramsar sites (2). All these are values that transcend the forest and wildlife sectors purely for the tourism industry and the informal sector.

Reflecting on the above mentioned values, the national planning process needs to recognize the contribution of wildlife at the local level. Currently these values have continued to be mentioned in passing but not reflected in economic terms.

3.3.2 Marine Protected areas and Coastal Resources Diversity

The Tanzania coastline harbors an abundance and high biodiversity of natural resources constituting some of the most important and globally significant ecosystems and includes coral reefs, mangrove forests, and marine fisheries. A number of marine reserves and one Marine Park (Mafia Island Marine Park) have been designated as a mechanism to ensure the protection and preservation of these important biodiversity and natural resources.

Coral reefs are tropical shallow-water ecosystems that have very high productivity and biodiversity. They are located along two thirds (600 km) of Tanzania's continental shelf. They also provide shelter as well as feeding, breeding and nursery grounds for a great variety of invertebrates and fish. The variable topography of the reef structure creates numerous microhabitats which, in turn, support a high diversity of algae, seagrass, sponges, sea anemones, soft corals, crustaceans, gastropods, bivalves, echninoderms, fish and marine turtles. Coral reefs support and estimated 70% of the artisanal fish production of the country and are now an important tourist attractions that bring foreign currency into the country. Coral reefs are unique, complex, and incredibly biologically diverse; as a result the reefs have very significant educational and scientific roles.

Mangrove forests are salt tolerant trees or shrubs that form the major complex tropical and subtropical mangrove ecosystems. Characteristically, mangrove forests occupy intertidal zone, primarily in muddy sheltered areas of the coast (bays, inlets, and estuaries), areas of large river deltas, channels, and the leeward sides of islands. Other components of the mangrove ecosystems include algae; marine fauna living in the mud, on bases of the trees and the tidal water; and the terrestrial animals living in the tree canopy. Mangroves are keystone ecosystems producing high quantities organic matter that serve as food for many organisms. They are also important as feeding, breeding and nursery grounds for a variety of invertebrates and fish, many of which move out into the ocean during adult stages.

Marine fisheries are an important component of the Tanzanian coastal natural resources and provide both important subsistence protein and a substantial income for the communities and the nation. The demand for fish in Tanzania is progressively increasing due to a rapid population increase along the coast and the expansion of tourism industry seen in recent years. The increased demand for fish products has raised fish prices

substantially, which in turn has enlarged the incomes of some in the fisheries trade. The number of fishermen is currently estimated at 60,000, but the importance and impact of fishing extends much beyond these full time fishers, including all those involved in boat construction and repair and marketing and sale of fish products. The total annual catch of Tanzania's marine fisheries is around 70,000 metric tons²⁵.

3.3.3 Aquatic Biodiversity

Tanzania's aquatic biodiversity wealth is enormous and still unexplored. Over 10% of the surface area of the country constitutes wetlands which support aquatic biodiversity. The wetlands ecosystem in Tanzania comprises of marine and coastal wetlands, inland wetlands (lakes, rivers, inland floodplains), and artificial wetlands as major ecological systems in which biological resources thrive. Seagrass beds, seaweeds, coral reefs, silt and mudflats, mangrove swamps, estuarine, and deltaic ecosystems are examples of marine and coastal wetlands with diversified habitats to support biological diversity. Flora diversity in the marine ecosystem includes: 12 species of seagrass, 287 species of seaweeds, 250 species of phytoplankton; in the freshwater ecosystems, there are 243 species of macrophytes (238 species of angiosperms and 5 species of ferns) and 1,119 species of phytoplankton. Diversity of fauna in the marine environment includes 976 species of invertebrates comprised of Molluscs (74.6%), echinoderms (10.9%), arthropods (6.5%), corals (5%) and sponges (4%). The Vertebrate family includes 532 species of fish, 5 species of sea turtle, 1 species of snake, and 4 species marine mammals. Diversity of freshwater invertebrates is somewhat smaller with about 785 species, but 37% of them endemic, and the Vertebrate diversity especially fishes constituting 729 species and 95% of them are endemic and not found anywhere else²⁶.

3.3.4 Coastal Forest Biodiversity

The coastal forests of Tanzania comprise remnants of evergreen or semi-evergreen forest vegetation of the Zanzibar-Inhambane Regional Mosaic. The Region covers the coastal belt from Somalia to the mouth of the Limpopo River. It is 50-200 km wide inland from the coast except up river valleys, and mostly below 200 m in altitude. There is, however, no single agreed definition of "coastal forest". Varying levels of disturbance further complicate this problem as degraded forest and thicket may preserve some characteristics of the previous forest communities. In this work, mangroves have not been included in the range of coastal forests.

Coastal forests in Tanzania cover about 800 km². However, they are small, highly fragmented, separate forest patches, most of which are less than 500 ha in size and some carry a conservation status. These are individually distinctive, with a high level of local forest endemism, and a great array of different communities and endemism. In Tanzania they have 105 endemic plants, 20 endemic reptiles, 40 endemic butterflies, 5 endemic birds, 5 endemic mammals, 5 endemic amphibians. For example the tree *Sterculia schiebenii* is endemic to Chitwa Forest Reserve, Lindi Region. The Kiwengoma Forest Reserve in Rufiji district has 4 endemic plants (*Tricalysia* sp., *Pavetta* sp., *Chlorophytum*

²⁵ Tanzania. State of the Coast Report 2003. Tanzania Coastal Management Partnership

²⁶ National Biodiversity Strategy and Action plan, 2001

sp. and a fern *Nephrolepis* sp.). Of the 105 endemic plant species recorded in Tanzania coastal forests, over 50% are located in Rondo forest in Lindi district. Also, the Gendagenda forests in Handeni and Pangani districts for example, contain the rare *Saintpaulia* sp. (African violet) and wild coffee (*Coffea* sp.) which is of potential value in crop breeding.

The most extensive coastal forests are Gendagenda Forest (28 km²), Msumbugwe (30.93 km²), Mafi Hill (45.08 km²), Kiono-Zaranginge (20 km²), Ruvu South (30.93 km²), Pugu Hills (25 km²), Kazimzumbwi (23.5 km²), Rondo (40 km²) and Kiwengoma (22 km²) forest reserves. Other forest reserves that attract considerable interest include Mahuta, Pande, Vikindu, Kisiju, Mchungu, Kikale, Ngarama, Pindiuro, Chitoo, Ndiba, Ruawa, Matapwa, Litipo, Chilanga and Mlola forests. The Kiono-Zaranginge forest in Bagamoyo district contains at least three endemic plant species and 12 globally scarce species. The Pugu Forest on the other hand ranks second in terms of biodiversity in coastal forests in East Africa. About 15 plants are believed to be endemic or near endemic, besides around 65 species of forest birds are known.

The five species of mammals that are endemic to coastal forests are: Golden-rumped elephant shrew (*Rhynchocyon chrysopygus*), Ader's duiker (*Cephalophus adersi*), African woolly bat (*Kerivoula africana*), Pemba fruit bat (*Pteropus voeltzkowi*) and the bat species *Rhinolophus deckenii*. Rare species found in the coastal forests and elsewhere are: the Lesser pouched rat (*Beamys hindei*), the Eastern tree hyrax (*Dendrohyrax validus*), Seychelles fruit bat, *Pteropus seychellensis* and the African elephant, *Loxodonta africana*. The Jozani forest in Zanzibar is the main habitat of the endemic red colobus monkey (*Colobus kirkii*). There are many invertebrates, around 40 endemic species of butterflies and at Kiwengoma forest alone, there around 25 species of millipedes of which 15 are new species.

Presently, coastal forests in Tanzania are under heavy pressure. They are threatened by unsustainable human actions including logging of canopy trees for timber and fuel, removal of hardwood poles to build houses, burning of woody plants to produce charcoal, and wholesale removal of woody vegetation for conversion of the land to agriculture. Uncontrolled bushfires (which are usually started by humans) are the worst threat in some forest reserves such as in Chitoo Forest Reserve and in Rondo, as these could encroach upon the forests. To some forests, e.g. Mlola Forest Reserve in Mafia Island and Kazimzumbwi in Coast Region, clearance for farmland is the major threat. Pugu Forest Reserve is threatened by mining as it contains the largest deposits of kaolin in the world. In some of the forests, the natural vegetation has been replaced with exotic species such as in parts of Ngezi in Pemba, and in Pugu, Vikindu and Rondo Forest Reserves on Tanzania Mainland.

The coastal thickets are mainly characterised by scattered trees and shrubs with climbers and lianas. The canopy cover is less than 40% and dominated by trees such as *Dalbergia melanoxylon*, *Sclerocarya caffra* and *Annona senegalensis*. Common shrubs include *Suregada zanzibariensis*, *Phyllanthus reticulatus*, *Strychnos spinosa* and *Catharanthus roseus*. Common lianas and climbers include *Macrotyloma axillare*, *Cissus quadrangularis*, *Landolphia kirkii*, *Tinospora oblongifolia* and *Ipomoea coptica*. The

herb layer comprises species such as *Waltheria indica*, *Triumfetta rhomboidea* and *Agathithanthemum bojeri*.

3.3.5 Threats to Tanzania's Biodiversity

The Tanzania biodiversity is threatened by a variety of human activities ranging from the household micro level to the national and global macro levels. Foremost, Tanzania's biodiversity resources are threatened by the failure to effectively manage mounting pressures for agricultural expansion, hunting and bushmeat trade, livestock grazing, wild fires and over exploitation of the resources. Additionally, biodiversity is threatened by several direct and underlying processes which have led to the clearing of forest land at a rate of 400,000 hectares per year during the past two decades. These processes relate, in part, to the conversion from forest to commercial agriculture and mining because of export-oriented policies widely applied at the national and global levels.²⁷

As Tanzania develops, given the strong NRM orientation of its economy, increasing and often competing demands will increasingly place unsustainable pressures on the natural resources, threatening the base of Tanzania's economic future. Although Tanzania has contributed about 25% of her land area to protected area networks, many times those protected areas have been created without consideration of the demand of the surrounding communities (grazing areas, fuelwood, water etc). Neither do surrounding communities fully benefit from the proceeds accruing from the protected areas. As a result, local people lack incentives to respect protected area boundaries, and frequently disturb habitats through land clearance and natural resource extraction, and take wildlife for their own uses, such as food, skin and for-profit sales.

Deforestation:

Virtually, all of Tanzania's wood fuel comes from forests-over 90% of all round wood harvests are for charcoal and fuelwood. As can be expected, much of the demand for fuelwood is satisfied through deforestation.

It is estimated that about 70% of the deforestation in Tanzania is due to fuelwood harvests, directly or indirectly, with about 30% of the deforestation being the result of agricultural land clearing. As the economy matures, deforestation associated with agricultural land use clearing is expected to grow, increasing emissions of greenhouse gases, and reducing the supply

Poaching, Hunting and bushmeat trade:

Poaching is a growing concern where people hunt large mammals for horn and ivory. In some areas hunting for tourism is also beginning to make a negative impact. Hunting is historically responsible for the absence of several large mammals (buffalo, rhino, elephant, leopard, and bushbuck) from large areas in the hotspot where they used to roam. The local bushmeat trade threatens the smaller mammals. Although this trade is not on the scale found in West and Central Africa, local consumption of game meat can threaten rare wildlife. For example, the endangered Aders' duiker has been reduced to very low

²⁷ WRM's bulletin N° 56, March, 2002.

population levels by local hunters in Arabuko-Sokoke Forest²⁸ and also in Jozani Forest in Zanzibar²⁹

Coral reefs and Other Marine Biodiversity:

Threats to coral reefs and resources include: fishing pressure, destructive fishing practices result in further deterioration of coral reefs. Coral bleaching due to global warming result in profound adverse impacts on the future health of coral reefs and therefore the abundance of associated resources.

Threats to mangroves are associated with over harvesting of mangroves trees (46%) for firewood, charcoal making, building poles, boat making, and clear cutting of mangrove (30%) for aquaculture, agriculture, solar salt works, road construction, urbanization and hotel construction. Near urban centers, mangroves are threatened by various types of pollution including municipal sewage, garbage, and oil.

Serious threats to marine fisheries include destructive fishing methods that result in indiscriminate destruction of fish breeding and nursery grounds, destroying fish larvae and juveniles. Loss of habitats due mangrove cutting has similar adverse impacts on fisheries. Mangrove forests are an irreplaceable part of fish cycle, providing spawning grounds as well as nursery grounds for many ecologically and economically valuable fish and prawn species.³⁰

3.4 OPPORTUNITIES FOR CONSERVING TROPICAL FORESTS AND BIODIVERSITY

The Convention on Biological Diversity, signed by Tanzania on 12 June 1992 and ratified on 1 March 1996, gives an opportunity for Tanzania to contribute to the global initiatives for the conservation of biological resources, making it eligible to benefit from technology transfer, financial assistance, scientific and research cooperation, and capacity building. In addition, Tanzania stands to benefit from other provisions of the Convention relating to: research and training, public education and awareness, the need for impact assessments with respect to projects that may threaten genetic resources, species, or habitat, exchange of information, and technical cooperation. These provisions provide avenues for the development of a technical, social, and management infrastructure that is conducive to better protect Tanzanian biological diversity. It also creates a basis for exchange and cooperation among country parties.

85% of Tanzanians depend entirely on the management of natural resources for their livelihood. Natural resource-based activities such as agriculture, livestock-raising, forestry, fisheries, mining, and nature-based tourism have promising futures as engines for Tanzania's long-term economic growth, but only if Tanzania invests in these sectors in a sustainable fashion. Recognition of the strong NRM orientation of Tanzania's economy as a potential threat to the sustainable base of Tanzania's economic future presents an excellent opportunity for managing the country's biodiversity resources in a way that will ensure sustainability of the resources for the benefit of the country's present and future generations.

²⁸ FitzGibbon *et al.* 1995; Kanga 1996

²⁹ Struhsaker & Siex, pers. comm.

³⁰ **Tanzania** State of the Coast 2003: People and the Environment

Tanzania's future efforts to preserve and protect tropical forests and biodiversity will build on the past achievements and lessons learned in conservation endeavors. For example the foundation and opportunities established by USAID's current program is critical for increasing the attention and focus on improving rural livelihoods, while retaining biodiversity conservation as the core goal. The rationale for the program rests on the environment, economic growth and poverty alleviation nexus, and the need to establish a sustainable approach to natural resource-based economic development. The current program has set the stage by identifying an appropriate balance between conservation and development through policy and legislative reform, capacity strengthening, and pilot activities. The proposed program will continue investment in these areas, helping Tanzania to attain and maintain that balance, while achieving significant results in areas of both biodiversity conservation and improved livelihoods. USAID's new program will demonstrate ample opportunities for conserving biodiversity on the following specific targets:

Support for Improved Management Policies at the National and Local Levels: The Tanzanian Government has made significant progress in strengthening its institutional and legal framework for environmental management. Over the past six years, it has promulgated a number of progressive natural resource management (NRM) policies, laws, and devolution of authorities, and has revised several key sector policies to better reflect environmental concerns.

The 1998 New Forest Policy of Tanzania has made significant improvements in the management of Tanzania's forests, particularly by providing increased tenure security for community forest reserves, as well as through assistance to communities in drafting community forest management plans. Additionally, the National Biological Diversity Strategy and Action Plan (NBSAP) was completed in 2001 and highlights strategies and action plans for the management of aquatic, terrestrial, and agro-biodiversity. It presents an excellent opportunity for furthering sustainable utilization of Tanzania's biodiversity resources.

Tanzania recognizes that providing a visible stream of benefits to local people is important if conservation and sustainable utilization of biodiversity are to be realized. The GOT natural resource management policies that are currently under review have statements/strategies on how to address the issue of benefit sharing. For example, the Wildlife policy strategies are focused on involving various stakeholders in working out a sustainable system to manage distribution of revenue and benefits among themselves and determining proportions for benefit sharing by the government. Furthermore, the Forestry policy states: "In order to improve forest conservation and management and to ensure equitable sharing of benefits among all stakeholders, joint management agreements between the central government, specialized executive agencies, private sector, or governments, as appropriate in each case, and organized local communities or other organizations of people living adjacent to the forest, will be promoted. The local community will be granted appropriate user rights for forest produce and forests will be managed in accordance with approved management plans".

Along with these policy measures some economic measures are also being implemented to improve economic performance. These include improvements in revenue collection

through the creation of an enabling environment to boost investments, and hence the contribution of the forestry sector beyond the narrow sources of revenue base. Financing of the forest sector is mainly from three sources (i) government budget (ii) retained income from the forest revenues (56% of the revenue collected) and (iii) donors' support to specific projects contributing to 68% of the annual budget. Revenues have however, been low (only about 10% of the potential is collected) with a narrow base relying mostly on timber and fuelwood necessitating continued donor dependence. This skewed financing is related to inadequate valuation of the forest resources in terms of forest products and services.

The skewed valuation of services provided by forests has had negative impacts on some societies. In some aspects, the most vulnerable segments of the marginal communities depending on forests and forest products--especially the hunters and gatherers such as the Barbaig and Hadzabe in Arusha and Singida drylands/woodlands--place their survival on forests. Expansion of agricultural land, ranching lands and enclosed wildlife areas have pushed these communities to marginal lands and changed lifestyles.

