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THE GOVERNMENT OF TANZANIA

AGRICULTURAL SECTOR DEVELOPMENT PROGRAM

(ASDP)

One voice among many voices of Tanzanias women farmers with access to irrigation services.

" I do not consider myself poor. I am able to assist my husband with all our needs. I grow wheat for my family's food security needs and rice as my main cash crop.

We used to live in a mud house, but now we live in a brick house with a secure and leak free roof. I am strongly considering sending my children to a private secondary school in our area, if they are not granted acceptance into the state school. All this, thanks to the Lower Moshe Irrigation Project.

I could raise my farm income even more, if I had access to more irrigated land with enough water. I also need access to market/crop price information and micro-credit so that I can further raise my income from processing/milling my grains which I will then sell at a higher price.

Sadia Danga
From Lower Moshi Irrigation Project, Moshi, Kilimanjaro Region, Tanzania (August 2005).

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

(FINAL DRAFT AUGUST 2005)

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1.0 EXECUTIVE SUMMARY

In August 2001, The Government of Tanzania (GoT) approved the Agricultural Sector Development Strategy (ASDS) which envisages an agricultural sector that, by 2025, is modernized, commercial, highly productive and profitable, and utilizes natural resources in a sustainable manner. The ASDS has identified five strategic issues:

- Strengthening the institutional framework.
- Creating a favorable environment for commercial activities.
- Clarifying public and private sector roles in improving support services.
- Strengthening marketing efficiency for inputs and outputs, and
- Mainstreaming planning for agricultural development in other sectors.

The GoT with financial assistance from the World Bank, International Fund for Agricultural Development (IFAD) and other bilateral donors is planning to implement the Agricultural Sector Development Program (ASDP), to serve as the overall framework and operational process for implementing the ASDS. The ASDP also provides GoT, especially the four ASLM's[1] with a sector-wide framework for overseeing the institutional reforms and investment priorities.

The Program Development Objectives of the ASDP are;

(i) Sustained 5 percent annual growth of agricultural GDP (averaged over a rolling three year period) through improved productivity and profitability of the sector and

(ii) Higher farm productivity, profitability and incomes through improved access to and use of relevant agricultural knowledge and technology by farmers; increased district level investment; and improved market development.

To achieve these objectives, Phase 1 of the ASDP is structured into two components:

- **Component 1 – National Level Support**
- **Component 2 – District Level Support**

Component 1. National Level Support: The program will provide funding through the strategic plans of the agriculture line ministries, initially for support to agriculture research (through the zones), to larger scale irrigation based on demand from the districts, and for market development.

Component 2. District Level Support: The program will provide funding through District Agricultural Development Plans (DADPs) for agricultural investments, support for improvements of LGA core regulatory functions, and support to reforming the agricultural extension system. Consistent with the local government capital development grant transfer system, districts will be assessed on performance against progress on these elements which will determine the level of funding they can access from the program, which will take the form of three formula-based block grant transfers which form the sub-components of the district level support.

[1] The ASLMs include the three sector line ministries: The Ministry of Agriculture and Food Security (MAFS), Ministry of Water and Livestock Development (MWLD) and Ministry of Cooperatives and Marketing (MCM), as well as the President's office – Regional Administration and Local Government (PO-RALG)

Development activities at the national level are to be funded based on the strategic plans of the line ministries while activities at the district level are to be implemented by local Government Authorities (LGAs), based on District Agricultural Development Plans (DADPs). The DADPs are to be part of the broader District Development Plan (DDP).The ASDP is to be supported through a multi-donor "basket funded" arrangement to prevent high transaction costs of parallel programs. The basket would move towards budget support and, through detailed design of the program, would ensure improved efficiency of these sector expenditures. Efforts would be made to ensure that the "basket" abides by the principles of the budget process to ensure greater sustainability of the program.

The ASDP is designed as a three phase program with Phase1, 2 and 3 each planned for three years.

However, since the exact locations of the areas where DADP sub projects are to be located was not known at the time the ASDP was being prepared, the Laws of the United Republic in Tanzania and Operational Policy 4.01 of the Bank requires the Government of Tanzania (GoT) to prepare an Environmental and Social Management Framework (ESMF) which is to establish a mechanism to determine and assess future potential environmental and social impacts of all program activities to be financed under ASDP, and then to set out mitigation , monitoring and institutional measures to be taken during implementation and operation of the program activities to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels.

Furthermore, the GoT is also required to prepare a Resettlement Policy Framework (RPF) to address the needs of those who might be affected when an operators operations causes the involuntary taking of land and other assets resulting in: (a) relocation or loss of shelter, (b) loss of assets or access to assets (c) loss of income sources or means of livelihoods, whether or not the affected person must move to another location. The RPF has been prepared as a stand alone and separate document.

The GoT is further required to disclose both documents (the ESMF and the RPF) in-country as two separate and stand alone documents so that they are accessible by the general public, local communities, potential project-affected groups, local NGO's and all other stakeholders and also at the Infoshop of the World Bank and the date for disclosure must precede the date for appraisal of the program.

The key highlights in this ESMF are as follows;

- Detailed and comprehensive environmental and social baseline data which will provide the environmental and social management process with key baseline information when identifying adverse impacts. The information contains data on Tanzania's bio-physical environmental features such as its ecosystems, geology, hydrology in terms of ground and surface water resources, major and sensitive wetlands, flora and fauna. On social baselines the report discusses the main features of Tanzania's demographics, public health features and poverty.

- A thorough review of the World Banks Safeguards Policies is made. The triggered policies are:

- OP 4.01 Environmental Assessment
- OP 4.09 Pest Management
- OD 4.12 Involuntary Resettlement
- OP 4.37 Safety of Dams
- OP 7.50 Projects on International Waters

Table 5.1 presents a summary of the requirements to comply with these polices. The report states that other Bank policies may apply and includes a summary in Annex A of all the Bank Safeguards Policies that are likely to apply to the sub projects.

- The administrative, policy, legislative and regulatory framework in Tanzania for the Agriculture Sector in particular and for environmental management in general is presented in chapter 6.0.

- Generic potential adverse environmental and social concerns and impacts from anticipated program/ DADP sub project activities with root and immediate causes is presented in detail in Section 7.0

- The roles and responsibilities of key institutions and players for the purposes of this ESMF are discussed in Chapter 8.0 and they are;

- **District Level Authorities**

The District Agricultural Development Plans (DADPs), which would be based on the District Agricultural Development Strategy (DADS) and would be part of the overall District Development Plan (DDP), and which would provide a comprehensive plan for LGA uses of resources.

The DADP's are to be approved by the respective District Councils.

The DALDOs and District Environmental Coordinators on their own, or when supporting the beneficiaries of the DADPs such as farmer groups (who in turn can be assisted by extension services) will be responsible ; (i) for complying with all national laws regarding the environment and with all social/poverty guidelines, parameters and targets set by the GoT, and of all triggered World Bank Safeguards policies, (ii) to implement their DADP sub project activities according to and consistent with the provisions of this ESMF, implementing, inter alia, all appropriate mitigation measures identified in their completed ESIA and/or environmental and social management plan (ESMP) into the construction planning cycle, technical and engineering designs and drawings, and civil works contracts, etc. (iv) to ensure that these mitigation measures are complied with during construction and post construction (i.e. operations) stages of their activities, by self monitoring of their activities and by periodically reporting to their respective District Environmental Coordinator and , (v) to maintain an adequate budget to implement the appropriate maintenance procedures and practices for their operations , to ensure relevant mitigation measures identified in the ESIA and/or environmental and social management plan (ESMP) are implemented and sustained in their operations and (vi) to comply with any directives that may be issued from time to time from the NEMC, ASDP SC, ASDP Secretariat, the Zones and Regional authorities.

- **Regional Level Authorities**

The regions would be responsible for, (i) receiving, reviewing and commenting, requiring revisions where necessary for category C type DADP sub projects and their corresponding environmental and social management plans (ESMP), prior to approval of the DADP by the District council, (ii) to carry out a regular and intrusive monitoring regime during planning, implementation, construction, operations and maintenance stages of the all DADP sub projects/activities (incl. category A, B and C) (iii) for preparing periodic monitoring reports on the DADP sub projects/activities at all stages of the operations and to send these reports on a regular basis to their respective Zonal administration for compiling and monitoring of cumulative impacts across Tanzania, (iv) to comply with (consistent with national laws) the directives of the NEMC and the zonal authorities (v) to issue directives to the districts consistent with national laws on environmental requirements.

- **Zonal Level Authorities**

For the purposes of environmental and social management of the DADPs, the roles of the zonal authorities are as follows:

For environmental management – the zones will act as coordinators and reviewers of the periodic monitoring and oversight process, collecting and compiling monitoring reports of the regions for direct reporting on this to the NEMC. Also, the zonal irrigation engineers and zonal environmental specialist will carry out routine and periodic monitoring and backstopping the regions as may be required.

Further, when Dam Safety issues are involved, the zonal irrigation engineers will serve as the experts on this issues and advice and support the districts on what may be required of them on these issues, for planning, design, contracting, construction, supervision during construction and for monitoring and operations, when dam is in use.

For issues involving resettlement, the zonal land authorities would be directly responsible for reviewing and clearing the resettlement action plans and for monitoring the process of delivery of the emoluments on the resettlement plans.

- **The National Environment Management Council (NEMC)**

The NEMC is responsible for ensuring that all development projects in Tanzania comply with all relevant environmental laws. The new law, the Environment Management Act, 2004, specifically states that NEMC's role, among many other others is to review and recommend for approval/clear EIA's. Therefore, the overall role of the NEMC will be to review and clear ESIA's for all but Category A and B type sub project activities in the DADP's.

Overall the NEMC will perform three critically important and significant roles as follows;

(i) Review, Clearance and Approval of the ESIA's/process for Category A and B sub projects/activities of the DADP's.

(ii) Training of District Staff (DALDO, District Environmental Coordinators and Zonal Environmental Specialists) to carry out monitoring.

(iii) Monitoring Oversight.

- **National River Basin Offices**

The nine national river basin offices are responsible for issuing and managing water rights. They will issue water rights only when the ESIA's have been reviewed and cleared by the NEMC.

Section 8.0 also contains a training program and a training of US$400,000.

- The Environmental and Social Management Process is contained in Section 9.0 with the following key features/steps.

a) The **FIRST** step in the process begins at the start of the planning cycle for the preparation of the DADP's.

b) The first step is for the potential sub project owner, implementer or operator to assign an Environmental Category for their sub project type, using table 9.1 below.

c) This group can either be the **DALDO** or the **farmer group**. But in either case they will be assisted by the **District Environmental Coordinator's (DEC),** and in the case of farmer groups further assistance can be sought from the empowerment services (extension services) of the ASDP.

Table 9.1 provides a list of sub project types that may be considered by for inclusion in the DADPs.

Table 1.1: Potential DADP Sub Project Types, Major Environmental and Social Concerns and Probable Category

DADP Sub Project Type*	Potential Major Environmental and Social Concerns	Sub Project+ Environmental Category
A. Irrigation		
Large scale irrigation defined in this case as over 300ha	Water pollution and water quality, water extraction and water rights, land loss and resettlement, natural habitats, species loss, land degradation, Dam safety. Significant construction issues such as spoil disposal management.	**A**
Medium Scale, i.e between 50 ha and 300ha	Water pollution and water quality, water extraction and water rights, land loss and resettlement, natural habitats, species loss, land degradation. Construction issues. Significant construction issues such as spoil disposal management.	**B***
Small scale, i.e. less than 50 ha and with no resettlement.	Land degradation, water pollution	**B**/ C**
B. Other types of sub projects		
Water harvesting, small	Soil erosion, water source contamination.	**B**

watershed management, ground water charging, etc.	May involve significant construction issues such as spoil disposal management.	