Also, the focus on timber alone as the main forest product has enabled other services to be overlooked. Some other benefits from forests are related to the contribution to basic needs for energy, building materials, and subsistence economies for rural communities from non-wood products for consumption and sale, like medicinal products, honey and beeswax, and extractives.

Promotion of Sustainable Livelihoods: Conservation of tropical forests and biodiversity depends in large part on reducing encroachments into critical habitats. Encouraging non-resource dependent livelihoods through provision of training and capital for the establishment of micro-enterprises in food processing and services would be one method for alleviating pressures on the resource base. Micro-enterprises which focus on the sustainable harvesting of non-timber forest products such as honey, fiber, and non-threatened medicinal plants would be a recommended approach.

One study established that sizeable incomes can be generated from the sales of traditional medicines. Traditional Medical Practitioners (TMPs), most of whom are women, sell powdered plant material, bark, roots and leaves, and can earn between US\$ 2.5 and 10 per day in urban centres, (but incomes in the rural areas are relatively lower). In any case the contribution of the medicinal trade to household economies through employment and income generation is substantial. The Forest Act (under revision) recognizes these values and promotes their development.

The importance of dry grass for thatching also cannot be overstated. Most houses in rural areas of Tanzania are of grass thatch and plant fibers, and are important both for domestic use and for sale. Dry grass is also used for fencing homestead compounds. Such uses are important and contribute significantly to the normal running of lives in the rural areas.

USAID/Tanzania's proposed program will build on the foundation and opportunities established by the previous program: increasing the attention to improving rural livelihoods, while retaining biodiversity conservation as its core goal. The key rationale for the program is the environment, economic growth and poverty alleviation nexus, and

the need to establish a sustainable approach to natural resource-based economic development. The current program has set the stage by identifying an appropriate balance between conservation and development through policy and legislative reform, capacity strengthening, and pilot activities.

Non-wood forest products contribute in various ways to household food security in terms of wild vegetables and fruits. For instance, wild green leafy vegetables are an essential part of every diet, accounting for about 80% of all side dishes in West Usambara and about 20% of the total foods consumed during the months of June and July among the Luo in Tarime District. Thirty-one common edible mushroom species in Tanzania are widespread in the miombo forests that cover over 70% of the forest in the country. Wild roots and tubers are also widespread in Mtwara region. A study³¹ of wild, indigenous fruit trees was carried out in the miombo woodlands in 10 villages of Maswa District in western Tanzania to study how families use the wild fruits in their daily lives. Respondents made use of 30 different types of wild, indigenous fruit trees in their homes. *Tamarindus indica* was the priority wild fruit used by 99% of the respondents. Women chose this tree more frequently than did the men. Other important indigenous fruit species were *Cathium burtii*, *Vitex payos*, *Vitex mombassae* and *Adansonia digitata*. These fruit trees provided people with multiple products such as wood for constructing homes and domestic tools, fodder for livestock, firewood, medicines for all ailments and diseases such as measles, stomach ache, smallpox, goitre, high blood pressure, scabies and bilharzia, and income from the sales of fruit. Selling wild fruit wholesale was generally done by older people; the age of people selling the fruit retail was much lower. Younger people tended to say that the sale of wild fruit contributed significantly to overall income.

With 85% of Tanzanians depending entirely on the management of natural resources for their livelihood, USAID/Tanzania will invest in fostering broader community participation in conservation, sustainable utilization, and benefits sharing of natural resources; by supporting activities linking biodiversity conservation and rural livelihoods. The proposed program will continue investment in these areas, helping Tanzania to attain and maintain that balance, while achieving significant results in areas of both biodiversity conservation and improved livelihoods.

Intensification and Improved Management for Agricultural Production: Agriculture is the foundation of the Tanzanian economy. It accounts for about half of the national income, three quarters of merchandise exports, is a source of food, and provides employment opportunities to about 80 percent of Tanzanians. It has linkages with the non-farm sector through forward linkages to agro-processing, consumption and export, provides raw materials to industries, and a market for manufactured goods. In general productive capacity of the key sectors of the economy is dependent upon the health of the environment. USAID will work towards protecting the health of the environment as the key means towards peoples' improved health and livelihoods in general. Recommended methods to increase productivity of existing agricultural lands would include promotion of mariculture, aquaculture, agroforestry, pastoral techniques, and high yielding seed varieties.

³¹ Masanyika and Mgoo 2001

It is fully recognized that while agriculture suffers the effects of environmental degradation, it also causes some environmental problems. For example soil erosion, soil and water pollution by toxic substances, and salinization caused by bad irrigation practices, has serious effects on agricultural activity. In particular, the production of cash crops such as cotton, coffee, and tobacco involve processes which affect the environment as follows:-

USAID will promote efforts to manage the above problems by supporting community based approaches to improve land use planning and natural resource management at local levels as well as national level environmental policy initiatives.

Tropical Forests:

In general terms the Tanzanian society depends on forest resources in varying degrees ranging from household subsistence to nation-wide economic development. However, a large part of the benefits are yet to be recognized, tapped and integrated in the planning system at all levels. This has not only hindered effective management, but also deprived the nation of full utilization of the resources for its economic development. As USAID continues to promote sustainable practices in utilization of natural resources by exploring alternative economic options, non-timber benefits of forests will be promoted to alleviate pressures on traditional economic natural resource usage options.

Biodiversity Conservation

By 2015, as a result of USAID investment in the natural resources and economic growth SAAs, critical elements of Tanzania's biological diversity will be better conserved. A broad range of stakeholders, from central government to local communities, will participate in both conservation and sustainable utilization efforts, and share equitably in benefits. Livelihoods will be enhanced through increased investment in emerging biodiversity-based economic opportunities. Along the coast, mariculture, fisheries, and tourism will prosper. Inland, new approaches to wildlife management will diversify and expand the wildlife sector. Locally, thriving rural settlements will rely on abundant natural resources and biodiversity for their food and livelihoods. Nationally, the contribution of wildlife and coastal biodiversity to Tanzania's GDP will grow, along with incentives and resources to conserve Tanzania's valuable biodiversity.

Open woodlands and other forests are constantly turned into farmlands for agricultural crops and animal husbandry. About 13 million ha of the forests have been gazetted as forest reserves including 80 000 ha of industrial plantations and 1.6 million hectares of strategic forests such as water catchments and mangroves owned and managed by the central and local governments through the Forest and Beekeeping Division (FBD) in the Ministry of Natural Resources and Tourism (MNRT). Forests on the general lands as classified under the Forest Policy, Land and Village Acts cover 19 million ha.

Improved Management and Monitoring for Existing Tropical Forest Reserves: In the Poverty Reduction Strategy Paper (PRSP) which Tanzania developed in 2000, the Government recognized dependence of the poor in Tanzania on environmental resources, particularly on forest products such as charcoal, honey, wild fruits, and firewood, both for income generation and for consumption. The Government indicated that it intended to

find ways of incorporating environmental indicators into its poverty monitoring system to capture this dependency, and to capture poverty-environment linkages more fully in future iterations of the PRSP and the MTEF.

Chapter 4: BEYOND COMPLIANCE: OPPORTUNITIES IN USAID/TANZANIA'S 2005-2014 ASSISTANCE STRATEGY

This chapter presents major highlights of opportunities for proactive integration of the environmental “thinking” into the various Strategic Assistance Areas being proposed in USAID/Tanzania’s new portfolio; by identifying and effectively capitalizing the conceptual environmental linkages inherent in each of the SAAs. Under each of the SAA’s an illustrative cocktail of potential activities that can be carried out to capitalize the conceptual linkages and enhance programming impact is developed and presented. This effort is intended to take the ETOA an extra mile, beyond mere compliance with FAA 118 and 119 requirements, to serving as a practical strategic planning guide. This guide will enable teams to realistically integrate environmental thinking into their activity design mainstreams.

4.1 GENERAL OVERVIEW

4.1.1 Conceptualizing Sustainable Development

This section presents a theoretical framework for examining factors that link environmental protection, through the overriding goal of Sustainable Development (SD), to USAID/Tanzania’s Assistance Strategy over the next 10 years. In the face of today’s escalating developmental challenges at the local, regional, and global fronts, consensus is increasingly gravitating on the notion that: “unless solutions for environmental problems are sought and secured, sustainable growth will never be achieved ...” This framework is rooted in the strong conviction that sustainable development is an overarching goal of USAID/Tanzania’s presence and interventions in Tanzania’s key sectors of development. As such, an effort is made in this chapter to operationally define sustainable development in the Tanzanian context by identifying its key operational variables and examining their causal interrelationships.

Sustainable development³² is the type of development that meets the present generation’s needs without compromising the ability and capacity to meet the future generation’s needs; and in a way that preserves and avails the bundle of choices to the future generations. SD is therefore concerned with managing consumption of resources in a way that minimizes wastes, maximizes efficiency, and seeks to ensure perpetuity of the resource base for the benefit of the present and future generations. Operationally, SD targets, in the course of human development endeavors, the rational point of efficiency between utilization and conservation of the natural resource base (or broadly the environment). The state reached when conservation and economic interests optimally meet is known as eco-efficiency (in the context of production) or sustainable utilization (in the broad natural resources management sense).

³² as defined by WCSD

SD recognizes and embraces efficiency in three concurrent dimensions namely: economic efficiency, ecological efficiency, and social efficiency. Operationalization of the sustainability measurement criterion requires that policy-makers set targets for natural resource use. Moreover, they need to address new trade-offs, for instance between short-term income objectives (economic efficiency) and long-term environmental and social objectives (socio-ecological efficiency). The new issues raised by the socio-ecological criterion require a review of the applicability of project appraisal methods. Cost-benefit analysis (CBA) has been used most frequently, but its usefulness in sustainability-oriented project appraisal is shown to be limited. Despite some methodological problems, multi-criteria analysis (MCA) should be regarded as an appropriate alternative or complementary appraisal tool. MCA does not require monetarization of effects, nor does it exclusively focus on efficiency measurement. These advantages apply particularly to developing countries like Tanzania where the data base is weak, human development activities are directly dependent on natural resources, and distribution concerns are strong.

In sum, measurement of sustainable development should be based on indicators which signal:

1. the totality of pressures that human societies put on the environment (in the form of pollution and resource depletion)
2. the resulting state of the environment (especially the incurred changes) compared to desirable (sustainable) states and
3. the response by human activity mainly in the form of political and societal decision, measures, and policies

Such pressure-state-response frameworks for strategic planning are in common use by most agencies in development work including USAID.

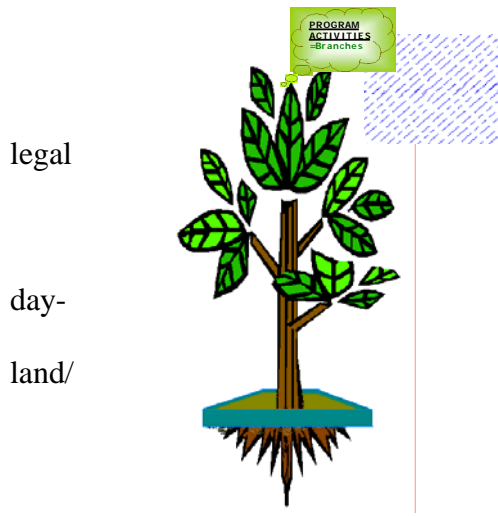
To identify the relevant variables this framework uses the concept of the Capacity Tree³³ for Programmatic Linkages. This helps establish a comprehensive understanding of the relational perspective of the various inputs, processes, outputs and, general operating environment of USAID's portfolio of Assistance programs in Tanzania. The guiding conceptual principle is; the environment influences the health of the tree.

USAID's program in Tanzania, just like the trunk of capacity tree in the model, supports a broad portfolio of program activities represented by the different branches in the model. A number of factors that influence the success and program sustainability; those that enable and predispose and the institutional capacity; those factors are ergonomically analogous to the rain and sun, and the soil and the roots. They support success.

The broader environment in which the program operates is determinant of the nature of constraints that would threaten the program's overall performance and sustainability; just in the same way that harsh weather conditions, lightning, bush fires etc would threaten the tree.

³³Adapted from Environmental Change and Security Project Report , Issue 6, (Summer 2000),p.67

The



mosaic of problems identified and targeted by USAID's interventions in Tanzania³⁴ represents a summary scope of the present problematic situation. A degraded environment is caused by poor E/NRM (land) management brought about by poor policy and framework, unhealthy population with no/or limited knowledge of their civil rights and responsibilities. In such population the major undertaking for the majority of the people is to-day survival and there is no incentive for engaging in sustainable management of their natural resources base.

E/NR, good Health & improved Governance. At this stage an attempt is not being made to determine in detail how these variables relate and/or to determine which of them are either independent, dependent, intervening and/or moderating variables. At this stage the focus is on making sure that as many as possible of the variables are identified by examining all the conceivable inputs, scanning the environment, and translating all this into programmatic outputs.

Likewise, the reduction in poverty and increase in per capita income for any population is directly correlates with improved

Conceptually an inference can be drawn that when one addresses and improves policy and legal issues, Community Based Conservation management, protected area management, and increases effectiveness in institutions that manage them, the environment and natural resources base is improved (that is value is added to the land). The value for land can only be of use if the population is willing, empowered, and able to utilize the natural resources on land for economic activities that will improve peoples' livelihoods.

To briefly demonstrate how the input-transformation-output model puts the linkages in perspective lets look at USAID's current portfolio. USAID's HIV/AIDS and Health Strategic Objectives intervene to promote a reduction in HIV/AIDS infections, Child and Reproductive Health Problems, and other diseases like malaria and TB. They seek to produce as an output a healthy and strong population. This population becomes a key input into USAID's Democracy & Governance interventions under SO3 where, with knowledge of civil rights, responsibilities, and governance, functioning CBO's are better able to manage environmental protection and natural resources practices (E/NRM), which becomes, in turn, an output. These CBOs that can now engage in income generation activities derived from land are more amenable to change and likely to be active in supporting poverty reduction and improving livelihoods of targeted populations. This is consistent with the sustainable development thinking and embraces the three dimensional efficiency values.

³⁴ USAID/Tanzania ISP: 2005-2014 Concept Paper

4.1.2 Overview of the post-2004 USAID Strategy:

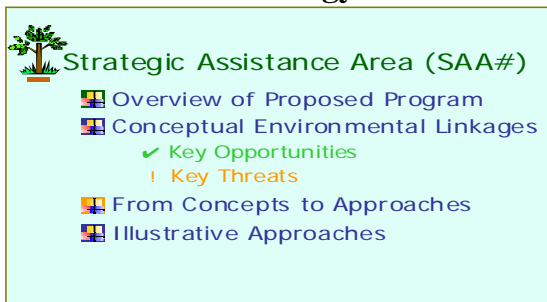
USAID/Tanzania’s response to Tanzania’s development challenges and to the GOT’s vision will be to help accelerate the country’s progress on its path to sustainable development and reduced poverty. The degree to which Tanzania is able to overcome key challenges including: i) combating HIV/AIDS; ii) conserving and developing its natural resources; iii) accelerating private sector growth; and iv) expanding political freedom on the Mainland and in Zanzibar, will determine its success.

The Mission proposes assistance in five strategic areas namely: HIV/AIDS; Health; Environment/Natural Resources Management; Democracy/Governance; and Economic Growth. Each of these SAAs is closely related to Agency and Africa Bureau goals, as well as to Tanzania and regional development visions. Assistance in these SAAs will support reducing poverty and improving quality of life, with particular emphasis on improving the health status of Tanzanians. Further, these SAAs exploit USAID’s clear strengths and position of comparative advantage gained through USAID’s prior engagement in the various sectors of development. . Although assistance under the new strategy will change, key lessons learned from previous assistance will improve Mission performance.

To move the Mission towards its goal, USAID maintains among its key guiding principles, an imperative for activities under various strategic assistance areas (SAA) to complement each other and work together. The proposed SAAs in the upcoming ISP will be designed with specific linkages to fellow SAAs. The Mission will build on its previous experience with SO linkages and geographic collaboration, and incorporating this knowledge in the design of the new strategy where it makes sense.

Gender, Governance, and HIV/AIDS will benefit from special attention as cross-cutting themes under the proposed Program Support Objective (PSO). Further, assistance in the DG SAA will emphasize gender equity in the results framework, performance indicators, and specific activities. One or more of the SAAs will work on aspects of education as a cross-cutting issue under the PSO with information technology (IT), Capacity building and use of the Global Development Alliance are being proposed as a cross-cutting tool to be promoted under the PSO.

4.1.3 Methodology and Presentation Structure:



Under each of the proposed SAAs, in the next (review) section, linkage opportunities are examined. As indicated in the presentation template in the box on the following page, under each SAA the following are covered: 1) brief overview of the proposed program, 2) conceptual linkages are identified and 3) the conceptual linkages are further fleshed into Approaches

at intervention-level that will be used to enhance and capitalize linkages and synergies. At the end of the chapter, a section is included that presents illustrative approaches to give a

feel of the examples of best practices, projects, programs and/or cases in which the suggested conceptual linkages are in application.