* Resettlement is also likely to be a factor for most sub project types involving land acquisition or restriction for new irrigation sites or extension of existing sites.
** Although most irrigation sub projects are expected to be medium scale and therefore fall within a **Category B**, it is possible that some may require the use of dams and involve water storage/reservior. This could include the impoundment of large relatively flat areas. As such, these areas could remove land from cultivation and possibly result in involuntary resettlement. In such cases, the sub project would fall into a **Category A.**
*** Any sub project with resettlement will be **Category B, at a minimum**, even if they are less than 50 ha irrigation or small market.
+ The ASDP Category is B for the program as a whole. Not to be confused with sub project category.

d) The **SECOND** step is to determine which of the World Bank's safeguards policies may be triggered by the sub-project and what the requirements are to comply with the triggered policy.

e) This requires the sub project potential owner/implementer/operator to use the Safeguards Tables in Annex A. Further information on these policies is available on the Bank's website, www.worldbank.org.

f) The assumption is that the Environment Assessment OP 4.01 is already triggered and hence the need for compliance with this ESMF. OP 4.01 is included in Annex A to provide additional guidance and information to the sub project potential owner / implementer / operator. Therefore, compliance by the sub project potential owner/implementer/operator with this ESMF process is deemed to be accepted as compliance with OP 4.01.

The following Safeguards Policies are not included in Annex A, because they are not likely to apply for the reasons noted in brackets next to the OP.;

1.Indigenous Peoples (OD 4.20) (no recognized indigenous people in URT)
2.Projects in Disputed Areas (OP 7.60, BP 7.60, GP 7.60) (no disputed borders with neighbors of Tanzania).
3.Projects on International Waters (OP 7.50, BP 7.50, GP 7.50) (To be addressed at the national level by the government of the URT by bank appraisal of the ASDP and **not** by sub project owner/implementer/operators.)

g) However, Annex A contains information to help the potential operators determine which of the following Bank safeguard policies may be triggered by their sub project;

1. Environmental Assessment (OP4.01, BP 4.01, GP 4.01) (Always Applies)
2. Pest Management (OP 4.09)
3. Natural Habitats (OP 4.04, BP 4.04, GP 4.04)
4. Forestry (OP 4.36, GP 4.36)
5. Cultural Property (OPN 11.03)
6. Involuntary Resettlement (OP/BP 4.12)
7. Safety of Dams (OP 4.37, BP 4.37)

h) If any of the Bank safeguards policies are triggered by sub project, the owner / implementer/operator will modify the design, implementation, operation, maintenance

and decommissioning phases to ensure that the sub project satisfies the requirements of that particular policy.

i) The **THIRD** step is for the owner/ implementer/ operator to prepare a comprehensive sub project Environmental and Social Impact Assessment (ESIA) including an environmental and social management plan (ESMP) (see Annex C for guidelines on how to prepare and ESMP). Additionally, for situations where OP 4.12 apply, the Owner/ Implementer/ Operator will prepare a Resettlement Action Plan (RAP) consistent with the separately disclosed RPF. For situations where OP4.37 applies, the owner/implementer/operator will prepare a Dam Safety Measures Report and similarly where Pest management issues apply, the use of the IPMP is mandated. Annex H has specific guidelines for the assessment and preparation of the Dam Safety Measures Report.

j) Annex B contains an example of a comprehensive terms of reference (tors) for the ESIA.

k) For Category C sub projects, the owner/implementer/operator is only required to prepare an Environmental and Social Management Plan (ESMP).

L) Annex C contains guidelines for the preparation of an ESMP for Category C sub projects and what the ESMP in Category A or B sub project ESIAs should also contain.

m) According to Tanzanian Law and World Bank OP4.01, Public Consultation is required as part of the ESIA and/or ESMP process.

n) Annex F has a generic guide to an acceptable public involvement process.

o) Step **FOUR**: Following compliance with these steps the operators submit their ESIA and or ESMP to the required authority as specified.

p) The ESIA for Category A and B sub projects will be reviewed and cleared by the NEMC.

q) The ESMP for Category C sub projects is to be reviewed and cleared by the respective Regional Environmental Engineers/Specialist, with assistance of Zonal Irrigation Engineers as required.

r) Annex G contains a generic Environmental and Social Appraisal Form to be used by NEMC and the Regional and Zonal technical staff, to provide guidance to their review process and to notify the District Councils of their decision before final approval and funding is made.

s) The first set of cleared ESIA's for Category A and B sub projects would also have to be reviewed and cleared by the World Bank, to ensure compliance with its safeguards policies. The World Bank reserves the right to not allow funds under the ASDP be applied to sub projects that do not meet the requirements of its safeguards policies.

- Chapter 10.0 contains a detailed Monitoring plan, with verifiable indicators, monitoring roles and responsibilities and costs to implement this plan.

- Chapter 11.0 presents a Cost Table for the ESMF which is as follows.

Cost for Environmental and Social Management of the ASDP (in US$)	
Training	*400000*
Review of ESIAs/ESMPs	*250,000*
Monitoring Plan	*400,000*
Total Costs	***US$ 850,000***

Table 1.2

Annexes A – I contain tools that are designed to assist this process by providing information and methods to ensure the desired goal of satisfactory environmental and social management is achieved for the ASDP.

2.0 INTRODUCTION

The Government of United Republic of Tanzania (GoT) has asked the World Bank, IFAD, the EU and its other major development partners for continued support for its Agriculture Development Sector Program (ASDP). All investments from the ASDP would be through the District Agricultural Development Plans (DADPs).

However, since the exact locations of the areas where DADP sub projects are to be located was not known at the time the ASDP was being prepared, the Laws of the United Republic in Tanzania and Operational Policy 4.01 of the Bank requires the Government of Tanzania (GoT) to prepare an Environmental and Social Management Framework (ESMF) which is to establish a mechanism to determine and assess future potential environmental and social impacts of all program activities to be financed under ASDP, and then to set out mitigation , monitoring and institutional measures to be taken during implementation and operation of the program activities to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels.

Furthermore, the GoT is also required to prepare a Resettlement Policy Framework (RPF) to address the needs of those who might be affected when an operators operations causes the involuntary taking of land and other assets resulting in: (a) relocation or loss of shelter, (b) loss of assets or access to assets (c) loss of income sources or means of livelihoods, whether or not the affected person must move to another location. The RPF has been prepared as a stand alone and separate document.

The GoT is further required to disclose both documents (the ESMF and the RPF) in-country as two separate and stand alone documents so that they are accessible by the general public, local communities, potential project-affected groups, local NGO's and all other stakeholders and also at the Infoshop of the World Bank and the date for disclosure must precede the date for appraisal of the program.

Since the participating and qualifying districts will be become known during ASDP implementation, each DADP sub project location that is subsequently identified and approved by the District Councils, the ASDP NSC and the LGCDG SC, would be subjected to environmental and social planning prior to approval of the DADP for funding under the ASDP basket. Other program activities under the ASDP which may not be financed by the World Bank are also subject to the provisions of OP 4.01 and hence this ESMF.

2.1 Scope of Work

The scope of work is to:

- **Prepare an Environmental and Social Management and Framework (ESMF)**
- **Resettlement Policy Framework (a separate document)** – who's processes are also included in the ESMF

This ESMF presents a framework for screening, monitoring and mitigating potential impacts.

3. DESCRIPTION OF THE PROPOSED PROGRAM.

3.1 Program Background

Meeting Tanzania's Poverty Reduction Strategy and Millennium Development Goal of halving poverty by 2015, will require annual GDP growth of at least 6-7 percent which is significantly higher than that achieved over the last decade. As agriculture remains the largest sector in the economy accounting for about half of GDP and exports and 70 percent of rural incomes, higher agricultural growth is a key requirement to meeting the MDGs. Future agricultural growth and profitability will need to rely more on productivity gains with the reduced space for further improvements in macro-economic policy, a key contributing factor to improved agricultural incentives in the late 1980s and 1990s.

In August 2001, The Government of Tanzania (GoT) approved the Agricultural Sector Development Strategy (ASDS) which envisages an agricultural sector that, by 2025, is modernized, commercial, highly productive and profitable, and utilizes natural resources in a sustainable manner. The ASDS has identified five strategic issues:

- Strengthening the institutional framework.
- Creating a favorable environment for commercial activities.
- Clarifying public and private sector roles in improving support services.
- Strengthening marketing efficiency for inputs and outputs, and
- Mainstreaming planning for agricultural development in other sectors.

The key policy features of the ASDS are;

- Sustained agricultural growth target of at least 5% per annum, to be achieved through the transformation from subsistence to commercial agriculture, as a core element of the Poverty Reduction Strategy.
- Transformation is to be private sector-led through an improved enabling environment for enhancing the productivity and profitability of agriculture, with the removal of constraints to private sector involvement.
- Sector development to be facilitated through public/private partnerships, including increased contract farming (vertical integration), with a delineation of public/private roles.
- Focus on participatory planning and implementation, using the framework of the District Agricultural Development Plans (DADPs), which is part of the District Development Plans (DDPs).
- Decentralization of service delivery responsibilities to Local Governments.
- Mainstreaming of cross-cutting and cross-sectoral issues in agricultural development operations.

Policies, Legislative and Regulatory arising out of the ASDS and ASDP will be addressed through the framework of the rolling PRSC process.

Whereas, the Agricultural Sector Development Program (ASDP), developed jointly by the four Agriculture Sector Lead Ministries (ASLM's)[2], provides the overall framework and operational process for implementing the ASDS. To this end, the GoT with financial assistance from the World Bank, International Fund for Agricultural Development (IFAD) and other bilateral donors is planning to implement the Agricultural Sector Development Program (ASDP). The ASDP also provides GoT, especially the four ASLM's with a sector-wide framework for overseeing the institutional reforms and investment priorities.

3.2 PROGRAM DESCRIPTION

Development activities at the national level are to be funded based on the strategic plans of the line ministries while activities at the district level are to be implemented by local Government Authorities (LGAs), based on District Agricultural Development Plans (DADPs). The DADPs are to be part of the broader District Development Plan (DDP).The ASDP is to be supported through a multi-donor "basket funded" arrangement to prevent high transaction costs of parallel programs. The basket would move towards budget support and, through detailed design of the program, would ensure improved efficiency of these sector expenditures. Efforts would be made to ensure that the "basket" abides by the principles of the budget process to ensure greater sustainability of the program.

The ASDP is designed as a three phase program with Phase1, 2 and 3 each planned for three years.

3.2.1 Program Development Objectives

The Program Development Objectives of the ASDP are;

(iii) Sustained 5 percent annual growth of agricultural GDP (averaged over a rolling three year period) through improved productivity and profitability of the sector and

(iv) Higher farm productivity, profitability and incomes through improved access to and use of relevant agricultural knowledge and technology by farmers; increased district level investment; and improved market development.

This three phased Adaptable Program Loan, APL, would allow over a 9-10 year period support by development partners to the Government's efforts to (i) improve the responsiveness of agricultural services to farmer needs; (ii) implement district agricultural development plans; and (ii) market development (local, regional and international). Over the three phases the program would progressively increase both its sectoral and geographic coverage. The sequencing and main thrust of the three phases would be:

- **Phase I** (three years): focus on empowering farmers/clients to make better informed decisions on technology choice; introducing a more contestable and decentralized system of agricultural services and extension to improve its relevance and encourage pluralism in service provision with a greater role for the

[2] The ASLMs include the three sector line ministries: The Ministry of Agriculture and Food Security (MAFS), Ministry of Water and Livestock Development (MWLD) and Ministry of Cooperatives and Marketing (MCM), as well as the President's office – Regional Administration and Local Government (PO-RALG)

private sector; clarifying the strategy for technical services and training; strengthening capacity for implementation of the district agricultural development plans, including irrigation; and identification of models for local, regional and international market development.