While it was tempting to categorize Illustrative Approaches under each SAA, it was noted that cases and projects in the best-practices range are essentially integrated and cross sectoral in nature. Presenting the cases in a combined package at the end of the chapter was therefore perceived as the best way to go.

4.2 A REVIEW OF USAID’S PROPOSED STRATEGIC ASSISTANCE AREAS

The summary of the linkages across SAAs identified by the USAID/Tanzania’s Strategic Planning Coordination Committee’s Linkages working group are summarized in the following table.

E n v i r o n m e n t a l — L i n k a g e s	USAID/Tanzania Strategic Assistance Areas			
	Economic Growth	Democratic Governance	HIV/AIDS	Health
	<ul style="list-style-type: none"> • NR is the basis for longterm EG • Water: Availability, Quantity, Quality, utilization • Tourism: linking NR & EG • Decentralized ownership of NRM rights will promote community participation in NR based enterprises • Use of Env. Economics for NR base valuation (eg. Watersheds, habitats etc) 	<ul style="list-style-type: none"> • Decentralized NRM • Increased community awareness/ advocacy on NRM issues • Gender mainstreaming into into decision making • Promoting accountability & transparency for efficient permitting, licensing, etc in the hunting industry 	<ul style="list-style-type: none"> • Reduced productivity—unsustainable NRM practices. (How: educating target population on HIV/AIDS coping strategies and sustainable practices) 	<ul style="list-style-type: none"> • Population boom leads to increased pressure on the NR base • Environmental health is affected by increases in population • Human health and the health of the env. have causal-effect correlation • Water: Quality & Quantity—prevalence of health problems (eg. Malaria etc) watershed mgt.

The remainder of this chapter presents an in depth review of the conceptual environmental linkages under each of the missions proposed SAAs.

SAA 1:HIV/AIDS



1. Overview of the proposed Program:

USAID envisions by 2014 a reduction in the incidence of new HIV/AIDS infections among young Tanzanians, especially those in the 15-24 age range, as a result of information, education, and communication efforts focusing on risk reduction through abstinence, faithfulness, and consistent condom use. For people living with AIDS, USAID's vision is that both rural and urban communities have access to a continuum of care from home to health facility. For infected mothers, USAID's vision is for greatly reduced risk of perinatal or postnatal HIV/AIDS transmission and access to treatment. For communities affected by AIDS, especially children orphaned by AIDS, USAID envisions effective systems that help to keep children, especially girls, in school, systems and community networks that offer affected families and communities economic opportunities to counteract the hardships caused by AIDS, and community support networks with external support required to meet the monumental challenge of caring for such large numbers of orphaned children.

HIV/AIDS overshadows every aspect of Tanzanians' lives. USAID is developing an HIV/AIDS program that will support an integrated approach to addressing the broad issues surrounding the disease, including economic, gender, human rights, and environmental variables. The program will address the needs of populations in HIV prevention, AIDS care and support, and impact mitigation. Strategic interventions may appear through advocacy/human rights programs (governance) or nutrition and income generation programs for the infected and affected families (environment and/or economic development and/or gender programs).

2. Conceptual Environmental Linkages:

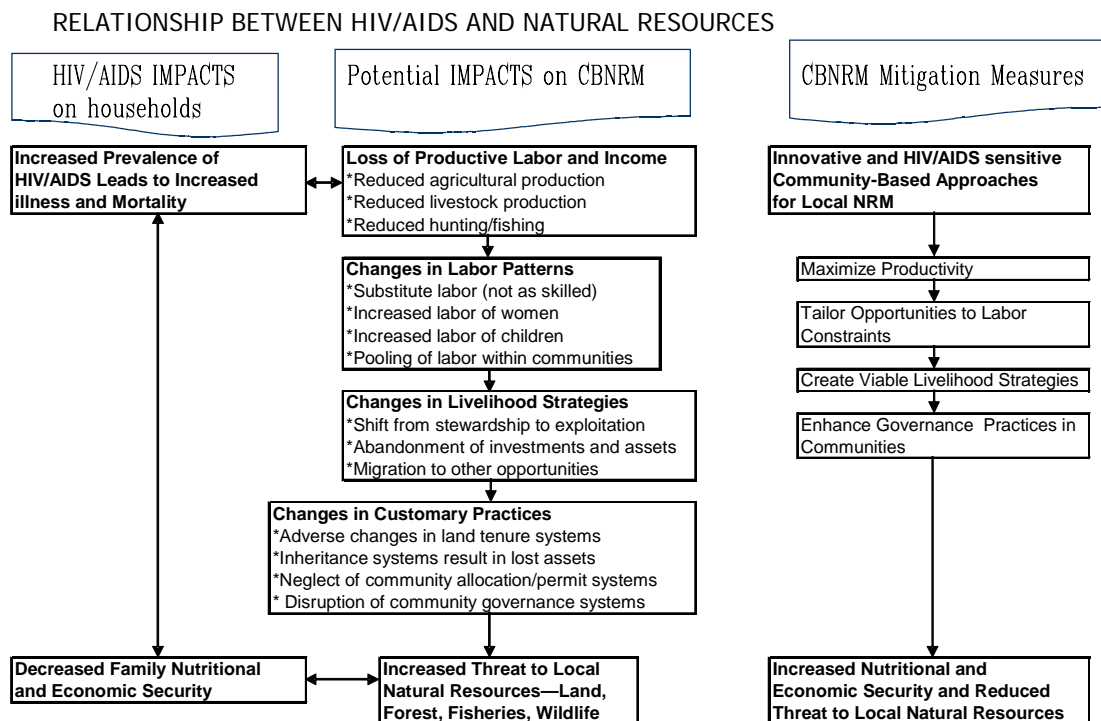
A number of opportunities exist for proactively capitalizing the synergies and linkages between the proposed HIV/AIDS SAA and the environmental protection framework; thus going beyond the conventional Agency's environmental compliance thresholds. CBNRM projects like can integrate activities to prevent HIV/AIDS and mitigate the impact of the epidemic³⁵ on both the human populations and environment.

HIV/AIDS epidemic threatens to derail Tanzania's sustainable development prospects through weakened ability of the population to participate in and benefit from a growing economy. Since Tanzania economy is primarily natural resource based this translates into increased pressure on the environment/ natural resource base, pushing the pattern of natural resources usage further away from the "sustainable" end of the usage continuum. The framework below conceptualizes the relational dynamics between the HIV/AIDS epidemic (and its associated interventions) and the natural resources management practices within the impacted society. It specifically attempts to develop a clear

³⁵ http://www.dai.com/pdfs/aids_brief.pdf; Community-Based Natural Resource Management- AIDS Brief

understanding of how HIV/AIDS-affected populations impact the environment and how environmental management changes.

The HIV/AIDS epidemic is a real threat to Tanzania’s long term-development prospects. At households’ level more and more families, survivors, parents, and children are left to cope with the impact of HIV. The pandemic is increasing death rates, lowering life expectancies, decreasing family incomes, reducing productive enterprise, decreasing school attendance, increasing the number of orphans, and generally damaging normal community life. The following model³⁶ depicts the interrelationships.



The consequences for CBNRM efforts are considerable and tend to occur at two levels: First, as illness and death occur, families and communities develop coping responses to compensate for the loss of productive members and to meet the most urgent survival needs. Families sell their assets and switch to other sources of income. Within an AIDS affected community, there are threats to the established and traditional resource management or land tenure systems and to the local governance structures themselves. Second, as families and communities focus on the crisis caused by HIV/AIDS, they usually place less emphasis on sustainable management or stewardship of resources and more on direct exploitation. This can apply to any harvesting—firewood, bushmeat, fish or forest products, and even herbs used as traditional medicines. Both responses are self-perpetuating.

CBNRM activities and programs offer one of the best development channels to work directly and in a positive way with the communities to address the HIV/AIDS issues

³⁶ Adapted from the Community-Based Natural Resource Management- AIDS Brief

affecting them while at the same time meeting the environmental protection objectives. This is particularly true because HIV/AIDS is a societal and community emergency requiring popular responses. Joining HIV/AIDS activities to interventions aimed at CBNRM practices such as forestry or fisheries, civil society strengthening, local conservation efforts, or wildlife management is an effective approach to reduce the impact of the epidemic on families, communities, and the environment.

3. From Concepts to Approaches:

Cognizant of its cross cutting nature the HIV/AIDS SAA will work to promote integration across the full range of USAID's SAAs. Working across SAAs, the program would ensure a multi-sectoral approach to HIV/AIDS, engaging the democracy and governance, environment and natural resources, and economic growth teams. In some cases, the integration may involve co-funding of activities or outright funding of initiatives in areas of mutual benefit. USAID is currently exploring the best modalities for ensuring synergy with other SAAs on a broad range of areas, but within the strict parameters of USAID's guidance on appropriate use of funds.

Working with non-HIV/AIDS SAAs such as NRM and can significantly broaden the "reach" for the HIV/AIDS program. For example, working with the International Small Group and Tree Planting (TIST) Program in central Tanzania will facilitate reaching over 1,535 small groups engaged in tree planting and other socio-economic activities. Such an approach will allow access to over 75,000 people in Tanzania with appropriate HIV/AIDS prevention messages and other interventions

The current NRM target geographic areas show HIV infection rates ranging between 5% and 24%. Under such circumstances, no development program can ignore the impact that HIV/AIDS can exert on economic growth activities. To ensure its own success, the proposed Environment/NRM program must address HIV/AIDS prevention and management, in partnership with the HIV/AIDS SAA, and work to weave those efforts into sustainable NRM practices to reach vulnerable populations (such as youth and women) and the hardest hit geographic areas. HIV/AIDS prevention and management not only ensures sustainability of the human capital critical for economic growth and sustainable ecosystems management. It also alleviates the threats to the established and traditional resource management or land tenure systems and to the local governance structures themselves, given the exclusive dependency of the economy on the natural resources.

Participatory planning to identify and strengthen the benefits of the specific natural resource categories, such as watershed's forests, to HIV/AIDS affected and infected families is highly anticipated. Non-timber forest products (NTFPs) have met and continue to meet local villagers' needs for energy, construction, food, and health. Sustainable NTFP use is considered an incentive that directly links the conservation of the Usambara Mountain's forests to the livelihood strategies of the mountain villagers. Indigenous knowledge of medicinal plants and their application have a unique role in this planning. In an innovative response to the region's HIV/AIDS crisis, traditional healers and western medicine have pooled their resources in an innovative program that treats HIV/AIDS patients with plant remedies. Initiated in 1990, this collaborative effort has been operating

under the auspice of the Tanga AIDS Working Group (TAWG), which currently provides care to 400 of the country's HIV/AIDS patients. These remedies, which have been observed to improve condition and reduce the incidence of opportunistic infections, are made available for patients preferring traditional medicine. The detailed TAWG narrative is available in the Illustrative approaches section.

Borrowing a leaf from the Tanzania Social Action Trust Fund's (SATF) success story, ample opportunity exist for fostering growth of sustainable natural resources enterprises and helping HIV/AIDS victims (for example orphans) with the profits made from investments while effectively serving conservation interests. Such a fund, which blends economic entrepreneurship, environmentalism, and humanitarianism, will effectively achieve the strategic objectives under USAID's HIV/AIDS and Environment SAAs.

SAA 2:HEALTH



Overview of the proposed Program:

By 2014, USAID envisions significant improvement in quality of life of Tanzanian families in rural and urban areas through increased availability of quality health services. The changes we seek include smaller families, who have access to quality health care in both rural and urban areas. More women will have access to modern contraceptive methods. More children will be immunized. Prevention of malaria and other infectious diseases will be better understood and their incidence reduced. USAID, whose potential financial contributions to the sector will remain modest, will continue to collaborate with other partners, ensuring that its resources effectively complement the investments of other donors, most of whom target the public sector.

Demand for, and increased availability of, quality services are critical factors in improving health sector service delivery and will continue as priorities in the proposed RCH program. There is a need to revitalize and refocus the national program managed by the MOH's Reproductive and Child Health Section (RCHS) and to ensure maximum impact in key areas, including access to modern contraceptive methods and quality services. It requires strengthened leadership, stronger management, and scaled-up implementation if the government and its private and voluntary sector partners are to achieve their stated targets. USAID's work in infectious disease (ID) control will continue, with a focus on improved surveillance and adoption of new practices such as intermittent presumptive treatment of malaria (IPT) and use of insecticide treated bed nets (ITN). The team faces the challenge of increasing the Reproductive Health (RH), Child Survival (CS), and ID program impact with diminishing funds while simultaneously ensuring continued integration with dramatically increasing HIV/AIDS funding.

2. Conceptual Environmental Linkages:

Recent studies by WHO/ EMRO (2002) confirm that a healthy environment³⁷ is not only essential for Human Health but also an essential for sustainable development. An ecosystem is said to be healthy and not suffering from "distress syndrome" as long as it is sustainable; in other words, as long as it remains active and can maintain its function and integrity over time, and rebound from stress. This brings back into play the inevitable quest for sustainability: The definition of sustainability for the purposes of this section embodies the concept of "inter-generational equity" as conceptualized by the World Commission on the Environment and Development (1987). Sustainability requires that the needs of the present be met without compromising the ability of future generations to meet their needs.

Key environmental health threats include: 1) Environmental degradation causes 23% (measured in DALYs) of the total disease burden worldwide, and that proportion is much higher among children, 2) Water pollution and reduced availability lead to 3.4 million deaths every year (worldwide), mostly among children and the poor, 3) Air Pollution

³⁷ Environment here refers only to those physical resources provided by nature distinct from human beings, with emphasis on human use and values of natural resources (e.g., water, land, air).

responsible for estimated 3 million deaths worldwide each year; developing countries account for some 90% of deaths, and 4) Other important sources of environmental health hazards e.g. solid waste, radiation and natural and man-made disasters.

To clearly understand the linkages between the Environment and Human health, the following key concepts need to be understood:

- Sustainable development can only be achieved by healthy people i.e. in the absence of high prevalence of debilitating diseases within the society.
- Better management of the ecosystem could significantly reduce the burden of various diseases (World Bank, 1993). For purposes of planning and information gathering, the limits of a given ecosystem will be defined according to the task at hand and the scope of the process. While in general the limits selected will define an ecological space such as a watershed or a region, we can also designate a farm, an urban subdivision, or a rural community as an ecosystem.³⁸
- Population growth will increase natural resource usage pressures on ecosystems leading into degradation of the environment. Degradation of agricultural land, depletion of forests and fish stocks, and the lack of access to safe drinking water have a major adverse impact on the income and health of the poor.

In addition to providing a livelihood, the environment plays a very significant part in influencing the health of the poor; while the incidence of disease in poor countries is about twice that of rich countries, the disease burden from environmental risks is 10 times greater in poor countries. Environmental degradation has a disproportionate negative impact on both the livelihood and the health of the poor.

Environmental effects on health are associated with the following conditions, all of which exacerbate the spread of disease, place stress on poorly functioning and overburdened health systems, complicate disease etiology, and lead to depletion of human and economic resources:

- Environmental degradation: Air, water, soil, and food insecurity (contamination, availability etc.)
- Inadequate environmental health services: such as water supply, sanitation, solid and hazardous waste management, and shelter; coupled with unsustainable growth of population
- Global environmental problems: such as reduction of biodiversity and degradation of ecosystems through deforestation, global warming, ozone layer depletion, and contamination by persistent organic chemicals;

3. From Concepts to Approaches:

All things being equal, increasing numbers of people place increasing demands on natural resources. If management practices do not adjust to this reality over time, environmental degradation may occur, undermining the productive resources available for livelihoods. In extreme cases, numbers of people simply outstrip the carrying capacity of one or more of the land's critical resources. Due to this linkage, environmental conservation can only be sustained if population growth occurs within acceptable limits. This linkage is one of the fundamental underpinnings of U.S. foreign policy on "population." Practically speaking, while the conceptual linkage is clear, programmatic synergies are more difficult

³⁸ After the Canadian council of ministries of the environment, 1996

to achieve, and limited in scope. A number of programs achieve “economies” by pursuing multi-sectoral programs (e.g. agriculture, family planning/health, and conservation) through a geographical focus and use of common local government or community structures, multipurpose extension agents/animators, and activities that combine more than one sectoral element, as in water resource conservation (health and environment) or soil or tree conservation (agriculture and environment). Examples of such an approach can be found both in the Jane Goodall Institute (JGI)’s TACARE integrated community based development project in Tanzania, as well as in USAID/Madagascar’s landscape-focused development program. Both cases are documented under illustrative approaches (Chapter 5 of this Report).