- **Phase II** (three years): continued roll-out of the competitive grant schemes for research and extension together with empowerment activities; support for technical services and training; implementation of the district agricultural development plans through investment and capacity building; and implementation of market development models.
- **Phase III** (three years): continued expansion of the competitive grant scheme for research and extension and support for the implementation of the district agricultural development plans; implementation of market development. Dependant on implementation progress, IDA funding could be integrated into direct budget support (PRSC) in this phase – although the basket and support the ongoing activities would continue to be financed by development partners.

3.2.2 Program Components

To achieve these objectives, Phase 1 of the ASDP is structured into two components:

- **Component 1 – National Level Support**
- **Component 2 – District Level Support**

Component 1. National Level Support: The program will provide funding through the strategic plans of the agriculture line ministries, initially for support to agriculture research (through the zones), to larger scale irrigation based on demand from the districts, and for market development. The components of the national level support are:

Sub-component 1.1: Agricultural Research: Building on previous support for zonal agricultural research, this sub-component will endeavor to improve the relevance and responsiveness of agricultural research through improving the management of the Zonal Agricultural Research Institutes (ZARDIs) with the implementation of a Client Oriented Research and Development Management Approach (CORDEMA), and through a reconstitution and expansion of the Zonal Agricultural Research and Development Fund (ZARDEF), which will allow on a competitive basis, participation of a broader range of research providers in the delivery of publicly funded research. This component will include: public sector re-orientation and capacity building, private sector provider support and provision of services.

Sub-component 1.2: Irrigation: Most publicly supported irrigation will be through the district agricultural development grant of component 2. This sub-component would finance a District Irrigation Development Fund (DIDF). A separate fund will be established to complement the formula based direct district support. As funding requirements depend on local irrigation potential and implementation capacity, additional budget allocations will not be needed in every district and not in every year and accounting for these differences in a formula based allocation is difficult. The DIDF would be centrally located in the Ministry of Finance, from where funds would flow directly to qualifying districts. The DIDF would finance: (i) those irrigation schemes in selected water basins based on a more strategically planning approach, such as inter-district irrigation schemes, and complex irrigation infrastructure, including ground water,

and requiring higher financing levels than what can be accommodated by the districts; and (ii) supplemental cost of small scale district irrigation schemes (derived from demand through the O&OD process) funded by the general annual allocations for small scale irrigation schemes from the LGCDG/DADG. Only districts that meet the access criteria for the LCDG and the DADG would be able to apply to the fund for supplementary irrigation funds for specific identified irrigation and/or water harvesting schemes. A Board, consisting of representatives of the Ministry of Finance and the ASLMs, the Basin Authorities, and others as relevant, would govern the DIDF.

Sub-component 1.3: Market Development: to finance studies, pilot activities, could include work on rural financial markets.

Component 2. District Level Support: The program will provide funding through District Agricultural Development Plans (DADPs) for agricultural investments, support for improvements of LGA core regulatory functions, and support to reforming the agricultural extension system. Consistent with the local government capital development grant transfer system, districts will be assessed on performance against progress on these elements which will determine the level of funding they can access from the program, which will take the form of three formula-based block grant transfers which form the sub-components of the district level support.

Sub-component 2.1: District Agricultural Investments: Investments will be funded through an earmarked grant top-up to the Local Government Capital Development Grant in support of agricultural development. The District Agricultural Development Grant (DADG) will support implementation of District Agricultural Development Plans (DADPs) on a cost-sharing basis. Criteria and procedures to assess the feasibility of proposed investments from a technical, economical, financial, social and environmental perspective will be included in the DADP guidelines. Investments will be in accordance with local needs, as determined through local participatory planning and budget processes.

Sub-component 2.2: District Agricultural Services: This sub-component would facilitate and oversee effective and efficient provision of services responsive to farmer groups and fora demands. It would be financed through the existing discretionary, formula-based Agricultural Extension Block Grant (EBG) This sub-component would have provide funding for both public extension services and for private service providers. The latter would be engaged through agreements and contracts directly between farmer clients or through local government outsourcing.

Sub-component 2.3: District Agricultural Capacity Building and Reform: This sub-component would provide resources for public sector re-orientation and performance improvement; and for capacity building and greater involvement of private extension service providers. Part of the funds will be an earmarked to-up to the Local Government Capacity Building Grant (CBG), and part will be managed through a centrally managed reform fund that would assist local government authorities to reform their services and meet the requirements and incentives provided through the annual assessments for the DADG and CBG.

Examples of Typical Irrigation Sub projects:

- **Traditional Irrigation Schemes** – schemes that have been initiated and operated by farmers themselves using local skills and materials, with no intervention from external agencies. These would include schemes based on traditional furrows for the production of fruit and vegetables in the highland areas, and simple diversion on the lowlands for paddies. As for this category, at present, the schemes in Arusha and Kilimanjaro accounts for over 60% of the total area.
- **Water Harvesting Schemes** – water harvesting schemes and flood recession schemes, on which subsistence farmers have themselves introduced simple techniques to artificially control the availability of water to crop. These schemes involve a process whereby rainfall is concentrated or is captured as runoff from a large area and is canalized for use in a smaller targeted area. Water application to the scheme is essentially uncontrolled under farmer-managed practices. The objective is simply to capture as much water as possible and store it within reach of plant(s) in the soil profile of cultivated area or into a storage reservoir. They are mainly located in such regions as Dodoma, Mara, Mwanza, Shinyanga, Singida, Tabora and Mayara.
- **Modern irrigation schemes** – these are formally planned and designed smallholder schemes, on which full irrigation facilities have been provided by external agencies with or without some contribution from the beneficiaries, and on which there is usually a strong element of management provided by Government or other external agency. The major regions, where the schemes have been developed, are Morogoro followed by Kilimanjaro and Mbeya.
- **Improved Traditional Irrigation Scheme** – schemes which have been initiated and operated by semi-subsistence farmers themselves and on which there has subsequently been some intervention by an external agency in the form of construction of a new diversion structure, gated canal intakes, water diversion boxes and other farm related structures. The layout of irrigation canals and drainage system is well defined.
- **Small Scale Farmers Irrigation** – this is relatively new but growing sector, where individual farmers or small groups irrigate homestead or vegetable gardens of small to medium size (0.2 to 1.0ha), using small scale technology such as treadle pumps.
- **(ex)Parastatal Large Irrigation Estates** – There are a number of these large irrigation estates, such as Kapunga and Dakawa that are in the state of being privatized. At present different strategies are being contemplated by government for the privatization of these estates, which range from selling to large commercial enterprise (as in the case of the sugar estates of Morogoro and Kagera), to converting these estates in smallholder irrigation schemes. At present there is no clear government policy outlining the manner of privatization for the remaining Government controlled rice irrigation schemes, which is being decided upon case-by-case.
- **Private Commercial Sector** – Export commodity based private enterprises ranging from large scale enterprises as the sugar estates in Morogoro and Kagera, coffee estates and horticulture and flower enterprises around Arusha.

Types of Irrigation	No. of Schemes	Existing Area (ha)
Traditional Irrigation	982	122,600
Water Harvesting	42	7,900
Modern Irrigation	52	35,900
Improved Traditional Irrigation	113	25,500
Small Scale Farmers Irrigation	-	-
(ex) Para-Statal Large Irrigation Estates	5	25,464
Private Commercial Sector	-	-
Total	**1,194**	**217,364**

Table 3.1 : Types of Existing Irrigation Projects

While the National Irrigation Master Plan (NIMP) sets ambitious targets for irrigation development in Tanzania, investments in irrigation development is capped by the national implementation capacity. Past experience shows that a total of 6,000 – 7000 ha annually was developed through support of GoT and development partners. This is taken as the low case scenario. In a high case scenario, 10,000ha annually could be developed, but this would require significant support to strengthen capacities at the District and Zonal level. Adoption of the high case scenario would increase total irrigated area in Tanzania by 75% in 2017. Yet, it would fall far short in achieving the NIMP targets of 405,000 ha in 15 years.

	High Case			Low Case		
	Acreage (ha)	Total amount (m US$, 15 years)	Annual amount (m US$)	Acreage (ha)	Total amount (m US$, 15 years)	Annual amount (m US$)
LGCDG*	20,000	60.0	4.0	20,000	60.0	4.0
DADG*	50,000	150.0	10.0	50,000	150.0	10.0
DIDG	80,000	240.0	16.0	35,000	105.0	7.0
Extension Block Grant						
Total	**150,000**	**450.0**	**30.0**	**105,000**	**315.0**	**21.0**

* estimates
* US$3,000 per hectare

Table 3.2: Probable Irrigation investments and Services under ASDP

4.0 BASELINE DATA

4.1 The Bio-Physical Environmental Features

The United Republic of Tanzania lies between 29°30'E and 40°30'E, and 1°00'S and 11°48'S. Located on the east coast of Africa, it covers an area of approximately 945,000 km^2, of which the Zanzibar Islands cover 2,400 km^2. The islands of Mafia, Pemba and Zanzibar are included in this area. Of this area 61,495 km^2 is covered by the inland waters of the Great Lakes (Victoria, Nyasa/Malawi and Tanganyika). The country is bordered by Uganda to the north for 396km, Rwanda and Burundi to the north-west for 217km and 451km respectively, the Democratic Republic of Congo (DRC) to the west for 459km (a water border on lake Tanganyika), Zambia and Malawi to the south-west for about 338km and 475km respectively, Mozambique to the south for 756km, and Kenya to the northeast for 769km. The Indian Ocean, whose shores are characterized by coral reefs and small islands, lies to the east. The continental shelf within the 200-m depth contour varies from 4–60 km from the shore.

Tanzania is a land of contrasts, being the home of Africa's highest mountain (Kilimanjaro, at 5,895m and its lowest point (the floor of Lake Tanganyika, which is 1,470m deep).

Except for the coastal belt and islands, most of the country is part of the Central African Plateau (1,000–1,500 m above sea level) characterized by gently sloping plains and plateaux, broken by scattered hills and low-lying wetlands. The Central African Plateau is deeply incised by two arms of the Rift Valley: the eastern arm, which includes Lakes Natron and Manyara, and the deeper western arm, which contains Lake Tanganyika. Both arms of the Rift converge in the south of the country near the northern end of Lake Nyasa(Malawi).

The flora of Tanzania is extremely diverse, with over 12,700 plant species – a figure comprising more than one-third of the total plant species in Africa (UNEP 1998). This high diversity of plants is not evenly distributed throughout the country, they are found in six specific ecological zones, namely –

- Moist Forest Mosaic
- Coastal Forests and Thickets
- Afromontane
- *Acacia*–Savannah Grassland
- *Acacia–Commiphora* Thornbush, and
- *Brachystegia–Julbernardia–Savannah* Woodland.

Proportionately, Tanzania has a much bigger land surface area devoted to resource conservation (29%) than most countries. The hierarchical protected-area system consists of national parks (12), game reserves (28), the Ngorongoro Conservation Area (1), and game-controlled areas (38), comprising a total of 240,000 km2. In addition to the wildlife-protected areas, there are 540 forest reserves covering 132,000 km^2, equivalent to 15% of the total woodland and forest area in Tanzania. There is also the Mafia Island Marine Park.

4.1.1 Climate

Tanzania experiences a variety of climatic conditions, ranging from the alpine deserts on the top slopes of Mount Kilimanjaro that are permanently covered by snow, to the tropical coastal areas that are under the influence of two monsoon winds. The north-east monsoon wind which blows southwards from December to March brings the hottest weather, while the southeast monsoon winds which blow northwards from March to September bring intermittent rains. The main rainy season on the coast is from March to May (the 'long rains') with a second season between October and December (the 'short rains'). Mean annual rainfall varies from 400 mm in the central regions to over 2,500 mm in the highlands and the western side of Lake Victoria. Mean annual temperatures are influenced by altitude, ranging from 21 °C in high mountain areas to 29 °C at sea level.

4.1.2 Hydrology

Total water withdrawal in mainland Tanzania was estimated for the year 2002 to be 5142 million m^3. Agriculture consumes the largest share with 4624 million m^3 (almost 90% of total) of which 4 417 million m^3 for irrigation and 207 million m^3 for livestock, while the domestic sector uses 493 million m^3. Total water withdrawal of the domestic sector and irrigation in Zanzibar is estimated to be about 42 million m^3. Of this, withdrawal on Unguja Island is 33 million m^3 and on Pemba Island it is 9 million m^3. Industry in Tanzania consumes an estimated 25 million m^3.

Tanzania is divided into five major drainage systems (the Indian Ocean Drainage System, the Internal Drainage of Lakes Eyasi, Natron and Bubu Depression Complex, the Internal Drainage of Lake Rukwa, the Atlantic Ocean Drainage and the Mediterranean Sea Drainage System). These systems have been further divided into nine river and lake basins for ease of management of the Country's water resources on a "River-Basin" basis[3].

The nine drainage water basins as follows:
Pangani River Basin, Wami Ruvu River Basin, Rufiji River Basin, Ruvuma River and the Southern Coast Basin, Lake Nyasa/Malawi Basin, The Internal Drainage Basins of Lake Eyasi, Manyara and Bubu depression, Lake Rukwa Basin, Lake Tanganyika Basin, Lake Victoria Basin.

Tanzania's main rivers include the Pangani, Rufiji, Wami Ruvu and Ruvuma and Southern Coast.

The freshwater availability in Tanzania in 1994 is illustrated by the figures in Table 1 as provided by Gleick (1998)[4]:

[3] National Water Sector Development Strategy – 2005 to 2015

[4] Gleick, P.H. : 1998. "The Worlds Water 1998-1999. The biennial Report on Freshwater Resources". Island Press, Washington DC.

Annual renewable water resources	89 km^3/year	
Total freshwater withdrawal	1.17 km^3/year	
Estimated year 2000 per capita withdrawal	35 m^3/person/year	~ 96 l/person/day
Domestic use	3 m^3/person/year	~ 8 l/person/day
Industrial use	1 m^3/person/year	
~ 3 l/person/day	31 m^3/person/year	~ 85 l/person/day

Table 4.1 Freshwater availability in Tanzania

The relative share of agricultural use in Tanzania according to Table 1 is higher than the 70-80% figure often associated with developing countries. The 9% domestic use in Table 1 is less than one half of the share similarly quoted for developing countries as a whole[5].

Following a commonly used, if crude, criterion, suggested by the Swedish hydrologist Malin Falkenmark, water becomes scarce when there is less renewable water (surface water runoff and groundwater recharge) than 1700 m^3/person/year. It is termed water-stressed if the renewable water is 1000 - 2000 m^3/person/year and water-scarce if it is less than 1000 m^3/person/year.

The total figure for annual renewable water resources of Tanzania in Table 1 is equivalent to 2700 m^3/person/year. This means that Tanzania is not water-stressed by the Falkenmark criterion. However, rainfall is unevenly distributed in time and space, and many areas receive on the average between 450-700 mm/year. In these areas there are already signs that demand for water is exceeding the availability. Thus, Tanzania faces challenges to manage its water resources in a sustainable way.[6]

4.1.2.1 Rivers

Panagani Basin

The Pangani River drains the southern side of Africa's greatest mountain (Mt Kilimanjaro) as well as its neighbour (Mt Meru) and a large part of the Pare and Usambara Mountains of the famous Eastern Arc chain in Tanzania. While the principal watersheds of the Pangani are mountainous areas of high precipitation, the main river channel runs through the dry Maasai Steppe of northern Tanzania where rainfall rarely exceeds 500 mm per annum.

The Pangani River Basin covers about 42,000 km2 and is shared by Kenya and Tanzania. The mean annual flow of the Pangani has decreased over the last four decades but averages about 37 m3s-1 although this has been drastically reduced in recent years. The main north-western tributary of the Pangani (the Kikuletwa River) brings slightly sodic waters from the volcanic slopes of Mt Meru and Mt Kilimanjaro while

[5] FAO

[6] Ministry of Water, United Republic of Tanzania, Review of Water Resources Management Policy, Legislation and Institutional Framework

the other northern tributary, the Ruvu River, drains a complex in Kenya and Tanzania that surrounds Lake Jipe on the international border.

The sodic waters from lake Jipe pass through an extensive swamp and emerge much fresher to join the Kikuletwa in the Nyumba ya Mungu reservoir. This impoundment, of around 140 km2, was built in 1965 for irrigation, fisheries, water management and hydropower generation. Downstream of the dam, the Pangani travels 430 km to the sea and traverses extensive swamps before fuelling the Hale hydropower station and the turbines at Pangani Falls.

The Pangani river basin thus includes some of the most biodiverse areas in Eastern Africa including for example the endemic-rich flora and fauna of Mt Kilimanjaro and Mt Meru, the famous plant and animal diversity of the East Usambara Mountains, the Jipe lake and wetland systems, the dry Maasai Steppe, the Pangani Falls system, and the estuary and mangrove swamps.

The basin includes the city of Moshi, many smaller urban centres and millions of subsistence farmers on the fertile slopes of its mountains, irrigators on the lower slopes and pastoralists in the drier areas. The main arteries from Dar es Salaam to neighbouring Nairobi pass through the basin which has extensive sisal estates as well as commercial farms. Production and watershed forests are found on all the mountain systems and both tea and coffee are grown in the basin.

Unfortunately, the Pangani River and its watershed are increasingly suffering from environmental problems which are threatening the water resources, the plant and animal diversity and the people that depend upon these resources. Water extraction for small- and large-scale irrigation has severely reduced the flow of the river and its tributaries - a study in 1991 showed that 2,092 extraction schemes, most of them un-regulated, were extracting about 40 m3s-1.

The runoff from many irrigation schemes is adding nutrients to the Pangani River and there is significant pollution entering the river system from sisal factories along the drier parts of the basin.

The needs of power generation tend to dominate the water management regimes so that the mid-reach swamps are often denied their necessary flows. Water hyacinth is a pest in the lower reaches of the river - indicating a relative high level of nutrients as well as causing nuisance to hydropower generation and affecting aquatic biodiversity[7].

More than half of the Pangani basin is under semi-arid conditions, where annual rainfall is 500 mm on the average. The dry areas are situated immediately south of Mountains Kilimanjaro and Meru. West and east areas of the Pare Mountains are also under semi arid conditions. Higher falls are recorded in the mountain areas around Kilimanjaro, and Meru. Annual average totals are 2000 mm on the southern slopes of the Kilimanjaro, 1200 mm on mount Meru, 1000 mm on the Pare Mountains and well above 1800 mm on the west Usambara mountains[8].

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[7] IUCN

[8] Ministry of Water, The United Republic of Tanzania

Wami/Ruvu Basin

The Wami/Ruvu basin consists of two main river systems, the Wami 40,000 km^2 and the Ruvu 17,700 km2. Coastal rivers south of Dar es Salaam are part of this basin. The basin as a whole covers an area of 72.930 km2.

The Wami River, near Mandera gauging site 1G2, has a catchment area of 36,400 km2 and a mean annual runoff of 54 mm. About 60 to 70 percent of flow at Mandera originates from a small part of the catchment on the slopes of Nguru, Ukaguru and Rubeho mountains where rainfall is high. The Wami may be divided into four hydrological areas as follows: the Kinyasungwe which drains the dry north and east of Dodoma, the mountain areas of Ukaguru, Rubeho and Nguru mountain ranges, the northern semi desert area in the Masai steppe and the lower Wami.

The Ruvu river basin is 13,300 km^2 above the lowest gauging station 1H8 at Morogoro Road Bridge. The total catchment area is 17,700 km2. The major source area of the Ruvu river is the Uluguru mountains. The mean annual flow at 1H8 is 65.1 cumecs. The river system can be divided into four zones as follows: the upper Ruvu, the Mgeta plains, the Ngerengere and the lower Ruvu flood plain which extends over 100 km to Bagamoyo into the Indian Ocean. This basin consists of wide plains and large mountain ranges. Four mountain blocks are distinguished and these are the Uluguru mountains south east of Morogoro , Nguru mountains west of Kilosa, Rubeho mountain, west of Kilosa and Ukaguru mountains to the north of the Wami. The most noticeable plains are, Lower Ruvu Plains and Mgeta plains in the Ruvu system and the Mkata-Wami, (400-800 m), lower Wami (200-400) and the Berega valley 800-1200 m.

Mean annual rainfall of over 2500 m is recorded on the eastern slopes of the Uluguru Mountains, while the western part of the Uluguru Mountains lie in the rain shadow and small amounts of rain are observed. The Nguru-Rubeho mountain complex receives between 800-1200 m and 1000-1800 m are observed in the Ukaguru mountain ranges. Rainfall is much less in the plains; 800-1000 m near the coast, but these rainfall amounts reduce as you go inland towards Dodoma and north of Wami basin. These areas receive between 500-600 mm of rain per year on the average. The persistence of extreme variation of rainfall within the basin results in vegetation cover, drainage properties of the soils and surface runoff also to vary greatly.

Rufiji Basin

The Rufiji basin covers an area of 177,000 km^2, about 25% of Tanzania. This basin comprises of three distinct major river systems: Great Ruaha river system, Kilombero river system, and the Luwegu river system.

The Great Ruaha covers 83970 km^2 of the Rufiji basin or about 47%. Important features of this sub-catchment are the Poroto mountain ranges, the Usangu and Pawaga plains and the Utengule swamps. The Great Ruaha can be divided into three distinct river systems: the Great Ruaha, the Little Ruaha and the Kisigo. From the west the Kisigo river starts from Manyoni and Rungwa Game Reserve. It drains the dry areas in the Ruaha National Park and joins the Great Ruaha at Mtera. The Great Ruaha originates from the Poroto Mountains and Njombe where, numerous rivers flow into the Usangu plains and the vast Utengule swamps, passes the Ruaha National Park plains, and collects the Little Ruaha

before joining the Kisigo at Mtera. It then flows westward through the Ruaha Gorge into Kilombero plains before joining the Rufiji.

Kilombero River

The Kilombero is 39990 km^2 about 23% of the total area, but contributes about 65% of the flow to the Rufiji. An important features of the Kilombero basin is the great fertile Kilombero valley below the eastern scarp of the Udzungwa mountains. Numerous rivers flow on the scarp from the Udzungwa plateau. Some of the important rivers are Ruhudji, Kihansi, Luhombero, Kigogo-Ruaha and Mpanga. The Ruhudji and the Luhombero form the Kilombero river. After Shughuri rapids on the old basement step, the Kilombero joins the Luwegu flowing from south east to form the Rufiji. Mean flow of some of the Rivers in the Kilombero are as follows:

The Rufiji basin is large, with differing rainfall and catchment characteristics. The area north of Poroto and Udzungwa Mountain is under semi-arid conditions with mean annual rainfall of 500 mm. Rainfall increases southward and larger falls of 1800 mm per year are observed on the slopes at the Udzungwa and Kipengere range. The rainfall pattern is such that there is one rainy season (mid-November to May) and one dry season. This pattern is the same all over the basin with the exception of coastal areas where there is slight tendency to bimodal rain pattern. There is a tendency for the dry season to set earlier in the Great Ruaha basin than the Kilombero basin. The Kilombero floods occur at the end of April or the beginning of May.