Research is finding more and more links between health in the marine environment and human health³⁹. Among the examples cited are the consumption of fish and shellfish contaminated from red tides and with viral and bacterial microorganisms such as hepatitis and cholera and swimming in contaminated waters, both of which increase the risk of infectious diseases and provide direct exposure to harmful algal bloom toxins. The collapse of fishery stocks results the loss of important food sources, and the loss or endangering of marine species that may provide invaluable new medical research models and medicines to help treat human diseases. This presents an opportunity for the Health and E/NRM SAA to work in an integrated fashion with communities in and around marine ecosystems (e.g. the Coastal communities) to promote sustainable natural resource use practices in ways that proactively mitigate health hazards for the poor and improve livelihoods. As an example, the Health SAA’s health interventions in seaweed farming communities being promoted by the NRM SAA would generate significant synergies towards increased benefits accruing to the communities including the social (health) benefits.

The poor, in both rural and urban areas, often do not have the luxury of access to safe drinking water. They have to rely on water sources which are frequently contaminated for various reasons. Water-related diseases such as diarrhea and cholera kill a large number of people every year in the developing countries. Any improvement in water quality is likely to yield rich dividends in terms of improving, the health standards and productivity of the poor. The Health SAA could generate significant impact by incorporating into its interventions components that improve water quality and drainage practices.

As people and their livestock encroach on wildlife habitat, disease transmission has deleterious consequences for human livelihoods, fragile wildlife populations, and the livestock herds. Besides the obvious toll from human death itself, there are economic consequences—the loss of a wage earner, the loss of marketable livestock, or the loss of ecotourism dollars. Economic losses to those living in poverty affect their general health and nutrition, resulting in greater susceptibility to disease and thus an increase in disease transmission- establishing a vicious cycle of illness, suffering, and poverty.

Even beyond the impacts of disease, wildlife populations can collapse from over-harvesting, degradation of wilderness habitats, and pollution. This can easily translate into problems of malnutrition, illness, and lost income. Usually those most at risk are the people who, by definition, live on the fringe of society, at the edge of wilderness areas, out of reach of even the most basic healthcare and sanitation systems.

³⁹ <http://heed.harvard.edu/heedreport/exec/exec001.htm>

SAA 3: ECONOMIC GROWTH



Overview of the proposed Program:

By the end of the strategy period in 2014, productive investment in agriculture by producers and agribusinesses will have increased. Sustainable rural infrastructure and stronger advocacy by producer and trade associations will have resulted in policies that encourage investment in higher value and increasingly competitive agricultural primary and processed products. Higher agricultural productivity, enhanced market efficiency, heightened firm competitiveness, and increased value added throughout the marketing chain will have elevated rural incomes and improved food security. Expanding market opportunities for (possibly non-traditional) agricultural commodities will have developed. Finally, increased agricultural trade in staple commodities in national, regional, and international markets will contribute to sustainable economic growth.

Building on past efforts, the Mission's new approach would emphasize market-driven agricultural growth and expanding small farmer and agribusiness linkages that pursue national, regional, and international trade opportunities. The current strategy originally included two separate economic growth (EG) SOs. The first one promoted micro and small enterprise (MSE) development. The second focused on improving rural roads. However, given Tanzania's rapidly evolving economic context, as well as a renewed emphasis on poverty reduction, the Mission realigned the program. This resulted in a merger of the two SOs in a single program aimed at increasing the participation of rural, agricultural MSEs in the economy. The program supports selected agricultural commodities in high-potential regions, identifying constraints and opportunities to improve income and employment opportunities for MSEs (including farms). It promotes market linkages, market information dissemination, policy change, strengthened producer associations, and business skills training as vehicles to enhanced MSE economic participation.

Although the proposed strategic assistance area (SAA) builds on the foundation of the existing EG SO, it will shift the focus toward increasing rural incomes by emphasizing agricultural productivity, agribusiness competitiveness, business friendly policies and institutions, and expanded regional and international trade. The proposed program will align with priorities of both the Tanzanian and U.S. Governments by identifying opportunities consistent with several unfolding initiatives, including Tanzania's Poverty Reduction Strategy and new Agriculture Sector Strategy, and USG initiatives such as the Initiative to End Hunger in Africa (IEHA), Trade for African Development and Enterprise (TRADE) Program, and the African Growth and Opportunities Act (AGOA).

2. Conceptual Environmental Linkages:

Rapid economic growth is a necessary condition for poverty eradication. However, fast economic growth is often accompanied by adverse environmental consequences. Concurrent with Tanzania's resolve to achieve fast growth is its unwavering commitment to effectively reverse current adverse trends in the loss and degradation of environmental

resources (such as forests, fisheries, fresh water, climate, soils, biodiversity) and in the accumulation of hazardous substances. USAID's proposed programmatic focus on rural agricultural development offers significant economic growth, environmental sustainability and poverty alleviation linkages. For example, joint efforts to promote environmentally sustainable rural enterprises in key natural resource areas can generate important results for not just the NRM SAA but also the Economic Growth SAA as well.

The majorities of the rural poor live in ecologically vulnerable places and earn living from low-productivity natural resources⁴⁰. They often live in low-lying, flood-prone areas, on steep mountain slopes, or on dry land and possess low-productivity marginal land devoid of any irrigation facilities. The number of the rural poor in developing countries living on "marginal" land could be twice the number found on better-developed land. Likewise, the urban poor are found in the shanty towns of big cities, which are often built on flood-prone, low-lying areas or around city drains; many of the poor earn their livelihood from environmentally hazardous scavenging. Environmental deterioration in the form of land degradation, frequent flooding, increased pollution, and other hazards aggravates poverty among the both the rural and urban poor.

In Tanzania poor households, especially in rural areas, derive their livelihoods from natural resources, for example, land resources for agriculture and water resources for fishing. It is also found that the poorer the household, the greater is the share of its income from environmental resources⁴¹. The intensity of suffering of the poor from the adverse impacts of environmental shocks is much higher than that of the rich. However, because of the lack of proper assets, the poor are less capable of coping with those impacts. The vulnerability of the poor to environmental shocks is much higher than that of the rich in both rural and urban areas.

Despite the aforementioned background, the relationship between poverty and conditions of the environment is rather complex and context specific. The perception that poor people, especially in rural areas, represent an environmental time bomb has been increasingly refuted by modern research. First and foremost, most environmental degradation is not caused by poor people for the main reason that their levels of consumption and production are much lower than those of the rich. Secondly, empirical studies do not support the assertion that wealth allows people to consider the future and invest in environmental conservation, while poverty leaves people no other option but to exploit the environment. Poor households often take extreme measures to preserve productive capital for the future.⁴² Thirdly, when primary economic livelihood systems (agriculture, pastoralism and fisheries) move into a downward spiral of degrading its resource base it is generally not a Malthusian effect of population increase, but the effect of new competitors entering the ground normally with the backing of government policy.

⁴⁰ Over 50% of the poor in Tanzania live in rural areas which are mainly, fragile, remote and ecologically vulnerable ecosystems. (Household Budget survey 2002).

⁴¹ An analogous situation exists even at the countries-level; the shares of GDP (and exports) originating from sectors whose production is directly connected with environmental resources in poor countries are higher than those in rich countries.

⁴² Moseley, W.G., 2001, 'African evidence on the relation of poverty, time preference and the environment', *Ecological Economics*, Volume 38, Number 3, pp. 317-326.

Too often policies and programmes to reduce poverty and promote growth have been at the expense of the health of the environment, and efforts to protect the environment have not always taken into account the interests of the poor.⁴³ Rather than seeing poverty as a cause to environmental degradation, which may lead us to assume that reducing poverty in itself promotes sustainable development, there is a need to turn the arrows in the opposite direction, which is illustrated in the simplified poverty-environment linkages model below. From this point of view let's look at the Tanzania PRSP – environmental sustainability and management capacity are being built across all sectors with special emphasis on poverty-environment indicators

Poverty-environment linkages

Against the background of the observation that the poor, especially in rural areas, derive a large part of their livelihoods from environmental resources, especially land resources used for agriculture, some of the practices they follow can be damaging to the environment. Clearing forest areas to create land for agricultural use and including slash-and-burn practices are examples of how the poor take environmental degradation responsibility.

Additionally, certain consumption practices of the poor, such as damaging the forest to acquire firewood to be used for cooking and heating could also be detrimental to the environment. The urban poor, most of who live in shanty towns and ghettos, often create unhygienic sanitary conditions because of their lack of access to formal toilet facilities. However, there is overwhelming evidence to show that the impact of poverty on the environment is weak compared with the damage to livelihood and health which the poor suffer owing to environmental degradation not caused by them. Against this background, the impact of poverty on the environment will not be taken up explicitly in the present discussion and analysis.

3. From Concepts to Approaches:

The Nature Wealth and Power study recently carried out by the International Resources Group (IRG) spell out for USAID looking into emerging best practices for revitalizing rural Africa, documented 20 years of natural resource-based development experience,

⁴³ DFID, EC, UNDP and World Bank, 2002, *Linking Poverty Reduction and Environmental Management. Policy Challenges and Opportunities*, Consultation Draft, January 2002.

providing useful lessons to guide economic investments⁴⁴. On one hand the fate of the environment and natural resources can not be separated from the broader context of economic and development challenges; but on the other, neither can economic and development future be separated from the sustainable management of the environment (and particularly the natural resources base).

The proposed approach envisions a range of public-private partnerships, positioning the Mission to leverage investment from private corporations engaged in Tanzania's rural economy. Currently, the Mission is exploring such partnerships within two commodity sub sectors (specialty coffee and seaweed) as well as with Tanzania's Sokoine University of Agriculture. Such partnerships can be further promoted by using "potential for alliance" as a key criterion for selection of commodity sub-sectors. USAID/Tanzania's interventions will be using the NWP approach to capitalize environmental linkages and synergies in the course of implementing the economic growth program; particularly maintaining a focus on the following points:

1) Be strategic about the economics of natural resource management:

- Coordinate NRM resource allocation appropriately.
- Plan and invest at national, regional, local, and micro levels
- Focus on changing tomorrow's economy
- Encourage an enabling environment
- Support alternative income strategies.

2) Strengthen markets and make market incentives a more important part of NRM strategies:

- Help build competitive rural markets
- Promote and/or facilitate joint ventures

3) Invest in rural organizations as the long-term "building blocks" of rural development:

- Promote self-reliance
- Promote and fund local credit schemes
- Emphasize transparency and financial sustainability
- Create systems that facilitate market participation
- Promote establishment of robust rural groups and federations

4) Create a framework in which people can make better NRM choices in their own self-interest:

- Promote NRM solutions that make financial sense and foster economic opportunity
- Apply design and operational principles and undertake economic analysis
- Assure that strategic plans address tenure arrangements
- Explore ways of assuring payments for environmental services

6) Assure that resource managers have—and perceive themselves to have—secure access to the means of production and the benefits of their NRM investments:

- Plan for how changing production requirements interact with land tenure systems.
- Foster clear, stable, legitimate, and democratic common property management
- Encourage and protect clear tenure and property right systems

⁴⁴ Nature, Wealth and Power Report http://www.dec.org/pdf_docs/PNACR288.pdf

USAID/Tanzania’s proposed EG program is agro-focused. Land used for agricultural operations, including grazing land for animal husbandry, provides an important (often the only) source of rural livelihood. The Economic Growth SAA will face a challenge of building in their designs adequate strategic, as well as intervention-level, capacity for proactive mitigation of any adverse impacts resulting from unsustainable agricultural practices. The range of these impacts is quite broad. The widespread use of chemical fertilizer, pesticides, and other chemicals for farming poses a formidable health hazard to the rural poor⁴⁵. Land degradation, either natural or due to the overuse of chemical fertilizers, and the mechanization or depletion of groundwater, which increases soil salinity, could erode the most important modality of livelihood of the rural population, especially the rural poor, who do not possess the means to counter such adverse impacts. As clearly portrayed in a snippet in the illustrative approaches section, the problem of obsolete pesticides in Tanzania is well known.

Also, the EG program will generate significant sustainable impact by increasing income-generating agricultural activities in the Private Sector. These are again tremendously broad ranging including agro forestry, mariculture, sericulture, livestock husbandry, and other conceivable forms of commercial and subsistence agriculture. The objective is to eradicate poverty at the rural household level. With drives that seek to maximize and optimize product mix, the EG program will be challenged with scoping the range of options and alternative income generators. However significant impact and synergies will be experienced wherever targeting is done in a way that overlaps with and complements the NRM program’s focus. Illustrative activities that meet this criterion will include Cottoni seaweed farming (see the seaweed farming success story under illustrative approaches) and tourism business ventures in rural communities gearing to start on wildlife management business ventures.

In Tanzania’s economy, the growth of the private sector is important to provide jobs and growth. EG and NRM programs can collaboratively build entrepreneurial capacity by providing joint-training for those seeking to establish viable businesses. These business skills development efforts should be targeted at both women and men to ensure equity. The effort should include market awareness exposure as well as financial management practices.

Making and marketing of environmentally clean technologies in the rural setting presents an excellent money making opportunity that also has intrinsic environmental benefits. Such technologies will include Fuel-Efficient Stoves, modern beehives, and water purification technologies using the Mlonge tree (*Moringa Oleifera*) and/or like products. In Senegal, USAID support for fuel efficient stoves has enabled metalworkers to increase their incomes. Metalworkers have low status and low incomes in Senegal’s economy. They work on the ground in dusty shops, making basic metallic products. Beneficiaries of USAID support include dozens of metalworkers who make the stoves, hundreds of merchants who sell them and thousands of dependents. Private sector-style advertising has proven effective in making the stoves a household name in Dakar. Consumers benefit

⁴⁵ 22 CFR 216 spells out the strict USAID Policy on safe-use of pesticides

financially by saving approximately \$80 per year worth of charcoal, freeing disposal income for other uses.

Use of environmental economics for “value” of the Natural Resource Base (e.g., Forests, watersheds, habitats, etc) is another key area where the NRM and EG could work together to generate significant impact. Presently, undervaluation of environmental goods and services is the order of the business at all levels in the national economy. This externalization of value and costs has resulted into market failures and serious threats to sustainability of the natural resources base for the benefit of future generations – in gross violation of the principles of intergenerational equity. The case of uncontrolled cutting of indigenous trees for fuel wood done by most of the tourist lodges in national park is one good example of such externalization of costs.

SAA 4: DEMOCRATIC GOVERNANCE



Overview of the proposed Program:

The Mission has already been incorporating governance activities into its Environment/Natural Resources and Health Strategic Objectives under the current country strategic plan. For example, the DG spell out program has helped improve the HIV/AIDS legal environment. By adding governance to the new strategy as a cross-cutting theme, the Mission will be able to further embed governance into those SAA programs. In the future, the environment SAA might include intermediate results for increasing environmental advocacy and for improving access to and control of natural resources by communities and local governments. The economic growth SAA might include regulation and policy advocacy programs to improve coffee producers' access to markets.

2. Conceptual Environmental Linkages:

Good governance is increasingly being proven by research to be a key to managing natural resources and promoting economic growth. Environmental governance is essentially the distribution, exercise, and accountability of power and authority over natural resources. In Tanzania, the major governance issue is control and access to natural resources. Environmental management is political; access to resources and distribution of their benefits are often politically charged and contentious. Underdevelopment, environmental degradation, poverty, and famine result, not so much from a lack of natural wealth, but from decisions and systems, often political in nature, on the distribution of resource wealth and relevant citizen rights. Mismanagement of these resources can contribute to and exacerbate conflict and corruption. Good governance is the key to managing natural resources and promoting economic growth successfully in Africa.

Many development specialists argue that environment should be the primary sector (or entry point or “wedge issue”) for promoting good governance in Africa (and other rural-based economies) because control over natural resources is the main source of wealth and power. Working with communities and local government to manage such resources locally directly addresses the same issues that D&G programs focus on. In this regard, components of most CBNRM programs contribute to D&G, and the current Mission D&G program is designed to build appropriate local capacity towards these same shared goals. Mission experience has also shown the importance of a national level civil society that is capable of advocating for appropriate policies. Entrenched, working-level civil servants in line ministries have shown a reluctance to develop and apply legislation to implement the real spirit of Tanzania's otherwise progressive policies.

As an example, natural resource sector policies are excellent, but implementation agencies have tended to favor conservative legislation that includes very little empowerment of local and civil organization in favor of maintaining much of the long-standing status quo. Strategically focused support to environmental advocacy can have huge payoffs by reducing the time from policy reform to effective implementation. USAID's experience with its E/NRM program to date indicate that effective integration

of governance into E/NRM programs will be better driven by inclusion of activities *within sectoral programs, rather than cutting across them*. Such an arrangement is more likely to promote a continuous dialogue between implementing partners, and mainstream “governance” permanently into the implementation agenda.

3. From Concepts to Approaches:

Governance reforms affecting natural resource management are sweeping much of Africa. These reforms have profound implications on which individuals and institutions will be empowered to decide on using and managing natural resources.