Runoff pattern is closely related to the rainfall pattern. Rivers start rising in December with a peak in March-April.

Ruvuma River and Southern Coast

In this basin, independent river systems drain into the Indian Ocean, the major river systems are: River Matandu, River Mavuji, River Mbwemkuru, River Lukuledi, Rivers Mambi and Mbuo River Ruvuma. The dominant features are the Makonde and Rondo plateaux separated by the Lukuledi valley. Except for these raised plateaux, the land rises gradually from the Indian Ocean to the hinterland. A large part of the area of the Matandu, Mavuji, Mbwemkuru, Lukuledi, Mambi and Mbuo rivers lie at or below 500 metres above mean sea level.

The Ruvuma is shared by Tanzania and Mozambique and forms almost the entire Tanzania and Mozambique boarder. A large portion of the Ruvuma river is in the Mozambique. Several large tributaries originate in Tanzania in Mbinga, Songea, Tunduru and Masasi districts. The total basin area on the Tanzanian side is about 104,000kmk^2. The mean temperature in the coastal area is 26° C and that of the hinterland is 24° C. The annual and daily variations in the temperature are small.

The rainfall pattern is such that there is one dry season June to November and the wet or rainy season the rest of the year. This pattern is very regular. The annual mean rainfall is 800 to 1200mm recorded on the Rondo and Makonde plateaux and in the Matengo highlands while elsewhere rainfall is between 800 - 1000m. The year to year variation in rainfall is very high. The annual precipitation may rise up to 2,000mm once in twenty years and may fall to 500mm once in twenty years in places where the mean annual rainfall is 1000mm per year. Rainfall as low as 200mm have been recorded at Mtwara and Lindi.

About 500mm were recorded at Nyangao within a duration of 24 hours in 1990 which resulted into extensive land slides from the escarpments of Makonde plateaux causing severe floods. The flow regimes of the rivers in the basin follow closely the rainfall pattern. Many river channels are dry during the dry season.

4.1.2.2 Lakes

Tanzania shares three major lakes (Nyasa/Malawi, Tanganyika and Victoria) with other countries in the region. Other lakes in the country include Burigi, Eyasi, Magadi, Masoko, Manyara, Natron and Rukwa.

Lake Nyasa Basin

Lake Nyasa, the third largest lake in Africa is about 560 km long and 75 km wide at its widest point, with a total drainage area of about 132,000km^2 and a surface area of about 33,000km^2. The lake is an international drainage basin bordered by Tanzania in the north and northeast, Mozambique in the east, and Malawi in the south and west. The basin area draining into the lake from the Tanzania side is about 37,000 km^2.The lake is bounded by steep mountains, except in the south. Major rivers are Songwe (shared with Malawi), Kiwira, Lufirio, Ruhuhu, and Rumakali. The Ruhuhu River is its main tributary is in the northeast; the Shire (in the south), a tributary of the Zambezi, is the lake's sole outlet. Its outlet is the Shire River; its largest tributary is the Ruhuhu. About three quarters of the lake is in Malawi; the rest is in Mozambique. The lake lies in the Great African Rift Valley, a large graben caused by crustal extension. It probably formed about 40,000 years ago.

The mean annual rainfall varies between 1000mm to over 2600mm. Much of this rains occur in the rainy season from November through May. The highest rainfall is recorded in the northern part of Lake Nyasa, whereas a small portion on the lower Ruhuhu valley records the lowest rainfall of about 800mm. The basin in general may be classified as humid to sub-humid with abundant water resources[9].

Internal Drainage Basin

The Internal Drainage Basin is described as rivers/streams draining into a group of inland water bodies (lakes) that are located around the north-central part of the country. The system, mainly of troughs and faults runs southward from Lake Natron at the border with Kenya to central Tanzania in the Bahi depression and varies in width from 30-90 km. Total basin area on the Tanzanian side is about 153,800 km^2.

The major drainage systems in this basin includes: the Lake Eyasi System, which drains areas in North Tabora Region and East Shinyanga by the Wembere and Manonga river systems, the Lake Manyara System, the Bubu complex where important features are the Bubu and Bubu swamps. Several other small independent lakes and swamps with no outlet existing in this basin include Lake Basuto and Lake Natron.

[9] Ministry of Water, The United Republic of Tanzania

The basin is situated in the semi-arid region of Tanzania. The mean annual rainfall range from 500 mm/yr at Bahi to 900mm/yr in the highlands of Mbulu district. Rainfall varies greatly from year to year.

Lake Rukwa

Lake Rukwa basin is an internal drainage system which is described by all catchments drawing into the lake with no outlet. The lake has a surface area of about 2,300 km^2 with a total basin area of about 88,000 km^2. Rukwa Basin may be divided into several distinct areas according to topography. The main characteristics are related to the Rift Valley System of East Africa.

The Western part of the Lake rises rapidly to the Ufipa plateau. This area is very broken, with many small incised rivers flowing down the escarpment into Rukwa valley which runs from northeast to southeast. The northern side of the Rukwa Valley rises gently towards Lake Tanganyika basin. The East is dominated by the Mbeya range of mountains. The Altitude varies from the Lake Level of 800m to 1500m a.m.s.l. on the Mbeya range.

Lake Tanganyika Basin

Lake Tanganyika Basin is situated in the Western Part of the country. All the catchments that drain in Lake Tanganyika constitute the Lake Tanganyika basin. The total catchments of Lake Tanganyika basin as a whole are 239.000km^2 and the area of the lake is 32,000 km^2. The land surface of the basin on Tanzania side is 151,000km^2 which contributes 60% of the total runoff to Lake Tanganyika.

The basin is dominated by the Malagarasi river system which is 130,000 km^2. The main river, the Malagarasi originates in the mountainous area close to the border with Burundi at an altitude of 1750 m.a.m.s.l. from where it runs northeasterly through hilly and mountainous landscape and then southward into the Malagarasi Swamps. Its major tributaries, the Myowosi and Igombe Rivers meet the Malagarasi in the seasonal Lake Nyamagoma. The Ugalla and Ruchugi Rivers join the main river downstream of Lake Nyamagoma. The river then runs west, through the Misito Escarpment where it forms the rapids and waterfalls before entering Lake Tanganyika.

The Ugalla River drains an area of approximately 52,000km^2 and before the confluence with the Malagarasi, it passes through large areas of swamps and marshlands, forming the seasonal Lakes of Sagara and Ugalla.

Other major tributaries are the Ruchugi River which drains the hilly landscape north of Kasulu, running in a southerly direction through a low, partly swampy, undulating landscape, before it enters the Malagarasi River at Uvinza.

In addition to the Malagarasi, there are smaller basins draining into Lake Tanganyika. To the north west of Kigoma, the Luiche is an important river. The lower part of the river forms the Luiche Delta which floods often during the rainy season.

The rainfall regime is unimodal; there is one long wet season and a corresponding long dry season. The wet season is from November-May and the dry season June - October. The main part of basin has a mean annual rainfall of 800 - 1,000mm and the minimum expected

annual rainfall is of the order 500 - 750mm. The areas north of Kigoma are wet receiving more than 1000mm of rain per year.

The Malagarasi basin is gauged at 18 locations of which 12 have automatic water level recorder, the Luiche is gauged at 5 locations. Other gauged rivers in the southern part of the Malagarasi basin are Lugufu, Luegele, Kalambo and Luamfi. It is noted that catchments with area below 1,000sq.km. have a runoff coefficient between 33.6% and 22.1%, the bigger catchments below 22%. The Ugalla at Sindi has a runoff coefficient of 2.6 and that of Malagarasi at Mbelagule 4.1%. These low coefficients are due to water use in the Ugalla, and Myowosi extensive swamps.

Lake Victoria Basin

The Lake Victoria is the largest freshwater lake in Africa and source of the White Nile. Lake Victoria lies across the equator, between latitudes 0 31'N and 3 54' S and longitudes 31 18' to 34 54' E. The Lake is contained in a wide basin at 1124 metres above sea level, with an average depth of 80m. The total surface area of the lake is estimated to be 69,000km2. The Lake Victoria basin drains an area of 115,380 square kilometres in Tanzania. About 52% of the lake area and about 46% of the total basin area is within Tanzania. The Lake is shared between Uganda, Kenya and Tanzania. The main rivers draining into the lake include Kagera, Simiyu, Mbarageti, Grumet, Mara and Mori. Kagera, Mara and Simiyu are the principal river systems flowing into lake Victoria. Kagera and Mara rivers originate from outside the country. The Kagera river head waters are in the humid Burundi and Rwanda, while the Mara originates from the Highlands in Kenya. Rivers from the south of the Lake flow intermittently each year.

In eastern part of the basin especially in the highlands of Tarime, the rainfall is distinctively bimodal. In the southern area the pattern is unimodal with a wet and dry season. The Western part receives rainfall almost throughout the year with minimum in July. There are considerable variations in the average yearly rainfall over the Lakes' surface and the surrounding land area. Over the extreme eastern area of the Lake rainfall is between 500 and 750 mm. per year. Westward from this area rainfall increases to an annual average of over 2,000 mm in areas around Bukoba and the Ssese Islands. To the south of the lake, in Mwanza Region the yearly average rainfall is 750 to 1100 mm and in the eastern part in Mara Region rainfall is between 750 - 1000mm increasing to 1600 on the highland areas of Tarime.

The flow of the Kagera river after the Ruhuhu-Kagera confluence at Rusumo falls is 9,501 million cubic metres and only 6,934 flows out at Nyakanyasi (Station 5A13). About 2,276 million cubic metres (or 27%) are lost presumably at the extensive and papyrus overgrown L. Rushwa. The lake greatly regulates the flows of the Kagera downstream. The minimum flow at 5F13 is 150 cumecs and the high flow is about 250 cumecs.

4.1.3 Tanzania has the following international waterways:

- Pangani River (shared with Kenya)
- Ruvuma River (shared with Mozambique)
- Lake Victoria (shared with Kenya, Uganda, Brundi and Ruwanda. The River Nile (Nile Countries) sources from the lake. Kagera River a confluence of two rivers from Burundi and Ruwanda and Mara River from Kenya drain into the lake.

- Lake Tanganyika (shared with Congo, Zambia and Brundi)
- Lake Nyasa/Malawi (shared with Malawi and Mozambique) The Songwe, Ruhuhu and Kiwra) Unsustainable abstraction from Lake Nyasa waters may lead to negative effects along Shire River and ultimately the Zambezi River affecting fisheries and irrigation.

The Congo River Basin

The Congo River Basin is the largest river basin of Africa, covering over 12% of the continent. It extends over nine countries and the largest area is in the DRC. It is also, one of the most humid basins of Africa. Most of the flows of the Congo River Basin in Rwanda, is into Lake Kivu, which is connected with Lake Tanganyika through the Rusizi border river between Congo, Rwanda and Burundi.

Country	Total area of the country (km^2)	Area of the country within the Basin (km^2)	As % of total area of the Basin (%)	As % of total area of the Country (%)	Average annual rainfall in the basin area (mm)		
					Min	Max	Mean
Zambia	**752,610**	**177,735**	**4.7**	**23.6**	**985**	**1420**	**1195**
Tanzania	**945,090**	**244,593**	**6.5**	**25.9**	**720**	**1385**	**970**
Burundi	**27,834**	**14,574**	**0.4**	**52.4**	**920**	**1565**	**1155**
Rwanda	***26,340***	***6,464***	***0.2***	***24.5***	***1135***	***1580***	***1365***
Central Africa	**622,980**	**403,570**	**10.7**	**64.8**	**1065**	**1680**	**1465**
Cameroon	**475,440**	**96,395**	**2.5**	**20.3**	**1440**	**1670**	**1545**
Congo – Brazzaville	**342,000**	**246,977**	**6.5**	**72.2**	**1190**	**1990**	**1660**
Angola	**1,246,700**	**285,395**	**7.5**	**22.9**	**785**	**1635**	**1375**
Congo – DRC/Kinshasa	**2,344,860**	**2,313,350**	**61.1**	**98.7**	**775**	**2115**	**1540**
For Congo River Basin		**3,789,053**	**100.0**		**720**	**2115**	**1470**

Table 4.2[10] The Congo River Basin: Areas and Rainfall

The irrigation potential of the Congo River basin in Tanzania has been estimated at 0ha.

Country	Irrigation Potential (ha)	Gross Potential Irrigation Water Requirements		Area under irrigation (ha)
		Per ha (m^3/ha per year)	Total (km^3/year)	
Zambia	**101,000**	**19,500**	**1.970**	**5,000**

[10] FAO.

Tanzania	0	13,000	0.000	0
Burundi	105,000	13,000	1.365	14.4
Rwanda	*9,000*	*13,000*	*0.117*	*2,000*
Central África	1,400,000	18,000	25.200	0
Cameroon	50,000	14,000	0.700	1,650
Congo-Brazzaville	255,000	13,000	3.315	217
Angola	900,000	20,000	18.000	2,000
Congo – DRC/Kinshasa	6,980,000	15,500	108.190	10,500
For Congo River Basin	9,8000,000		158.857	

Table 4.3 [11] The Congo River Basin: Irrigation potential, water requirements and areas under irrigation.

The Nile River Basin

The Nile River, with an estimated length of over 6800km, is the longest river in the World, flows from south to north over 35 degrees of latitude. It is fed by two main river systems: the White Nile, with its sources on the equatorial plateau (Tanzania, Burundi, Rwanda, Kenya, Congo and Uganda), and the Blue Nile, with its sources in the Ethiopian Highlands. The total area of the Nile basin represents 10.3% of the area of the continent of Africa and spreads through 10 countries.

Country	Total area of the country (km^2)	Area of the country within the Basin (km^2)	As % of total area of the Basin (%)	As % of total area of the Country (%)	Average annual rainfall in the basin area (mm)		
					Min	Max	Mean
Burundi	27,834	13,260	0.4	47.6	895	5,570	1,110
Rwanda	*26,340*	*19,876*	*0.6*	*75.5*	*840*	*1,935*	*1,105*
Tanzania	945,090	84,200	2.7	8.9	625	1,630	1,015
Kenya	580,370	46,229	1.5	8.0	505	1,790	1,260
Cong	2,344,860	22,143	0.7	0.9	875	1,915	1,245
Uganda	235,880	231,366	7.4	98.1	395	2,060	1,140
Etiopía	1,100,010	365,117	11.7	33.2	205	2,010	1,125
Eritrea	121,890	24,921	0.8	20.4	240	665	520
Sudan	2,505,810	1,978,506	63.6	79.0	0	1,610	500
Egypt	1,001,450	326,751	10.5	32.6	0	120	15
For Nile River Basin		3,112,369	100.0		0	2,060	615

[11] FAO.

Table 4.4 [12] The Nile River Basin: Areas and Rainfall

The irrigation potential of the Nile river basin in Tanzania has been estimated at about 30,000 ha.s

Country	Irrigation Potential (ha)	Gross Irrigation Water Requirement		Actual Flows		Flows after deduction for Irrigation and losses		Area already under irrigation
		Per ha (m^3/ha.yr)	Total (km^3/yr)	Inflow (km^3/yr)	Outflow (km^3/yr)	Inflow (km^3/yr)	Outflow (km^3/yr)	(ha)
Burundi	**80,000**	**13,000**	**1.04**	**0.00**	**1.50**	**0.00**	**0.46**	**0**
Rwanda	**150,000**	**12,500**	**1.88**	**1.50**	**7.00**	**0.46**	**4.09**	**2,000**
Tanzania	**30,000**	**11,00**	**0.33**	**7.00**	**10.70**	**4.09**	**7.46**	**10,000**
Kenya	**180,000**	**8,500**	**1.53**	**0.00**	**8.40**	**0.00**	**6.87**	**6,000**
Congo	**10,000**	**10,000**	**0.10**	**0.00**	**1.50**	**0.00**	**1.40**	**0**
Uganda	**202,000**	**8,000**	**1.62**	**28.70**	**37.00**	**23.83**	**30.51**	**9,120**
Etiopía	**2,220,000**	**9,000**	**19.98**	**0.00**	**80.10**	**0.00**	**6012**	**23,160**
Eritrea	**150,000**	**11,000**	**1.65**	**0.00**	**2.20**	**0.00**	**0.55**	**15,124**
Sudan	**2,750,000**	**14,000**	**38.50**	**117.10**	**55.50**	**90.63**	**31.13**	**1,935,200**
Egypt	**4,420,000**	**13,000**	**57.46**	**55.50**	**-**	**31.13**	**-26.33**	**3,078,000**
Sum of Countries	**10,192,000**		**124.08**					**5,078,604**
For Nile River Basin	**<8,000,000**							

Table 4.5[13]: The Nile River Basin: Irrigation potential, water requirements and areas under irrigation

The Zambezi River Basin

The Zambezi River Basin, the largest entirely within the Southern African Development Community (SADC) region, is shared by eight countries (Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe) with a total population of 102.9 million people of whom 30.8 percent live in the basin. This makes it the fourth most shared river basin in Africa and the second in the SADC region after the Congo, which is shared by nine countries.

The Zambezi River flows over a distance of nearly 3,000 km, dropping in altitude from its source in the Kalene Hills of North Western Zambia, at 1,585 metres above sea level, to its delta in the Indian Ocean, 200 km north of the Mozambican port of Beira. The Zambezi River is networked by major tributaries that include the Luena and Lungue-Bungo in Angola; the Chobe in Botswana; Shire in Malawi; Cuando and Luiana in Namibia; Kabompo, Kafue and Luangwa in Zambia; and Manyame, Sanyati and Gwayi in Zimbabwe.

	Total area	Area of the	As % of	As % of	Average annual

[12] FAO.
[13] FAO

	of the country (km^2)	country within the basis (km^2)	total area of the basin (%)	total area of the country (%)	rainfall in the basin area		
					(mm)		
					min.	max.	mean
Angola	1246700	235423	17.4	18.9	550	1475	1050
Namibia	824900	17426	1.3	2.1	545	690	630
Botswana	581730	12401	0.9	2.1	555	665	595
Zimbabwe	390760	213036	15.8	54.5	525	1590	710
Zambia	752610	574875	42.5	76.4	600	1435	955
Tanzania	945090	27840	2.1	2.9	1015	1785	1240
Malawi	118480	108360	8.0	91.5	745	2220	990
Mozambique	801590	162004	12.0	20.2	555	1790	905
For Zambezi basin		1351365	100.0		535	2220	930

Table 4.6 [14] The Zambezi River Basin: Areas and Rainfall

The irrigaton potential of the Zambezi River basin in Tanzania has been estimated at 0ha.

Country	Irrigation potential (ha)	Gross potential irrigation water requirement		Area under irrigation (ha)
		Per ha (m^3/ha per year)	total (km^3/year)	
Angola	700000	13500	9.450	2000
Namibia	11000	5000-25000	0.255	6142
Botswana	1080	5500	0.006	0
Zimbabwe	165400	10500	1.737	49327
Zambia	422000	12000	5.064	41400
Tanzania	0	11000	0.000	0
Malawi	160900	13000	2.092	28000
Mozambique	1700000	11000	18.700	20000
Sum of countries	3160380		37.303	146869
Total for Zambezi	3160380		37.303	

Table 4.7[15]: The Zambezi River Basin: Irrigation potential, water requirements and areas under irrigation

[14] FAO.
[15] FAO

4.1.4 Water Quality

4.1.4.1 Ground Water Resources

About 75% of the country is underlain by the Pre-Cambrian Basement Complex which is hard, consolidated and occasionally metamorphosed. Secondarily developed features of the Basement Complex, such as weathered zones, joints, fractures, faults and dykes allow borehole development and yield ranges up to 3litres/sec. The remainder of the country is underlain by much younger sedimentary and volcanic formulations such as: Karroo sediments, which include sandstones and conglomerates, and have yield ranges between .1 and 5litres/sec. Coastal sedimentary formulations yielding between 1 and 6 litres/sec in limestone and up to 2.5 litres/sec in sandstone. Volcano-pyroclastics yielding an average of 11litres/sec. Alluvial deposits yielding between 0.2 and 2 litres/sec.

4.1.5 Wetlands

Tanzania's wetlands cover about 10% of the country. They are classified as marine and coastal wetlands, inland wetland systems, rivers and inland flood plains, and artificial wetlands. The marine and coastal wetlands include the mangrove estuary swamps, coral reefs, seaweed and grasses, and intertidal mudflats. The inland wetlands include the Rift Valley lakes (Balangida, Eyasi, Manyara, Natron, Nyasa, Rukwa, and Tanganyika), some depression swamps (Bahi and Wambere) and Lake Victoria. The shores of the Rift Valley lakes provide a habitat for birds, while Lake Natron serves as the largest flamingo breeding ground in Africa. The soda lakes (Eyasi, Manyara, Natron and Ngorongoro) are their feeding grounds. The waters of these lakes and the adjacent land are often inhabited by wildlife, which is a major tourist attraction in Tanzania.

4.1.6 Soils

In Tanzania where over 90 percent of the population is rural and depends on land resources for its livelihood. Declining soil fertility due to inadequate farming practices, deforestation and overgrazing are among the primary impediments to increased agricultural productivity[16].

Prior independence soil fertility in both wetland and dry land areas were recognized to be high due to minimal land use, fallow practices because of enough land and also due to small human population at that time. Measured in terms of the amount of crop yield per acre, soil fertility declined during the period after independence due to increased in human population as well as due to policy changes particularly on land management. Decline in soil fertility during the villagilization period was linked to a further increase in human population due to changes in settlement pattern whereby people were brought together in Ujamaa villages leading to land scarcity and abandonment of their former fields. Declining soil fertility in the study area was linked to food shortage in recent years.

Deforestation occurs on most of the upper parts of the catchment as land for agriculture is in very short supply in the higher rainfall areas - especially where there are good soils.

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[16] World Bank

The resulting loss of mountain soil and the deposition of silt in the water courses are affecting many lower level ecosystems. Modification of wetlands for irrigation has resulted in serious floods and consequent destruction in several areas and increased grazing pressures are affecting the drier ends of the watershed.

4.1.7 National Parks/Forests at a Glance

- Arusha Ngurdoto Crater National Park
- Gombe Stream National Park
- Katavi National Park
- Kilimanjaro National Park
- Lake Manyara National Park
- Mahale Mountains National Park
- Mikumi National Park
- Ngorongoro Conservation Area
- Ruaha National Park
- Selous Game Reserve
- Serengeti National Park
- Tarangire National Park[17]

These areas are exclusively reserved for the protection of flora and fauna, eco-tourism, biodiversity conservation, and for geological formations of scientific and aesthetic value.

4.1.8 Volcanoes

Most of the country's mountains and volcanoes are located in the north and east of the country. They vary from the dramatic crater of Mt. Meru and the active volcano of Ol Donyo Lengai to tamer options like the Usambara Mountains and comparatively gentle slopes of the Crater Highlands.