Environmental governance is embedded in larger governance concerns. Good governance in general terms is needed for sustainable development. Better governance of natural resources is only one (but very important) aspect of the nature wealth and power paradigm. In this section governance issues that directly affect NRM are briefly examined; and an illustrative suite of results and activities is drawn. Three schematic governance themes were identified by the SPCC linkages focus group, namely: 1) Decentralized NRM: increased community awareness/advocacy on management issues related to NRM, 2) Gender mainstreaming into the NRM decision making mechanisms, and 3) Promoting accountability and transparency to ensure efficiency in NR governance. Some principles to help organize specific action recommendations are listed below:

1) Strengthen procedural rights at all (including local/ community) NRM level

Natural resource management matters often cross traditional sector boundaries in manners that are complex and that raise diverse legislative and budgetary issues. Operation of the Wildlife Policy at local/communities level is a case in point. The Wildlife Policy of Tanzania (WPT), among other things, anticipates the creation of Wildlife Management Areas (WMA) that would coordinate aspects of wildlife management and decentralize some responsibilities and budget allocations not only from the central to district governments but also further down to authorized associations at villages level. The WMA regulations were approved early this year facilitating the operative legal framework to support implementation of the WPT. There is a need to clarify matters such as land use legislation, central versus district government roles and what reforms of regulations and policies are required. Some results/ activities:

- Strengthen the Environmental Legislation “process”
- Promote understanding of and access to procedural rights
- Assure that rights include information access, decision-making, and environmental recourse
- Assure rights of association, speech, movement, and access to government institutions.
- Sensitize and educate MPs with respect to the importance and complexity of natural resource management activities

2) Improve representation and participation of local communities in decisions making

- Build and strengthen independent Authorized Associations and other organizations to effectively represent local communities interests

- Contribute to performance of government officials and institutions with rural representation

3) Support institutional framework for balanced environmental authority, responsibility, and accountability

Enhancing and regularizing the information flow among various NRM institutions including central and local government, communities, NGOs etc. is the key towards improved authority, responsibility, and accountability. As well, because of the diverse legislative and budget implications of environmental policies that cross sectors institutional harmonization and coordination should be carried out to eliminate redundancy and duplicity. An illustrative package of results would include:

- Increase the capacity of the Environmental Affairs Committee to provide oversight of Ministries and key government agencies involved with natural resource management
- Shift the role of central state authorities from command and control toward technical support and legal oversight

4) Transfer environmental governance powers to authorities representative of and accountable to local populations

- Support inclusive natural resource governance reform processes
- Transfer discretionary decisions before obligations
- Make transfers in the form of secure rights
- Transfer powers even before capacity is demonstrated

5) Explore a minimum environmental standards approach

Overly complex management planning requirements make it difficult, if not impossible, for local communities to use or manage natural resources with reasonable degree of independence. Minimum environmental standards allow for innovation and initiative as well as responsibility to be developed at the local level. An alternative, more effective, approach is to set minimum standards, specify goals, set targets, and establish restrictions and guidelines for environmental use and management. Any government agency, private institution, or individual operating within those restrictions and meeting goals/targets needs no approval from a government or management plan to use or manage resources. This allows for innovation and initiative as well as responsibility to be developed at the local level.

6) Encourage checks and balances, pluralistic approaches, and conflict management

Such support could build on and dovetail with concurrent efforts being undertaken by the USAID/Tanzania Natural Resource Management team and its counterparts in the GOT and civil society to harmonize and develop effective district and local level environmental policies. For example, the USAID-supported Tanzania Coastal Management Project is helping to form Working Groups to coordinate efforts of local governments, diverse donor programs working on coastal environmental conservation and local civil society stakeholders. These Working Groups can help define and implement district level integrated actions plans that can target matters such as water quality decline, shoreline erosion, and damage done by dynamite fishing. Illustrative results would include:

- Enhance MP-constituent relations in districts deemed key under USAID's Natural Resource Management Program.
- Create or modify forums for NRM discussion
- Use NRM conflicts as learning opportunities and facilitate conflict management.

Chapter 5: ANNEXES

ANNEX A: ILLUSTRATIVE APPROACHES

Case #1: TACARE⁴⁶ PROJECT: SUCCESSFUL INTEGRATED DEVELOPMENT MODEL

Kigoma, like other Tanzania regions, faces acute population growth, a struggling economy, and an overloaded ecological system to support livelihood. Kigoma region has the second highest countrywide yearly deforestation rate.

TACARE is actively engaged in endeavors to reverse scarcity of arable land and forest products by supporting sustainable use of natural resources, training in land-use planning, and general access to information. Special focus is on women's development and promoting the development of support groups that strengthen and empower individuals. Recognizing the "population" angle of the problem TACARE operates health projects with a focus on improving access to family planning, education, and supplies. It delivers family planning classes and distributes contraceptives for both men and women. Voluntary counseling services are provided to both men and women in conjunction with distribution of family planning methods. Available methods include condoms, oral contraceptives, voluntary sterilization, IUCD, Depo-Provera, and natural methods. TACARE also trains community members selected by peers to disseminate family planning information and resources. In a 1999 survey, 11,987 people were participating in TACARE's family planning program. In addition to providing family planning methods, Community Based Distribution Agents (CBDAs) also: make house calls to those who cannot travel to family planning centers, provide private peer counseling, keep health records and reports, and serve as role models to their communities by incorporating family planning into their own lives.

TACARE duly espouses the importance of the imperative to sustain the quality land and the broader natural resource base for the life and benefit of not only today's farmers but also the future generations. TACARE also focuses on community socio-economic development to improve the standard of living by uplifting household economies, while promoting reforestation, curbing soil erosion, and delivering education in conservation and sustainable natural resource management to the local population. TACARE also promotes perennial cash crops like oil palm, coffee and coconut, as well as vegetable and mushroom cultivation. Project technicians conduct regular village visits and train farmers and peer educators, while helping to establish on-farm agro-forestry and soil erosion control demonstration plots.

⁴⁶ <http://www.janegoodall.com/jgi/programs/tacare/health.html>

Case #2: EAST USAMBARA CATCHMENT FOREST PROJECT⁴⁷

In the pre-colonial times farming systems on the Usambaras were in a state of ecological equilibrium with the environment: agriculture was practiced in ways that did not endanger long-term sustainability. The East Usambaras were rather lightly populated during the last century and still carried very extensive tracts of forests. The first Forest Reserves were established by the German colonial regime. The forest clearance for large scale agriculture was continued, but on the other hand new forest reserves were gazetted mainly because of concern about environmental degradation. The forests create a suitable micro-climate for growing tea. In 1986 all commercial logging was stopped in a deliberate bid to conserve the remaining forests.

The forests were converted into tea fields

People are mostly living in villages. New cultivation areas are often cleared in natural forest. Cardamom grows well on fresh forest soils in the sub-montane forest zone after smaller trees and shrubs have been removed. Cardamom cultivation requires gradual cutting of the overstorey trees.

Population growth advances forest clearance

The original inhabitants of the East Usambaras are accustomed to acquire their living from the products of forests. The building materials: poles and materials for roofs are brought from the forest. Vegetables, spices, and fodder are collected from the natural forests. The local doctors find drugs and curative plants in the forest. The villagers know plant and animal species well. The holy places of the local population are usually the highest mountain tops or the most magnificent rain forests.

Forest products are required

Community benefits from the forests should be secured by allowing them to use some forest products controllably. The East Usambara Catchment Forest Project has emphasis on boosting local participation. Some village forests have been managed jointly by the village and the forest authority.

Sustainable conservation is not possible without participation of the local communities

⁴⁷ <http://www.metsa.fi/eng/tat/usambara/stake/index.htm>

Case #3: MEDICINAL PLANTS ADD VALUE TO ECOSYSTEM

The Eastern Arc Mountains form a chain of some of Africa's oldest peaks from southeastern Kenya through Tanzania. Their proximity to the Indian Ocean and the prevailing winds results in high rainfall when compared to surrounding areas. Planning is underway to identify and strengthen the benefits of the watershed's forests to local stakeholders⁴⁸.



Non-timber forest products (NTFPs) have and continue to meet local villagers' needs for energy, construction, food and, health. Sustainable NTFP use is considered an incentive that directly links the conservation of the Usambara Mountain's forests to the livelihood strategies of the mountain villagers. Indigenous knowledge of medicinal plants and their application have a unique role in this planning.

In an innovative response to the region's HIV/AIDS crisis, traditional healers and western medicine have pooled their resources in a program that treats HIV/AIDS patients with plant remedies. Initiated in 1990, this collaborative effort has been operating under the auspice of the Tanga AIDS Working Group (TAWG), which currently provides care to 400 of the country's HIV/AIDS patients. These remedies, which have been observed to improve condition and reduce the incidence of opportunistic infections, are made available for patients preferring traditional medicine.

In Tanzania, pharmaceuticals remain unaffordable and access to them is often limited. Because of this, HIV/AIDS victims are cared for at home where traditional healers far outnumber medical doctors. An estimated 15% of adults in Tanzania are HIV positive and in the Tanga region, which includes the Usambara Mountains, the number of those infected is possibly much higher. TAWG is a practical response to the epidemic, based on the indigenous knowledge of the region's ecosystems. As a result, the rapidly growing epidemic is generating a high demand for medicinal plants.

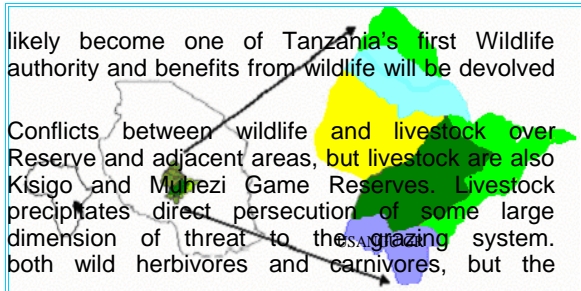
By meeting the health needs of HIV/AIDS victims, indigenous knowledge of medicinal plants adds value to the ecosystems in which they are produced, creating opportunity and incentive for mountain villages to sustainably manage these productive resources. This case study exemplifies the positive potential for linkages as the growing demand for medicinal plants is occurring simultaneously with efforts to support non-timber forest product production.

TAWG and other organizations have recognized the critical role of traditional healers where other forms of medical response are not available. With decreasing natural stocks of medicinal plants, traditional healers are now interested in sustainable management of these important non-timber forest products and conservation of the region's biodiversity.

⁴⁸ East Usambara Catchment Forest Project <http://www.metsa.fi/eng/tat/usambara/>

Case #4: THE LIVESTOCK-WILDLIFE BALANCE IN RUNGWA-RUAHA LANDSCAPE

Grazing, land transformation, unregulated and illegal hunting, and uncontrolled fires threaten the integrity of this wild landscape. The forests of the Isinkuviola Plateau are largely unsurveyed, and like the Eastern Arc Forests to the east and the Albertine Rift forests to the west, probably contain high levels of biodiversity and endemism.



likely become one of Tanzania's first Wildlife authority and benefits from wildlife will be devolved

Conflicts between wildlife and livestock over Reserve and adjacent areas, but livestock are also Kisigo and Muezi Game Reserves. Livestock precipitates direct persecution of some large dimension of threat to the grazing system. both wild herbivores and carnivores, but the

The Lunda-Mkwambi Game Controlled Area will Management Areas (WMA), where management to economically benefit the local communities.

grazing lands are most acute in the Usangu Game kept in Lunda-Mkwambi and adjacent to Rungwa, depredation, whether real or perceived, also carnivores (lions and wild dogs), adding another Diseases among domestic animals may also affect significance of disease interactions at the wild-domestic animal interface is in urgent need of

evaluation in this landscape. Tanzania National Parks (TANAPA) has been investigating a wide range of disease issues across the country, including recent work on canine distemper, tuberculosis, rabies, trypanosomiasis, foot and mouth disease, rinderpest, mange, and anthrax- just to name a few examples.

Solutions to conflicts over fodder resources must avoid simply exporting the problem elsewhere in Tanzania. Coexistence of livestock and wildlife must be explored wherever possible for several reasons. First, complete exclusion of cattle from Usangu GR, for example, may simply concentrate livestock on alluvial fans and lead to more serious local degradation. Second, reductions in livestock numbers could also have serious economic consequences for Mbarali District, which generates approximately half of its tax revenue from livestock. Third, mass exodus of livestock could also contribute to the spread of diseases of significant economic importance to livestock.

Developing acceptable solutions to challenges at the livestock / wildlife interface will of course require close collaboration with local people and with relevant local as well as national authorities. With sound veterinary science, adequate technical and financial resources, and approaches like community-based animal health care (for example), diseases like contagious bovine pleuropneumonia, tuberculosis, brucellosis, and a range of other maladies of significance to domestic animal health and (directly or indirectly) to human health can start to be addressed on the ground and in the policy arena- in ways that secure a future for healthy wildlife as well.

Case #5: PESTICIDES IN TANZANIA: A FRIEND OR FOE? ⁴⁹

As a provider of employment to 80 per cent of the country's population and earner of 40% of the country's GDP agriculture is Tanzania's leading sector in the nation's economy. Various agrochemicals in different formulation have been used in efforts to increase crop production and control losses. There has also been use of chemicals for disease vector control, industrial development and efficient energy production (PCBs) in transformers.

Factors driving obsolete pesticides accumulation in developing countries:

- ✚ **Product bans:** Pesticides banned for environmental or health reasons remain unused and deteriorate over time. Many African countries lack appropriate facilities. Poor stock control and distribution systems can also result in pesticides being kept beyond their shelf life.
- ✚ **Unsuitable products or packaging:** Poor product specification and lack of controls over supplies result in unusable products.
- ✚ **Lack of coordination between donor agencies:** Duplicate, unsolicited, or excessive donations have contributed to stockpiles in many African countries.

Source: **The problem of obsolete pesticides in Tanzania** *The Guardian*; Tuesday January 07, 2003

The program which is about to start is known as the African Stockpile Program (ASP). Current partners of this initiative include financial institutions and specialized agencies including the African Development Bank (ADB), UN Food and Agriculture Organization (FAO), the Global Environment Facility, Pesticide Action Network (UK and Africa), UN Environment Program, UN Industrial Development Organization, the World Bank, (WWF), Secretariat for the Based Convention, Crop life International, the African Union (AU) and Economic Commission for Africa (ECA).

Virtually, every African country has stockpiles of obsolete pesticides and associated wastes that have accumulated over periods as long as 40 years. Only three African countries, which are Gambia, Seychelles and Zambia, are free of obsolete pesticides. The objective of the Africa Stockpiles Program is to clean up and safely dispose of all pesticide stocks from Africa and

help to prevent future accumulations.

FAO estimates that the toxic waste in Africa alone amounts to around 120,000 tons, with more than 500,000 tons worldwide. FAO previously estimated that the amount of obsolete pesticides in Africa at around 50,000 tons. Despite the committed efforts of FAO and others to address the problem, obsolete pesticides continue to accumulate. In some countries, FAO has been very successful in linking the removal of pesticide waste with the improvement of pesticide controls and the promotion of sustainable pest management alternatives.

⁴⁹ Adapted from “**The problem of obsolete pesticides in Tanzania**” *The Guardian*: January 07, 2003

Case #6: SEAWEED FARMING: BENEFITS HOUSEHOLDS AND THE ENVIRONMENT.

SEAWEED farming; one of the several economic opportunities along the coast being promoted by Mtwara-based Coastal Environmental Award Scheme (CEAS) in co-operation with GreeCOM - a USAID environment education and communication project in co-operation with Tanzania Coastal Management

Farming of cottonii and spinosum provides numerous benefits.

Environmental Benefits-

- ✦ **Nutrient sink:** Farming and urbanization place increased nutrient loads in coastal waters. Primary Production: Seaweed farms can be consumed by herbivorous fish, particularly members of the Siganidae (rabbit fish).
- ✦ **Habitat:** Farms are usually placed over barren reef flats or on floating systems in deeper water, creating habitat for finfish and invertebrates. This enhances fish stocks for local fishermen as well.
- ✦ **Alternative sustainable livelihood:** Seaweed farming in Tanzania offers a sustainable alternative to dynamite and other damaging fishing, over-fishing, coral harvesting, reef cleaning and other damaging and unsustainable activities.
- ✦ **Stewardship:** Farmers of the sea maintain their assets in the ocean and therefore are extremely concerned about water quality and guard against damaging activities such as throwing garbage and dumping used engine oil into coastal waters.

Social -

- ✦ In Tanzania 90% of farmers are women. If women have their own source of income, the family benefits through better nutrition, healthcare, housing and education.
- ✦ Young adults are adopting seaweed farming as a livelihood, decreasing migration to urban areas that usually lack job opportunities.

Economic -

- ✦ The purchase of the 7,000mt³/year of spinosum and 1,000mt³/year of cottonii in Tanzania puts around US\$1,000,000 into villages in Tanzania.

Partnership (TCMP) and district authorities, has proved a good revenue earner, especially for women.⁵⁰

"Find some time and go to Mkungu village, you will witness how village communities are proudly stepping out of poverty through seaweed farming," says Mr. Lameck Kinyunyu, the Mtwara District Natural Resources Officer.

"Before seaweed farming was introduced in Mtwara, women used to engage in small scale fishing of sardines which was not very successful. Seaweed farming has bailed us out. The other lady in the group, Semeni Abdu says seaweed farming has liberated women in her village. "The advantage of seaweed farming is that it does not occupy all your time. Even our husbands are happy and some have joined in the seaweed farming activities," Semeni says adding that seaweed farming is progressively becoming a strong and reliable income generating activity.

The active participation of local communities in seaweed farming is also motivating investors. People were reluctant in undertaking seaweed farming. Elaborating on the significance of seaweed farming Kinyunyu says it has brought about both economic and cultural revolutions amongst coastal communities. "Farming of cottonii and spinosum; the preferred sea-weed species, provide numerous environmental, social and economic benefits".

⁵⁰ Adapted from G.Lihikula, Writing for the Guardian, June 2003

Case #7: TIST: BARREN GROUND TO⁵¹ REFORESTATION SUCCESSES IN 3 YEARS.



Household level usage of tree products by far surpasses the reforestation pace; tilting the scales away from sustainability

Millions of people in Tanzania live in vast rural stretches and depend entirely on the land around them to sustain life.

TIST was established in direct response to the needs developed and expressed by Small Groups of Tanzanian subsistence farmers from 1999 to the present. The identified problems include: recurrent famine, declining soil fertility, disease, and lack of shade and firewood – just similar to those shared by millions of smallholder farmers throughout the world.



Deforested area in Tanzania's Dodoma region

During problem identification, Small Groups did not stop with identifying the local problems, but rather established the goals of starting hundreds of Small Groups to plant trees, reduce poverty, improve health, and prevent famine. Not surprisingly, the challenges identified appear frequently in analyses performed by USAID and others institutions seeking to address deforestation problems in Tanzania.



Edeni Group in Banyibanyi, in Tanzania's Dodoma Region, with TIST trees

Since TIST was developed in response to local citizens trying to figure out a solution to their own problems, and because their challenges are similarly faced by thousands of farmers in Tanzania, TIST has already proven to be a workable solution not only in Central Tanzania, but for thousands of other similarly situated farmers and their families as well. Results in TIST's pilot sites in central Tanzania provide ready models for replication and scaling up else where.

Recognizing this opportunity USAID is in the process of investing in the TIST program using GDA FY 2004 funds to enhance and scale up the

successes of TIST in project sites to be soon identified

⁵¹ **The International Small Group and Tree Planting Program (TIST)**

Case #8: BUSSINESS WITH A MISSION BENETITS ENTREPRENEURS AND ORPHANS

The Social Action Trust Fund (SATF) in Tanzania is a non-governmental Trust established by the Government of Tanzania and financed by USAID. It was launched in 1998 with the dual purpose of promoting private sector growth and helping HIV/AIDS orphans with the profits made from investments. The Fund is a creative blend of private sector entrepreneurship and humanitarian response. The executive board is comprised of accomplished Tanzania professionals who volunteer their time to oversee operations.

Enabling their Dream ...



Loan investments account for 86% of total investments with the remainder used to purchase equity positions. It has established a special fund for small and micro projects; in 2000, this special fund approved 33 individual projects valued at nearly TSh 500 million (\$US 625,000). The Fund makes grants to community groups and NGOs working with HIV/AIDS victims and their families.

It has supported 55,376 since 1998. Due to successful return on investments, it has been able to increase the orphan fund every year.

The grants support primary and secondary education to children whose parents have died of AIDS and are therefore unable to pay school fees and the cost of uniforms and books. The goal of the Trust Fund is to double its investment capital to generate enough income to support orphans in all 20 regions in mainland Tanzania. An excellent example of the groups supported by SATF grants is the Kilimanjaro Women's Group Against AIDS (KIWAKKUKI). In addition to assistance from SATF, this organization receives USAID support as part of a network of non-governmental organizations (NGO clusters) leading the battle against HIV/AIDS in the countryside. Depending solely on volunteers and charitable donations, their accomplishments are inspirational. KIWAKKUKI's plans include expanded community education, creating counseling centers for children, and providing vocational training for primary school graduates.

Case #9: BRIDGING INDUSTRY AND NATURE--THE CASE OF BAMBURI CEMENT⁵²

Bamburi Cement Ltd. has mainstreamed environmental concerns and protection into their business objectives. As the company strives to meet its corporate goals they have put in place an innovative strategy that turns environmental responsibility into one of the company's strengths and opportunities. The company espouses Sustainable Development eco-efficiency philosophy and seeks to use social accountability and environmental responsibility to achieve economic competitiveness in production. Bamburi's key environmental objectives include; 1) Reduction of Emissions, Spillages and Other Pollutants, 2) Land Rehabilitation, Greening the Plant, and Recycling, and 3) Conservation Partnerships.

While gas emissions are partly controlled within the manufacturing process, the greater concern was the emission of dust and other pollutants into the atmosphere. Bamburi has launched several projects to monitor and reduce environmental pollution resultant from the manufacturing process. Part of this effort is the \$4 million state-of-the-art kiln cooler dust collectors installed in July 2000.

The company's ongoing quarry rehabilitation program form part of the corporate plan to mitigate the adverse environmental impacts associated with quarry mining. The program started in 1971 with a rehabilitation scheme to a quarry site at the south of the factory. The site was recently named Haller Park and has become a popular nature recreation site for tourists and locals. Situated in Bamburi's 'back yard' it is the company's pride and joy and sets the Plant in beautiful surroundings. This site demonstrates the opportunity - and benefits - of the coexistence of industry with nature.

Bamburi has continued to develop new projects for the other quarry sites with a vision for each quarry varying with geological and environment factors. Each of these staged developments makes the ex-quarry an increasingly alluring recreational spot. For example, The Bamburi Crater Lake is currently being developed in the Central Quarry. The lake will be used for fishing, canoeing, and other environmentally friendly sports. In the centre of the lake, there are two islands which can be made available for daily hire if visitors want to arrange barbecues or picnics. Future developments include a network of waterways interlinking lakes, ponds and wetlands, with potential for canoeing at a later date.

Recently Bamburi launched a project to 'green' the Plant. Grass and trees were planted in the factory, creating a more pleasant environment for factory workers, who take pride in their attractive and clean surroundings. Over two and a half million trees have been planted around the factory and in the quarries. These not only create a beautiful environment, but also help absorb Carbon dioxide from the atmosphere. The Greening followed in the heels of other Plant Clean-up projects including the demolition of obsolete buildings and infrastructural improvements. These were started in 1998 and are continuous.

Bamburi has ongoing a pilot recycling program for paper and printer ink cartridges. Other waste materials will be added to the project in due course. The paper is sent to Baobab Farm, who currently produces recycled paper that is subsequently used for the production of calendars, cards, and gift boxes. Future plans for the use of waste paper include the production egg trays.

Bamburi has a partnership agreement with World Wildlife Fund (WWF) to combat diminishing biological diversity and forest cover around the world. In the context of this agreement, Lafarge (Bamburi Cement Ltd's management company) will, together with WWF, develop a strategy for biodiversity and integrate it into its worldwide quarry rehabilitation programme. Through this agreement Bamburi commits itself to reduce even further the ecological impact of its activities and WWF vows to assist in implementing this commitment. The program aims to support conservation efforts through strategic alliances with companies. Lafarge's annual financial contribution is 1.1 million euros, for an initial term of 5 years.

Bamburi exercises the precautionary approach for the benefit of the environment by carrying out environmental impact assessment for any of their new development (such as the Nairobi Grinding Plant and adjacent pozzolana quarry, and the new Vipingo quarry.) The company also continuously identifies new ways to minimize its impact on the environment and promote its harmonious Industry/Nature co-existence, and continually strives to make the environment better off!

⁵²Adapted from <http://www.bamburicement.com/rehab.htm>

Case #10: EQUITABLE WATER ALLOCATIONS IN THE PANGANI BASIN⁵³

The IUCN Eastern Africa Regional Office received a mandate to start work on equitable water allocations for human and environmental needs at a stakeholder meeting in Moshi, Tanzania from 8 - 10 May. All stakeholders agreed that the increased water abstractions from the basin are seriously threatening the intricate links between livelihoods and environment.

The Pangani Basin, shared between Tanzania and Kenya, drains the southern side of Africa's tallest peak, Mt. Kilimanjaro, as well as neighboring Mt. Meru and much of the Pare and Usambara Mountain ranges. The area is well known for its endemic biodiversity.

However, increased water abstractions for human use in recent years have seen the average water flow in the Pangani River drop from several hundred to just 37 cubic meters per second. Under the current flow regime, the Pangani does not provide enough water to meet competing demands for hydro-electricity generation, irrigation and environmental needs.

Stakeholders from government institutions, universities and research institutes, NGOs and the private sector (including the power company and large and small scale irrigators) met in Moshi, Tanzania on 8-10 May 2002 to discuss water use in the Pangani Basin. Shrinking glaciers on Mount Kilimanjaro, drastically reduced water flows, pollution, invasive weeds, and a regressing delta with saltwater incursions causing erosion are some of the environmental issues that stakeholders voiced concern about.

The meeting concluded with participants highlighting the need for an equitable water allocation system that considers both human and environmental needs in the context of integrated river basin management. IUCN's Eastern Africa Regional Office will act upon this mandate, in partnership with the Pangani Basin Water Office and other relevant organizations, to develop a project to address the institutional, information, management and awareness needs identified in the workshop.

The project is part of the IUCN Water & Nature Initiative, a 5-year partnership for action to develop practical solutions to polluted waterways, dried-up rivers, and drained wetlands. The Initiative finds and tests these solutions in river basins around the world and these on-the-ground experiences assist in developing financial and legal instruments needed for good management.

The IUCN Water and Nature Initiative demonstrates that ecosystem-based management and participation of stakeholders will help solve the water crisis of today - bringing rivers back to life and maintaining the livelihoods of many.

⁵³ Adapted from <http://www.iucn.org/themes/wani/panganimay2002.html>

Case #11: FACING THE CHALLENGES FOR MANAGING THE OKAVANGO DELTA.⁵⁴

Increasing threats to a mighty inland delta...

The Okavango Delta is one of the largest and most important inland wetlands in the world, covering approximately 15,000 km², and harbours the largest Ramsar site in the world. Water supplying the Okavango originates in the highlands of Angola and, after passing briefly through Namibia, enters Botswana in Ngamiland. It is also the habitat of over 2500 species of plants, more than 65 fish species, 20 species of large herbivores and over 450 species of birds.

The Okavango Delta ecosystem provides essential goods and services forming the natural assets of the livelihoods of over 140,000 people. A wide range of livelihood strategies are used including floodplain farming, dryland agriculture, cattle rearing, wage labour, and craft and tourism related activities. Of late, an increasing number of people are benefiting from a community-based project which allows them to administer and allocate natural resources. The diversity of livelihood strategies is closely interwoven with the diversity of the natural resource base of the Delta.

Increasingly the Delta's diversity is under pressure. The unmanaged and uncontrolled expansion of the human activities and the unclear ownership of resources is threatening the livelihoods of the Delta's inhabitants. The Delta is further threatened by the use of the basin water resources for other development purposes including large scale irrigated agriculture, mining, and domestic use, both upstream and around the Delta. The lack of a comprehensive natural resources management plan which accommodates local participation and sustainable resource use currently hinders a healthy and wise development of the wealthy Delta.

Integrated planning to address increasing pressures...

To address the augmenting pressures, an integrated floodplain and water resources management plan is required. The exercise should determine the various development options that exist for the Delta and define a coherent strategy for actions to implement the most preferred option. Planning for the Delta is however not restricted to Botswana. An integrated planning of floodplain development provides a contrasting strategy to the traditional 'needs and solutions' approach. The planning process requires a number of elements: the bringing-together of economic, social and environmental information to provide a holistic view; analysis of critical levels of use and resources abstraction; definition of strategic development options (Master Plan); assessment of their compatibility and economic, social and environmental impacts; and ultimately the choice of best options that meet sustainable and integrated development criteria.

Goal:—Improved integrated floodplain and water resources planning and management in the Okavango Delta

⁵⁴ <http://www.waterandnature.org/d1.html>

Case #12: FISH FARMING: A SUSTAINABLE OPTION IN UGALLA .



Ugalla Community Conservation Project introduced fish farming in Sikonge and Urambo districts in year 2001 as one among environmentally friendly alternative income generating activities that was expected to improve conservation of Ugalla Ecosystem. The project supported communities to utilize the potential of water resources in Ugalla Ecosystem to do fish farming on communities' lands. The move was expected to reduce pressure on natural resources resulting from cutting trees needed to cure fish caught in the protected areas. It was also

expected to increase communities' income through sale of fish and improve nutrition of communities. The intervention was expected to make communities move away from fish catching in protected areas [Forest Reserves and Ugalla Game Reserve] to fish farming on community lands. It was also expected to save communities time spent on walking long distances to catch fish in Ugalla and related poaching practices.

Within two years the number of fishponds in UCCP target villages has increased from one in 2001 to 53 in 2003. Mr. Hassan Kasonta from Sikonge is one among the most successful fish farmer who has increased his fishponds from 2 [2001] to 11 [2003]. Utilizing income from sale of fish, Mr. Kasonta has managed to procure and install a mechanical water pump that he uses for pumping water needed for his fishponds during the dry season and for drinking by other members of communities in his area. In his own words Mr. Kasonta has revealed that the day he decides to do fishing he is not even able to meet local demand for fish, hence his clients have to place their orders in advance.

Mr. Kasonta's success has attracted many people. The District Commissioner for Mpanda for instance has visited Kasonta's farm to learn modern fish farming techniques in order to improve and expand fish farming in his own district. Similarly Mr. Kasonta's farm has been an inspiration to other fish farmers. In Kaliua village, which is not one of UCCP target villages, one farmer [Mr. Kisamfu] has invested about \$ 5,000 to construct a modern fish pond having seen benefits from Kasonta and other fish farmers in UCCP target villages.

Many more communities have taken their own initiatives to venture into fish farming as a business after an initial support from UCCP. Demand for extension in fish farming has increased and hence UCCP has had to use Mr. Kasonta and other fish farmers to carry out farmer-to-farmer extension service, a method that has worked well because farmers use their own vernacular to train others on modern fish farming techniques.

Many members of communities prefer fresh fish harvested from the fishponds as opposed to dried fish harvested in the core-protected area. Fish from these ponds fetch a better price [\$ 3.0 per Kg] compared to fish from the core-protected area [\$ 0.8 per Kg].

The flourishing fish farming industry in Ugalla has significantly reduced pressure on natural resources in Ugalla Ecosystem resulting from cutting trees to cure fish. The industry is expected make a positive contribution in poverty alleviation for Ugalla residents.

Chapter 7:

Case #13: GOLD MINING THREATS IN THE EASTERN ARC⁵⁵

Recent national concern has been sparked by the 'gold rush' seen to the East Usambara Mountains from April 2003 and into 2004. Information obtained shows that gold mining is occurring in the Uluguru, Nguu, West Usambara and East Usambara Mountains. In the Nguu Mountains 3,000 gold miners are said to be digging and panning in alluvial deposits along streams both in farmlands and also within the Pumula national Forest Reserve, and probably elsewhere in the Nguu range. In the West Usambara Mountains a peak of 40,000 people was recorded in Balangai West forest reserve, again digging and panning for gold in alluvial deposits alongside streams. Much more worrying is the continued exploration of other parts of the East Usambaras for gold along stream courses. Illegal mining and mining exploration has been reported in Semdoe FR, Nilo FR, Longuza FR, Derema corridor and is also occurring within Amani Nature Reserve.

Small groups of determined miners are working using local informers and at night time to prospect for gold within these nationally protected areas. Within the Amani Nature Reserve, the illegal miners are being evicted by teams made up of Nature Reserve staff and local villagers. The catchment forest staffs are also trying to deal with the issue of illegal miners within their forest reserves.

The forests of the East Usambara Mountains are regarded as globally important for biodiversity conservation. For example there are 2 species of dragonflies (with wholly aquatic larvae) that are endemic to the forested mountain streams of the East Usambaras. In addition the East Usambaras are the source of the rivers that supply Tanga with its drinking water and pollution of the streams draining Amani Nature Reserve and the Catchment Forest Reserves of the East Usambaras represents a serious potential problem to that town.

In conclusion, gold mining is occurring in a number of places across the Eastern Arc Mountains. The greatest problems are in the West and East Usambaras, and even though numbers of people concentrated in small tented camps seems to be declining, people have now dispersed into smaller mobile groups who are testing stream and swamp areas across the highlands, including within Forest Reserves and the Amani Nature Reserve.

⁵⁵ *Adapted Burgess, Kilahama, Sawe, Mahimbo and Nderumaki, March 2004*

ANNEX B: SCOPE OF WORK

Scope of Work

Environmental Threats and Opportunities Assessment USAID/Tanzania Country Strategic Plan 2005-2015

1. Objective

The objective of this work is to provide USAID/Tanzania a countrywide Environmental Threats and Opportunities Assessment (ETOA) that will inform the development of the USAID/Tanzania Country Strategic Planning (CSP). Conduct of the ETOA will fulfill legislatively mandated Sections 117 – 119 of the Foreign Assistance Act (1961), Agency guidance on country strategy development, and USAID environmental procedures described in Title 22 CFR Part 216. The ETOA will proactively examine the cross-sectoral linkages of environmental management to USAID/Tanzania’s proposed CSP portfolio. Additionally, the ETOA will examine the linkages between environment and natural resource issues and cross-cutting themes identified by USAID/Tanzania.