4.1.9 Wild Life

Amphibians show high diversity and wide distribution, with high endemism in coastal forests and in the mountain forests of the Eastern Arc Mountains. Tanzania has 293 reptile species, which have a wide distribution range and are not greatly threatened by habitat change. The number of bird species found in Tanzania is 1,065. Of these, 25 are endemic, and all but 3 species are limited to forest habitats. Some 302 species of terrestrial mammals occur in Tanzania. The keystone species of critical importance include chimpanzee, colobus and mangabey monkeys, elephant, and a dwindling population of black rhinoceros. The larger carnivores include lion, leopard, cheetah and the African wild dog. There are over 30 antelope species, and the giraffe populations are the most numerous in Africa. Tanzania also has a rich menagerie of small mammal species, including bats (97species), shrews (32 species) and rodents (100 species).

Of the 302 species of terrestrial mammals, 13 species (4%) and 5 subspecies are endemic to Tanzania and Kenya, and one subspecies is endemic to Tanzania and Uganda. Tanzania also has high numbers and a great species diversity of millipedes, terrestrial molluscs and butterflies. The marine environment has more than 7,805

[17] http://www.kilimanjaro.com/tanzania/parktz.htm Accessed 7th August 2005

invertebrate species, while about 789 species of freshwater invertebrates (mostly aquatic insects) are known in Tanzania.

4.1.10 Aquatic and Living Organisms

Lake Victoria has three major important commercial species (Lates nioticus (Nile Pech); Oreochromis niloticus (Nile Tilapia); and Rastrineobola argentea (Sardine)).

Lake Tanganyika has three major commercial fishes (One specie of Centropomedae and 2 species of Clupeidae).

Some swamps are important breeding sites for fish. Lake Tanganyika is home to about 217 endemic fish species, while Lake Malawi has the most diverse fish species population (over 600 species). Both lakes are world-famous for their diversity of aquarium fish. Lake Tanganyika is important nationally for sardine, while Lake Victoria has a naturally rich and diverse indigenous fish fauna (178–208 species). However, the introduction of Nile perch has led to the disappearance of several indigenous species.

4.1.11 Agricultural Produce

There are seven agro-ecological zones of Tanzania based on climate, physical geography, soils, vegetation, land use and tsetse fly occurrence, which are the main physical factors that influence opportunities and constraints for crop and livestock production.

The main products in farming are food and cash crops as well as livestock, which are basically for subsistence. Traditional Export Crops include coffee, cotton, cashewnut, tobacco, tea, sisal, and pyrethrum. The production of major cash crops shows no clear trend, annual fluctuations are largely influenced by climatic circumstances, incidence of pests and diseases, and short-term price variations. With only a very small share of the international market (except sisal and pyrethrum), increased production of these commodities in the country would not affect export prices. According to URT (2000) report, the trend in the production of major cash for 18 years and food crops over the past 17 years are summarized in Tables 1.2.2 and 1.2.3 respectively.

Year	Cashew	Coffee	Cotton	Pyrethrum	Tobacco	Made tea	Sisal
1995/96	81.7	52.3	250.2	0.4	28.4	21.2	25.0
1996/97	63.0	44.4	252.9	0.4	35.4	19.8	30.0
1997/98	99.9	38.0	208.2	0.4	52.0	26.2	15.3
1998/99	110.0	42.7	105.4	0.1	37.8	25.0	24.0

Table 4.8 Total Annual Production (in '000 Tons)

Year	**Maize**	**Paddy**	**Wheat**	**Sorghum & Millet**	**Pulses**	**Cassava**

1994/95	2,875	517	75	665	166	1,992
1995/96	2,822	495	84	629	196	1,498
1996/97	2,387	413	79	645	147	1,426
1997/98	2,921	1,402	111	959	592	1,528

Source: Statistical Abstract, 1994, Bureau of Statistics, President's Office, Planning Commision.

Table 4.9 Food Crop Production (in '000 Tons) and Growth Rates From 1981-1998.

4.2 The Sociopolitical Environment

4.2.1 The Demographics

Tanzania's population of 36 million in 2002 is made up of more than 120 different tribes, most of them belonging to the big Bantu family. Population density has increased from the national average of 26 people in 1988 to 39 people per sq. km. in 2002. Also at regional level, population density varies between regions, from 12 people per square kilometre for Lindi region to 1,793 people per sq. km. for Dar es Salaam region on the part of Tanzania Mainland. In Tanzania Zanzibar, regional population density range from 111 people per sq. km. in Unguja South to 1,700 people per sq. km. in Urban West.[18]

Since 1990, poverty in Tanzania declined but it remains widespread, particularly in rural areas. About 17 million people – half the population – live below the poverty line of US$0.65 per day. Approximately 80 percent of the poor live in rural areas where about 70 percent of the population lives (URT, 2001). From 1991/92 to 2000/01 overall food poverty declined from 22 to 19 percent while basic needs poverty declined from 39 to 36 percent. Poverty declines were most rapid in major urban centres such as Dar es Salaam (from 28 to 18 percent) and least rapid in rural areas (from 41 to 39 percent)[19].

Agriculture is the primary economic activity with a GDP of 44.7 % in 2003, hence its performance has a significant effect on output and corresponding income and poverty levels. Over the 1990s, agricultural growth was 3.6 percent, which was higher than in the 1970s and 1980s when annual agricultural growth averaged 2.9 and 2.1 percent respectively. Over the 1990s, agricultural exports grew at an annual rate of over 7 percent per year, although this rate has slowed in recent years due to declining world market prices. Food crop production has grown at about the rate of population growth and accounts for about 65 percent of agricultural GDP, with cash crops accounting for only about 10 percent. The sale of food and cash crops accounts for about 70 percent of rural incomes.16

[18] http://www.tanzania.go.tz/economicsurvey1/2002/part1/humanresources.htm Accessed 7th August 2005.

[19] DADP

Despite its potential and rich resource endowment, Tanzania is one of the poorest countries in the world with a per capita GNP $280 in 2005. The economy depends heavily on agriculture, which accounts for about half of GDP, provides 85% of exports, and employs about 80% of the work force. Official estimates suggest that over half of its 36million population is poor and 36% is very poor. Poverty is essentially a rural phenomenon, with almost 61% of the rural population is poor compared to 39% of the urban population. Income distribution is uneven. In the 1998 rural survey the lowest quintile accounted for only 7% of mean expenditures.

Table 4.10 Tanzania: Demographic and Social Indicators[20]

	1975	1985	2002
Population (millions)	15.9	21.8	36
% Female	-	56	90
Fertility Rate	6.8	6.5	5.2
Poverty (Headcount index (%))	-	-	35
Life Expectancy	48	51	44
Infant Mortality (per 1000 births)	118	100	99
Under 5 Mortality (per 1000 births)	197	160	147
Maternal Mortality Rate (per 100,000 births)	-	-	370
HIV/AIDS Prevalence (ages 15-49): urban	-	-	10.9
HIV/AIDS Prevalence (ages 15-49yrs): rural	-	-	5.3
HIV/AIDS Prevalence (over 12yrs) :urban	-	-	-
Literacy %	-	-	-
Males	-	-	85
Females	-	-	69
Gross Primary School Enrolment %	-	-	54.4
%Girls in total enrolment			
Net Primary Enrolment	-	56	89
Gross Secondary School Enrolment %			
% Girls in total enrolment			
Higher Education: % girls in total enrolment			

Agriculture is the primary economic activity for the 90% of the population living in the rural areas. The severe degradation of land, forests and water resources that support agriculture has become an obstacle to the revival of the rural economy.

The health status in Tanzania is poor. Life expectancy at birth is 44years (decline due to AIDS) compared to 50years average in SSA[21], and infant mortality of 99 per 1000 live births compared to 92 for SSA. The incidence of HIV/AIDS is high, with 10.9% of the urban population and 5.3% of the rural population aged between 15-49, seropositive. In the 1990's HIV infection rates increased significantly among this group and was higher among women. Infection rates are four times higher among young girls compared to boys. Water and sanitation services are deficient, with access to improved water source estimated to be about 49% of population. Communicable diseases (HIV/AIDS, persistent

[20] World Bank
[21] SSA – Sub-Saharan Africa

malaria, ARI[22] and diarrhea), malnutrition and poor quality health care have been major factors in poor survival indicators.

The illiteracy rate(% of population age 15+) is 25%. The Gross primary enrollment (% of school-age population) is 67% for men and 66% for women.

The age structure is as follows:

0-14 years: 44.3% (male 7,988,898; female 7,938,979)
15-64 years: 53.1% (male 9,429,959; female 9,634,102)
65 years and over; 2.6% (male 405,803, female 524,713)

Median age: total: 17.5years, male: 17.2 years and female: 17.7 years

In Tanzania, there are two official languages, Swahili and English.

4.2.1 Characteristics of Poverty

Based on the results of the in-country consultations with local communities, local and central governments and civil society members, during the preparation of this ESMF, the following characteristics of poverty were derived:

Who are the Poor?

- Rural households.
- Female headed households, other households with less than two adult-members, elderly and handicapped persons.
- Large households.
- Urban households.

The groups are not mutually exclusive.
Why are they poor?

- **Rural Households**
- low agricultural productivity, declining soil fertility and environmental degradation.
- lack of access to land, land fragmentation, insecurity of land tenure.
- lack of access to markets, absence of rural commercial activity and alternative income earning opportunities.
- poor quality education, lack of access to education, high cost of education.
- poor health services and health standards and rise in HIV/AIDS incidence, impacting negatively on productivity.
- Poor nutritional intake
- lack of access to low cost capital or micro-credit or micro-grants.
- lack of access to affordable and sustainable household energy sources.
- Vulnerability

- **Female-headed households**
- shortage of household labor.

[22] ARI – Acute Respiratory Infection

- declining soil fertility
- many women have to take care of unemployed/unemployable husbands, dependant parents, dependent orphans,
- low education attainment, poor access to land, paid employment and credit
- poor social services, e.g. water, health, education etc.

- **Urban Poor**

- rapid increase in urban population.
- no employment opportunities particularly among poorly educated young people.
- poor basic social services and infrastructure.
- lack of housing.
- lack of land.
- high food prices due to low agricultural productivity, high transport costs and restrictions on petty trade.

- **Where are the poor?**

Poverty continues to be essentially a rural phenomenon.

5. DESCRIPTION OF WORLD BANK ENVIRONMENTAL AND SOCIAL SAFEGUARDS POLICIES AND TRIGGERS.

This ESMF has been designed so that all investments in the DADPs funded under the ASDP will comply with all the Environmental laws of the United Republic of Tanzania (URT) and the Environmental and Social Safeguard Policies of the World Bank. In this chapter, the Bank's safeguards policies and their applicability are discussed and in the subsequent chapter those of the URT are presented.

The World Bank Safeguard Policies are;

1. Environmental Assessment (OP4.01, BP 4.01, GP 4.01)
2. Natural Habitats (OP 4.04, BP 4.04, GP 4.04)
3. Forestry (OP 4.36, GP 4.36)
4. Pest Management (OP 4.09)
5. Cultural Property (OPN 11.03)
6. Indigenous Peoples (OD 4.20)
7. Involuntary Resettlement (OP/BP 4.12)
8. Safety of Dams (OP 4.37, BP 4.37)
9. Projects on International Waters (OP 7.50, BP 7.50, GP 7.50)
10. Projects in Disputed Areas (OP 7.60, BP 7.60, GP 7.60)

These policies apply to all activities funded under the ASDP irrespective of whether or not they are being funded in whole or in part by the World Bank, IFAD, Government of Tanzania or any other donor. Therefore, it inconsequential in terms of the applicability of this ESMF (and the disclosed RPF) what the source of funding for any activity in ASDP is. Once an activity is funded by the ASDP, all of the World Bank's safeguards policies apply, if the Bank is to fund the ASDP. In preparing this ESMF, a consideration of the type of future investments planned vis-à-vis the baseline data presented in Chapter 4 against the requirements of the Bank Safeguard policies, has led to the determination that the following Bank policies are likely to apply.