2. Background

Environmental Requirements: The ETOA must meet the following core environmental requirements of USAID operating unit strategic plans as spelled out in ADS 201.5.10g, and derived from provisions of the Foreign Assistance Act (FAA).

- *Environmental Sustainability.* USAID/Tanzania recognizes the fundamental underpinning of Tanzania’s natural environment and natural resources to any successful development program. FAA Section 117 “Environment and Natural Resources,” dictates that operating units will implement their programs with an aim toward maintaining and restoring natural resources upon which economic growth depends and to consider the impact of their activities on the environment.” The legal requirements are reflected in USAID’s ADS Chapter 204 “Environmental Procedures,” which provides essential procedures and policy on the application of 22 CFR Part 216. This regulation codifies the Agency’s procedures “to ensure that environmental factors and values are integrated into the AID decision making process.” Further, 22 CFR 216.5 requires USAID operating units to conduct their assistance programs in ways that are sensitive to the protection of endangered or threatened species and their critical habitats.
- *Tropical Forestry and Biological Diversity.* Sections 118 “Tropical Forests” and 119 “Biological Diversity” of the FAA codify the more specific U.S. interests in forests and biological diversity. These two provisions require that all country plans include: 1) an assessment of the threats to tropical forests and biological diversity; 2) an analysis of the actions necessary in that country to conserve tropical forests and biological diversity; and 3) the extent to which current or

proposed USAID actions meet those needs. Section 118 and 119 analyses are specific legal requirements of all operating unit strategic plans.

Identify and promote cross-sectoral linkages: Environment and natural resource issues are fundamentally linked to all development sectors. Therefore, this analysis will proactively examine linkages across USAID/Tanzania's proposed CSP portfolio with the intent to highlight potential entry points for incorporation of environmental management issues to enhance results across the Mission's integrated strategy. Cross-cutting themes/issues (such as gender and governance) identified by the Mission will also be examined for linkages with environment and natural resource issues.

1996 Environmental Assessment: The previous CSP benefited from a comprehensive Environmental Assessment conducted in 1996, similar in scope and objective to the proposed ETOA. This ETOA will build upon the previous assessment while updating and expanding the scope to include the section on cross-sectoral linkages and cross-cutting themes. The 1996 Assessment identified the six categories of environmental problems affecting Tanzania:

1. soil degradation;
2. degradation of inland water systems;
3. degradation of coastal and marine resources;
4. deforestation;
5. depletion of wildlife populations and habitat loss; and
6. loss of biodiversity.

The 1996 Assessment further identified the seven root causes for the environmental problems affecting Tanzania:

1. unclear resource tenure arrangements;
2. weak horizontal and vertical policy harmonization;
3. weak institutional capacity to implement policies and legislation;
4. insufficient involvement of rural resource users in policy formulation and natural resource management;
5. lack of legal and institutional framework capable of supporting natural resource management;
6. lack of enforcement capability of existing environmental regulations; and
7. undervaluation of some components of the resource base by Tanzanian Government and resource users.

SO2 Retreat: The SO2 Annual Program Retreat was held February 3-6, 2003. The retreat was attended by over 70 participants representing the Tanzanian Government, local and international NGOs, US Embassy, USAID/Tanzania and USAID/Washington. During the retreat, two informational gathering activities were undertaken to inform the ETOA. The first activity identified current perceived environmental threats and opportunities within Tanzania. The list of threats and opportunities resulting from this activity is attached as Annex 1. The second activity provided information on the most recent relevant documents and contacts to inform the ETOA. The information was subdivided into the following categories: general environment, biodiversity, forestry, wildlife, coastal, wetlands/freshwater, agriculture, desertification, urban, mining, energy,

policy instruments and cross-cutting areas. The list of consensus documentation is attached as Annex 2.

3. Purpose and Objectives of the ETOA

The tasks embodied in this SOW will advance USAID/Tanzania’s CSP by providing and ensuring:

- An assessment of the status and trends of Tanzania’s tropical forests and biological diversity;
- An understanding of development threats (including existing and proposed policy initiatives as well as the legal and regulatory framework) to the environment, biological diversity and tropical forests;
- An understanding of actions that must be taken to maintain biological diversity, tropical forests and ensure sustainable environmental management based on the analysis of threats and opportunities;
- A proactive assessment of entry points to promote environmental sustainability and cross-sectoral linkages within USAID/Tanzania’s portfolio; and
- An understanding of the linkages with environment and natural resource issues and cross-cutting themes identified by USAID/Tanzania.

4. Implementation Plan

ETOA Team: The existence of the 1996 Environmental Assessment, together with the ready availability of recent documentation on environmental threats and trends in Tanzania will allow the ETOA to be done “in-house” utilizing human resources from USAID/Tanzania, REDSO and USAID/Washington. The ETOA team will be as follows:

- Core members: Asukile Kajuni (USAID/Tanzania), Gilbert Kajuna (USAID/Tanzania), Mary Hobbs (USAID/REDSO)
- Virtual members: Daniel Moore (USAID/Tanzania), Walter Knausenberger (USAID/REDSO), Leslie Johnston (USAID/Washington), Robin Martino (USAID/Washington), Mary Rowen (USAID/Washington)

Workplan/Timeline:

Step 1:	Collect and review the relevant documentation.	Feb 17 – 28
Step 2:	Develop report outline	
		Feb 17 – 19
Step 3:	Share SOW with the Mission SPCC and sensitize SPCC on the purpose of the ETOA	
		Feb 26
Step 4:	Assign specific areas for core and virtual team to review	

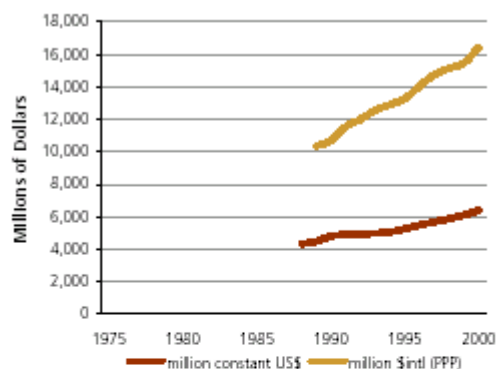
- and begin drafting sections for the report.
Feb 20 – Mar 15
- Step 5: Conduct interviews, as needed, with key USAID/Tanzania,
Tanzanian Government and NGO personnel to clarify
issues and bridge knowledge gaps
Feb 20 – June 17
- Step 6: Conduct site visits, as needed, for additional information
Feb 20 – June 17
- Step 7: Assemble all sections drafted by core and virtual team
members into one document. June 9 – 20
(Mary Hobbs – TDY#2 June 9-20)
- Step 8: Mission workshop to present the findings of the ETOA
and receive feedback from SAAs/SOs June 19
- Step 9: Revise document based on Mission workshop
and circulate to wider audience. June 30
- Step 10: Finalize document Aug 15

ANNEX C: KEY TRENDS AND METRICS:

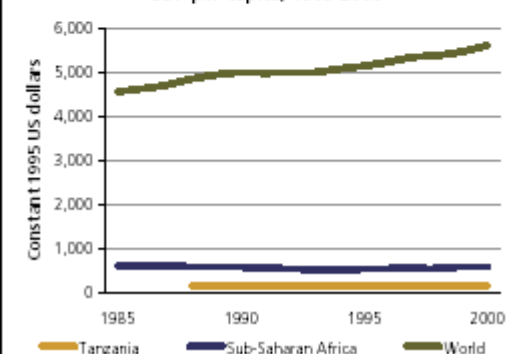
ECONOMIC INDICATORS:

	Tan- zania	Sub- Saharan Africa	World
Gross Domestic Product 2000			
GDP in million constant US dollars	6,419	326,493	34,109,900
GDP PPP (million current international dollars)	17,606	1,053,452	44,458,520
Gross National Income (PPP, in million current international dollars) 2000	17,522	1,053,452	44,913,910
GDP per capita 2000			
In 1995 US \$\$	183	617	5,632
In current international \$\$	501	1,797	7,416
Average annual growth in GDP 1991-2000			
Total	3%	2%	3%
Per Capita	0%	0%	1%
Percent of GDP earned by:			
Agriculture: 2000	45%	17%	X
Industry: 2000	16%	31%	X
Services: 2000	39%	53%	X
International Trade			
Trade in goods and services (million current US dollars)			
Imports, 2000	2,094	80,896	X
Exports 2000	1,352	78,438	X
Exports as a percentage of GDP			
	15%	33%	X
Balance of Trade, 2000 (million current US \$)			
	-769	1,213	X
Official Development Assistance (ODA) & Financial Flows			
ODA in million US dollars			
1998-2000	1,012	8,040	59,073
ODA per capita in US dollars 1998-2000			
	30	17	10
Current Account Balance (million US \$) 2000			
	-298	X	X
Total external debt (million US\$) 2000			
	7,705	224,885	X
Debt Service as a % of export earnings 1995-1997			
	16.6%	X	X
Foreign Direct Investment, Net flows (US\$\$) 2000			
	193	6,664	X
International Tourism Receipts			
	313	X	X
National Savings (as a % of Gross National Income)			
Gross National Savings, 2000			
	14%	13%	23%
Net National Savings, 2000			
	7%	5%	X
Adjusted Net Savings, 2000			
	10%	-1%	X
Income Distribution (years vary)			
Gini Co-efficient (0=perfect equality, 100=perfect inequality)			
	38	X	X
Percent of the total income earned by the richest 20% of the population			
	45.5%	X	X

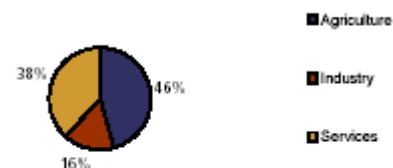
Gross Domestic Product, Tanzania, 1975-2000



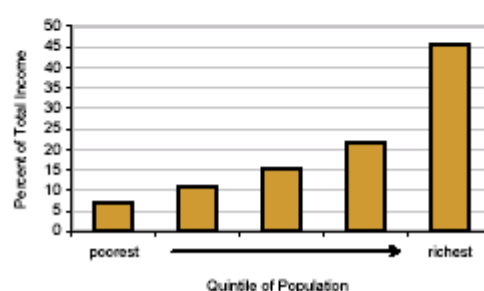
GDP per capita, 1985-2000



Allocation of GDP by Sector, Tanzania, 2000



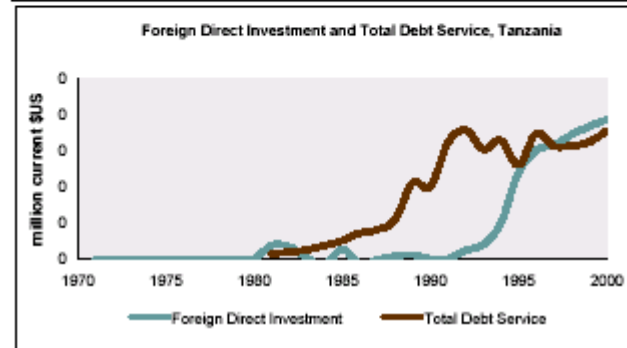
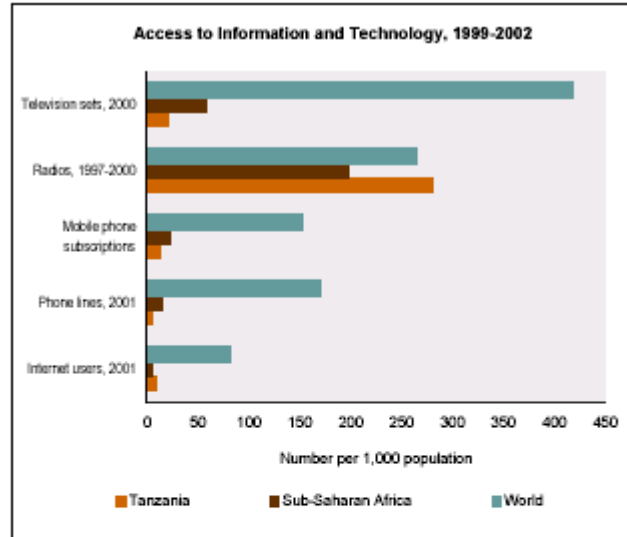
Distribution of Income, Tanzania



Percent of total income earned by the poorest 20% of the population	6.8%	X	X
National Poverty Rate	41.6%	X	X
Poverty Rate, Urban Population	24.4%	X	X
% of population living on less than \$1 a day	19.9%	X	X
% of population living on less than \$2 a day	59.7%	X	X

ENVIRONMENTAL INSTITUTIONS AND GOVERNANCE-TANZANIA

	Tanzania	Sub-Saharan Africa
Governance Indices		
Freedom house Indices {a} 2001		
Level of Freedom (free, partly free, not free)		
Political Rights (1-most free, 7=least free)	Partly free	
Civil liberties (1-most free, 7=least free)	4	
Press freedom (1-30=free, 31-60=partly free, 61-100=not free)	4	
Policy Indices 2000	49	
Level of democracy/autocracy (-10=strongly autocratic, +10=strongly democratic)	2	
Level of political competition {a}	fractional	
Transparency International Indices		
Corruption perception index (10=least corrupt, 0=most corrupt)	2	
Civil Society		
Number of International non-governmental (NGOs) 2000	1,082	32,825
NGOs per million population 2000	32	59
Number of formally committed municipalities to Local Agenda 21, 2001	13	133
Agenda 21 national reporting status, 2002	pending	
Government Expenditures and Financial Flows		
Development Assistance as a percent of government expenditures (1995-97)	X	X
Govt. expenditures as a percent of GDP		
Military 2000	x	X
Public Health, 1997	1.1%	2.4%
Public education 1995-1998	2.1%	5.2%
Foreign Direct investment net inflows, 2000(million current US\$)	193	6,664
Total debt service (1997 (millions current US\$))	161	x



Development

Assistance Per capita

1997 (current US \$\$) 31 x

Access to Information and Technology

Number of Internet

hosts, 2000 816 211,036

Number per 1000

population of:

Internet Users,

2001 {d} 8 6

Phone Lines,

2001 {d} 4 14

Mobile phone

subscriptions 12 23

2001 {d}

Radio receivers 281 198

1997-2001

Television sets, 20 58

2000

Status of freedom of

information

FOIA legislation

2002{e} pending

ENERGY AND RESOURCES-TANZANIA

	Tan- zania	Sub- Saharan Africa	World
Energy Production and Consumption (in thousands of metric tons of oil equivalent)			
Total energy production in 2000	14,601	552,808	10,077,984
% change since 1980	54%	71%	37%
Energy Imports 1997	781	28,564	9,521,506
Energy Exports 1997	29	219,173	3,416,104
Total Energy Consumption {b} 1999	15,033	X	9,702,786
Electricity Consumption 1999	155	X	1,040,770
Energy Consumption per capita 1997	0.45	0.54	1.64
% change since 1990	-8%	-2%	0%
Energy consumption per GDP, 1999	823	425	224
%change since 1990	-8%	4%	-13%

Energy Consumption by Source 1999 (in thousand metric tons oil equivalent)

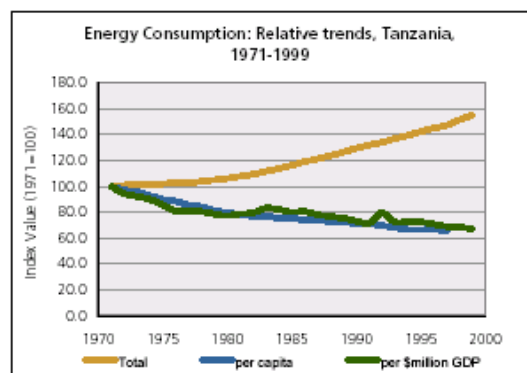
Total Fossil Fuels	762	X	7,689,047
Coal and coal products	3	X	2,278,524
Crude oil and natural gas liquids	0	X	3,563,084
Natural gas	0	X	2,012,559
Nuclear	0	X	661,901
Hydroelectric	187	X	222,223
Renewables, excluding hydroelectric:		X	
Primary solid biomass (excluding fuelwood)	14,079	X	
Biogas and liquid biomass	0	X	
Geothermal	0	X	
Solar	0	X	
Wind	0	X	
Tide, wave, and ocean	0	X	

Energy Consumption by Sector 1999 (in thousand metric tons oil equivalent)

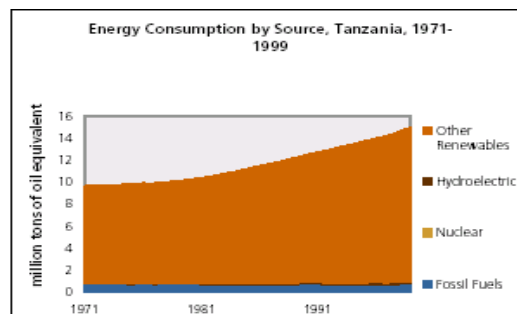
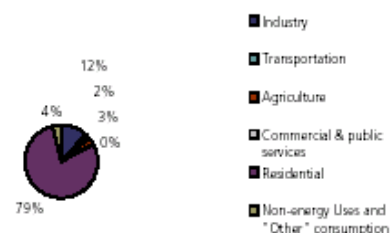
Industry	1,581	X	2,140,474
Transportation	290	X	1,755,505
Agriculture	436	X	166,287
Commercial and Public Services	40	X	511,555
Residential	10,697	X	1,845,457
Non energy uses and 'other' consumption	543	X	333,981
Total final energy consumption	13,589	X	6,753,276

Resource Consumption

Passenger cars per 100 people 1998	X	X	109
Annual motor gasoline consumption 200 (liters per person)	X	X	179
Annual meat consumption 1998 (kg per person)	10	13	38
Annual paper consumption, 2000 (kg per person)	X	X	53
Annual coffee consumption, 2001 (kg per person)	0	X	X

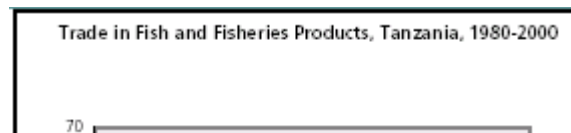
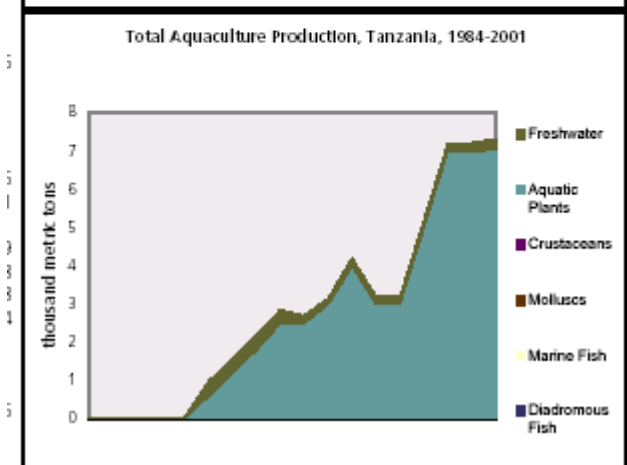
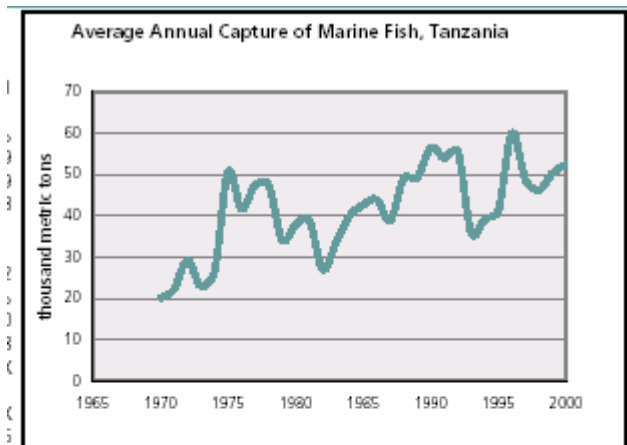


Energy Consumption by Sector, Tanzania, 1999



COASTAL AND MARINE ECOSYSTEMS-TANZANIA

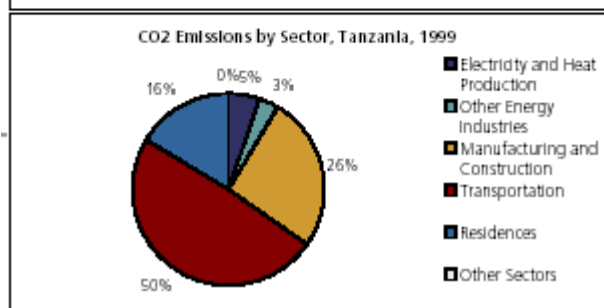
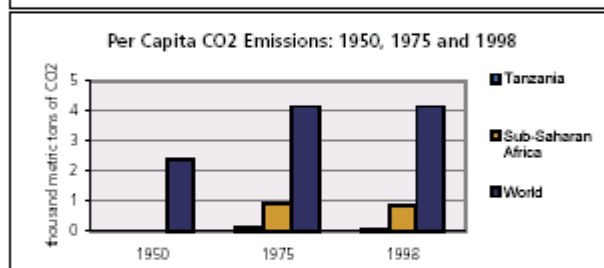
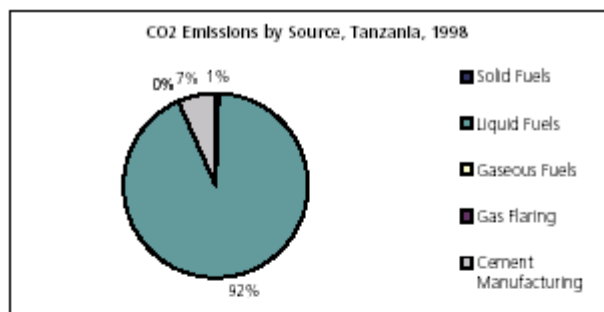
	Tanzania	Sub-Saharan Africa	World
Coastal Statistics 2000			
Length of coastline (km)	3,461	63,124	1,634,701
% populations within 100km of the coast	21%	X	39%
Area of continental shelf (km ²)	17,903	987,021	24,285,959
Territorial sea (km ²)	36,578	871,895	18,816,919
Claimed exclusive economic zone (km ²)	204,294	7,866,074	102,108,403
Coastal Biodiversity and Protected Areas Data 1990s			
Area of Mangrove forests (km ²)	3,233	38,013	169,452
% of protected mangrove forests	0%	1%	18%
number of mangrove species	10	17	70
Number of seagrass species	7	15	58
Number of scleractinia coral genera	57	68	X
International legal net trade in live coral (1997)	X	-202	X
Number of marine or littoral protected areas, 1999	9	150	3,636
Wetlands of international importance extent(km ²) 2000	X	143,481	730,116
Fisheries Production			
Average annual capture (excludes aquaculture) in metric tons			
Marine Fish, 2000	52,407	X	84,411,066
Mollusks and crustaceans 1997	3,153	140,424	12,055,801
Aquaculture production in metric tons			
Total (includes freshwater) 2000	7,210	55,520	45,715,559
Marine and Diadromous fish, 1997	X	1,202	2,623,888
Mollusks and			



crustacean s, 1997			
Aquatic plants	X	6,299	9,889,688
	3,000	3,095	7,241,754
Fish Consumption and Trade			
Per capita food supply from fish and fishery products (kg/person)	8	8	16

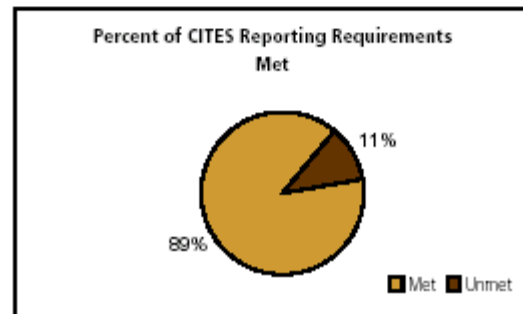
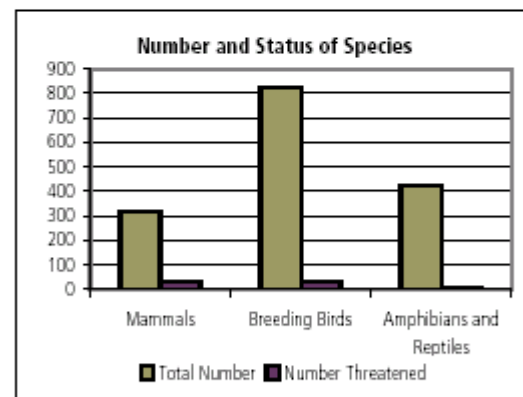
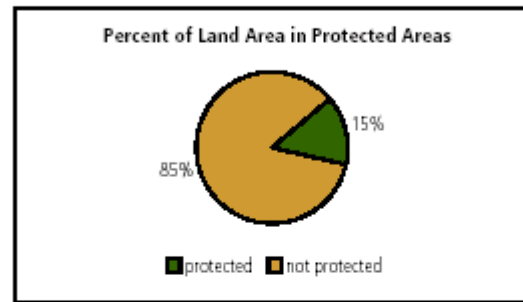
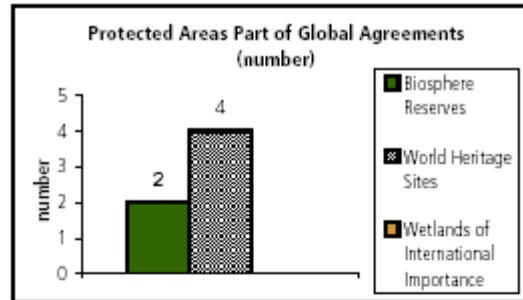
CLIMATE AND ATMOSPHERE-TANZANIA

	Tanzania	Sub-Saharan Africa	World
Carbon dioxide emissions in thousand metric tons CO₂			
Total emissions, 1998	2,227	515,001	24,215,376
% change since 1990	-2%	10%	8%
Emissions as % of global CO ₂ production	0.0%	2.1%	
Emissions in 1998 from:			
Solid fuel	15	292,852	8,654,368
Liquid fuel	2,063	151,843	10,160,272
Gaseous fuels			
Gas flaring	0	16,330	4,470,080
Cement manufacturing	0	42,110	172,208
	149	11,865	158,448
Per capita CO ₂ 1998 in thousand metric tons	0.1%	0.8	4.1
% change since 1990	0%	-12%	-2%
CO ₂ emissions in metric tons per million \$\$ GDP, 1998	400	X	773
% change since 1990	-21%	X	-10%
Cumulative CO ₂ emissions 1900-1999 in billion metric tons	87	16,887	933,686
CO₂ Emissions by Sector, 1999, in million metric tons			
Public electricity, heat production, and auto producers	0	X	8,693
Other Energy Industries	0	X	1,205
Manufacturing and construction industries	0	X	4,337
Transportation	1	X	5,505
Residential	0	X	1,802
Other Sectors	X	X	5,640
Total Emissions (all)	X	X	27,180
CO₂ Intensity, 1999			
Emissions per total energy consumption (metric tons CO ₂ / tetajoule energy)	3	32	56
Emissions per GDP (metric tons of CO ₂ /million \$ PPP)	120	X	582



BIODIVERSITY AND PROTECTED AREAS-TANZANIA

	Tanzania	Sub-Saharan Africa
Protected Areas 1999		
Protected Areas (number)	39	1,005
Area of Protected Area (000ha)	13,817	146,904
% of land area in protected area	14.6%	6.0%
Number of protected areas at least:		
100,000 ha in size		
1 million ha in size	19	202
	3	33
Number of marine protected areas	9	150
Protected Areas Part of Global Agreements		
Biosphere reserves (number)	19	202
World Heritage site (number)	3	32
Wetlands of international importance (number)	X	70
Number and Status of Species		
Total known mammal species	316	X
Known endemic mammal species	15	X
Known threatened mammal species	33	X
Mammal species per 10,000km ²	70	X
Total known bird species	289	X
Known endemic bird species	61	X
Known threatened bird species	4	X
Bird species per 10,000km ²	64	X
Total known reptile species	133	X
Known endemic reptile species	49	X
Known threatened reptile species	0	X
Reptile species per 10,000km ²	30	X
Total known fish species	X	X
Known threatened fish species	19	X
Total known higher plant species	10,008	X
Known endemic higher plant species	1,122	X
Known threatened higher plant species	326	X
Plant species per 10,000km ²	2,231	X
CITES Implementation		
Year CITES Entered into Force	1980	X
CITES reporting		



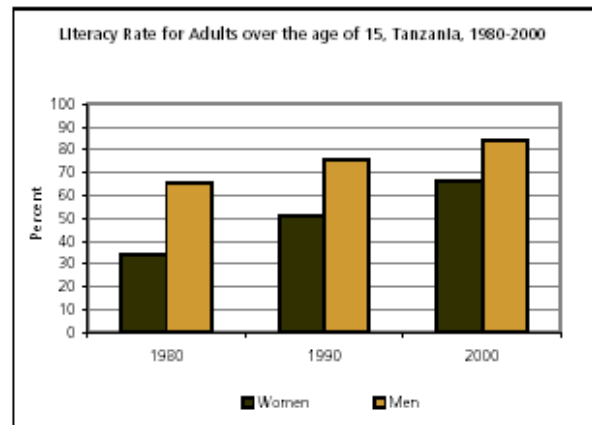
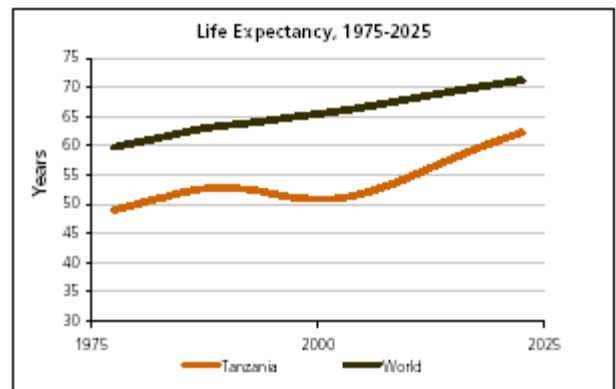
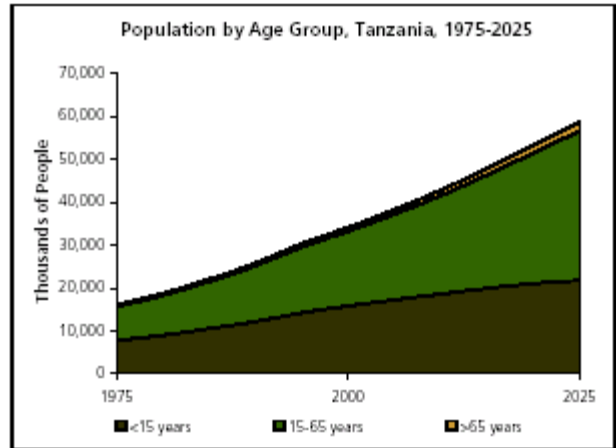
requirements met, 1997	89%	X
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POPULATION, HEALTH, AND HUMAN WELLBEING-TANZANIA

	Tanzania	Sub-Saharan Africa	World
Demographic and Health Indicators			
Total Population (in thousands of people)			
1950			
2002	7,886	176,775	2,519,495
2025(projected)	36,820	683,782	6,211,082
	60,395	1,157,847	7,936,741
Population density (people per km)			
	37.2	25.3	45.1
Average Annual Population growth rate (1908-2000)			
Total	1.4%	2.7%	1.6%
In rural areas	1.1%	1.9%	0.9%
In urban areas	2.6%	4.7%	2.4%
% of population: under age 15			
(2002)	44%	44%	29%
over age 65			
(2002)	3%	3%	7%
living in urban areas(2000)			
	33%	34%	47%
Average total fertility rate			
1975-1980	6.7	6.7	3.9
2000-2005	5.0	5.6	2.7
Infant Mortality rate 2000-05	73	89	55
Under 5 mortality rate 2000-05	165	175	85
Life expectancy at birth (years) 2000-05			
Female	52.0	49.8	68.1
Male	50.1	48.3	63.9
Births attended by trained personnel 1994-2000	36%	39%	57%
Adults and Children infected with HIV/AIDS 2001			
	1,500,000	28,500,000	40,000,000
% of adults age 15-49 infected with HIV or AIDS 2001	7.8%	9.0%	1.2%
Number of children orphaned by AIDS since the beginning of the epidemic	810,000	11,000,000	40,000,000
Safe Water and Sanitation			
Access to Improved Sanitation 2000			
Urban			
Rural	99%	72%	85%
	86%	44%	40%
Access to Improved Water source 2000			
Urban			
Rural	90%	82%	95%
	57%	47%	71%

School Enrollment and Literacy

Net Primary School enrollment both sexes



1980	X	X	X
1997-1999	48%	X	X
Net secondary school enrollment 1997-99			
Female	3%	X	X
Male	4%	X	X
Gross tertiary school enrollment 1996-99			
	1%	X	X
Adult literacy rate 2002			
Female	69%	55%	75%
Male	85%	71%	86%
Youth literacy rate (ages 15-24) both sexes			
1980	69%	55%	80%
2002	92%	79%	87%

ANNEX C: SELECTED BIBLIOGRAPHY

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ANNEX D: CONSULTATIVE FORA USED

Following is a list of events that contributed to the consultative process in the course of thinking through USAID/Tanzania's strategic interventions in the Environment / Natural resources SAA

Dates	Name of Forum	Venue	Participation level
Nov.2002	SOT meeting	Morogoro	20 people
Feb 2003	SO2 Annual Retreat	Momella	80 people
Apr 2003	SPCC Linkages meeting	DSM (USAID)	16 people
May 2003	SOT meeting	Tabora	15 people
Oct 2003	RF Development	DSM	20 people
Nov 2003	SOT meeting	Arusha	15 people
Nov 2003	Oversight Committee Meeting	Arusha	15 people
	Electronic distribution and feedback from RF	Electronic media	est. 100 people
Feb 2004	SO2 Annual Retreat	Ngurdotto, Arusha	est. 50-60 people
ONGOING	USAID/W and others virtual team dialog	Electronic media	
ONGOING	In-Mission consultation w/ other teams	Unscheduled	