OP 4.01 Environmental Assessment
OP 4.09 Pest Management
OP 4.12 Involuntary Resettlement
OP 4.37 Safety of Dams
OP 7.50 Projects on International Waters

Notwithstanding, since qualifying Districts and the exact location of the investments in the DADPs of these was not known at the time of preparation of the ASDP, and since the geographic coverage is expected to be country wide, other bank policies may apply and not all policies selected above may apply simultaneously.

Therefore, a complete description of the bank safeguards and their triggers for applicability can be found on the World Bank's official web site www.worldbank.org and are summarized in Annex 2.0, to be used as part of the Environmental and Social Management process presented in chapter 9. of this ESMF.

- **5.1 Environmental Assessment (OP4.01, BP 4.01, GP 4.01)**

This policy requires environmental assessment (EA) of projects/programs proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus improve decision making. The EA is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the program investments/sub projects under the DADPs in particular but the ASDP in general. The EA process takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and cultural property) and transboundary and global environmental aspects.

The environmental and social impacts of the ASDP will come from the sub projects and investments contained in the DADPs of the qualifying districts that will receive financing under the ASDP. However, since the location of these sub projects/investments will not be identified before appraisal of the program, the EA process calls for the GoT to prepare an Environmental and Social Management Framework (ESMF) report which will establish a mechanism to determine and assess future potential environmental and social impacts during implementation of the sub project activities and investments contained in the approved DADPs under the proposed ASDP, and then to set out mitigation, monitoring and institutional measures to be taken during operations of these activities, to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels.

OP 4.01 further requires that the ESMF report must be disclosed as a separate and stand alone document by the Government of Tanzania and the World Bank as a condition for bank Appraisal of the ASDP. The disclosure should be both in Tanzania where it can be accessed by the general public and local communities and at the Infoshop of the World Bank and the date for disclosure must precede the date for appraisal of the program and no later than 120 days prior to the board approval date of the World Bank's Board of Directors as required by the United States Federal Law[23]

The policy further calls for the ASDP as a whole to be environmentally screened to determine the extent and type of the EA process. The ASDP has thus been screened and assigned an EA Category B. This category of projects/programs is defined as follows.

> Category B projects are likely to have potential adverse environmental impacts on human populations or environmentally important areas – including wetlands, forests, grasslands, and other natural habitats – and are less adverse than those of category A projects. These impacts are site specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. The EA process for category B projects examines the potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

[23] Pelosi Amendment (US Federal Law) prohibits US Executive Directors of multi-national development agencies from voting in favor of the agencies lending operations if the EA reports are not publicly disclosed 120 days prior to board date.

Therefore, this ESMF sets out to establish the EA process to be undertaken for implementation of program activities (ie the DADPs in the qualifying districts) in the proposed ASDP when they are being identified and implemented.

This process requires the implementers/operators/sponsors of the activities in the DADPs, such as the district, ward, village officials and/or farmer groups and associations to use processes contained in the ESMF, especially section 9.0, to identify potential adverse impacts of their activities in the DADPs and thereby determine the corresponding mitigation measures they would need to incorporate into their planned activities. Section 9.0 sets the relevant process and requirements for environmental and social management.

- **5.2 Pest Management (OP 4.09)**

The Bank uses various means to assess pest management in the country and support integrated pest management (IPM) and the safe use of agricultural pesticides: economic and sector work, sectoral or project-specific environmental assessments, participatory IPM assessments, and adjustment or investment projects and components aimed specifically at supporting the adoption and use of IPM. In Bank-financed agriculture operations, pest populations are normally controlled through IPM approaches, such as biological control, cultural practices, and the development and use of crop varieties that are resistant or tolerant to the pest.

An IPMP is a comprehensive plan, developed when there are significant pest management issues such as (a) new land-use development or changed cultivation practices in an area, (b) significant expansion into new areas, (c) diversification into new crops in agriculture (d) intensification of existing low-technology systems, (e) proposed procurement of relatively hazardous pest control products or methods, or (f) specific environmental or health concerns (e.g. proximity of protected areas or important aquatic resources; worker safety). An IPMP is also developed when proposed financing of pest control products represents a large component of the project. A pest management plan reflects the policies set out in OP 4.09, Pest Management. The plan is designed to minimize potential adverse impacts on human health and the environment and to advance ecologically based IPM.

The ASDP will not, under any foreseeable circumstances, finance the purchase of any agricultural inputs. However, as the targeted/significant stakeholders in this program are farmers, who during the implementation cycle of the ASDP, will, independently continue to require the use of inputs, the provisions of OP4.09 are being triggered so that best practice methodologies in this field become part of the farmer empowerment activities of the ASDP, thereby ensuring that it is truly cross-cutting and sector wide.

Thus GoT has thus prepared an Integrated Pest Management Plan (IPMP), which will be included as part of the ESMF to address the needs of OP.

The IPMP has the following objectives:

- To enhance capacity of the program beneficiaries (individual farmers) to use pesticides in an economic and safeway (ensuring that banned pesticides or

agrochemicals in WHO[24] classes IA, IB and II will not be acquired by farmers), and introduce them to Integrated Pest Management (IPM) approach or concept for which technical capacity will be established in the program
- Identify key strategic and institutional issues at the national and local government levels, in order to promote movement towards the development and implementation of a pest management policy.

The first phase of the plan is the presentation of an initial reconnaissance to identify the main pest problems and their contexts (ecological, agricultural, public health, economic, and institutional) and to define a baseline. The second phase specifies procedures for screening pest control products and then develops specific operational plans to address the pest problems identified. The IPMP also consist of pest control product screening procedures.

• 5.3 Involuntary Resettlement (OP/BP 4.12)

The district, division, ward, village, individual farmers and farmer groups as implementers or operators of the DADPs will make every possible effort to avoid impacts on people, land, property, including people's access to natural and other economic resources, as far as possible. Notwithstanding, land acquisition, compensation and resettlement of people seems inevitable for certain type of DADP investments, such as irrigation sub projects located in certain areas. This social issue is of crucial concern to the Government of Tanzania and the Bank, as its impact on poverty, if left unmitigated, is negative, immediate and widespread. Thus, OP 4.12 will be triggered in those cases.

Thus a Resettlement Policy Framework (RPF) has been prepared by the government and approved by the Bank in compliance with OP 4.12. The RPF sets the guidelines for the Resettlement and Compensation Plans (RAPs) that would have to be prepared when any program investment (DADP activity) triggers this policy. The RAPs would be prepared by the sub project operators/sponsors/implementers (e.g. farmer groups) and would have to be submitted to the District, Regional and Zonal offices for approval. In some cases the World Bank reserves the right to also approve any RAP as a condition for that particular DADP sub project investment to be financed under the ASDP basket.

This policy would be triggered when a program activity, for instance in this case a farmer groups irrigation sub project, causes the involuntary taking of land and other assets resulting in: (a) relocation or loss of shelter, (b) loss of assets or access to assets (c) loss of income sources or means of livelihood, whether or not the affected persons must move to another location.

The World Bank Safeguard policy OP 4.12, in most cases, is not triggered because people are being affected by physical displacement. It is triggered because the program/DADP activity causes land acquisition, whereby a physical piece of land is needed and people may be affected because they are cultivating on that land, they may have buildings on the land, they maybe using the land for water and grazing of animals or they may otherwise access the land economically, spiritually or any other way which may not be possible during and after the sub project is implemented. Therefore, people are in most cases compensated for their loss (of land, property or access) either in kind or in cash of which the former is preferred.

[24] WHO refers to the World Health Organization, a UN agency.

The resettlement policy applies to all displaced persons regardless of the total number affected, the severity of the impact and whether or not they have legal title to the land. Particular attention should be paid to the needs of vulnerable groups among those displaced. The policy also requires that the implementation of the resettlement plans are a pre-requisite for the implementation/start of the construction to ensure that displacement or restriction of access does not occur before necessary measures for resettlement and compensation are in place. For chosen sites involving land acquisition, it is further required that these measures include provision of compensation and of other assistance required for relocation, prior to displacement, and preparation and provision of resettlement sites with adequate facilities, where required. In particular, the taking of land and related assets may take place only after compensation has been paid, and where applicable, resettlement sites, new homes, related infrastructure and moving allowances have been provided to displaced persons. For program activities requiring relocation or loss of shelter, the policy further requires that measures to assist the displaced persons are implemented in accordance with the project resettlement plans of action. The policy aims to have the displaced persons perceive the process to be fair and transparent.

Where there is a conflict between the Laws of Tanzania and the Bank OP4.12, the latter must take precedence if the Bank is to fund the ASDP basket.

Finally, OP 4.12 also requires the RPF to be disclosed both in Tanzania and at the infoshop of the Bank before appraisal and 120 days before World Bank board date presentation of the ASDP, the latter required in compliance with US federal law (see section 5.1 above).

- **5.4 Safety of Dams (OP 4.37, BP 4.37)**

The Bank may finance types of projects/programs that do no include a new dam but will rely on the performance of an existing dam such as water supply systems that draw directly from a reservoir controlled by an existing dam, diversion dams or hydraulic structures downstream from an existing dam, where failure of the upstream dam could cause extensive damage to or failure of a new Bank-funded structure; and or irrigation or water supply projects that will depend on the storage and operation of an existing dam. Projects/programs in this category also include operations that require increases in the capacity of an existing dam, or changes in the characteristics of the impounded materials, where failure of the existing dam could cause extensive damage to or failure of the Bank-funded facilities.

Activities in some types of the qualifying and approved DADP investments, such as irrigation sub projects may involve the use/rehabilitation of existing dams (large or small), or the construction of new very[25] small dams/dykes/weirs. Whereas other type sub-projects may depend only on the use of existing dams. In these particular cases, the dams will probably be used for one or a combination of these reasons;

i) as a reservoir
ii) to manage water flow and levels in rivers/lakes
iii) provision of head of water to maintain flow in irrigation channels.

[25] Construction of new small dams/weirs cannot be ruled, but these will not be higher than 5meters.

Therefore, for sub projects that involve the use of existing dams, the Bank requires that the sub project sponsors/implementers/operators arrange for one or more independent dam specialists to:

(a) inspect and evaluate the safety status of the existing dams or their appurtenances, and its performance history;

(b) review and evaluate the owner's operation and maintenance procedures; and

(c) provide a written report of findings and recommendations for any remedial work or safety-related measures necessary to upgrade the existing dams to an acceptable standard of safety.

The Bank may accept previous assessments of dam safety or recommendations or improvements needed in the existing dam if the project sponsors or the owners/operators of the Dam provide evidence that;

(a) an effective dam safety program is already in operation, and
(b) full-level inspections and dam safety assessments of the existing dam, which are satisfactory to the Bank, have already been conducted and documented.

For sub projects that involve the construction of new dams, the Bank requires that the dam be designed and its construction supervised by experienced and competent professionals. It also requires that the sub project sponsor/operator adopt and implement certain dam safety measure for the design, bid, tendering, construction, operation, and maintenance of the dam and associated works. The Bank distinguishes between small and large dams.

Small dams are normally less than 15m in height. This category includes, for example, low embankment tanks. Large dams at 15m or more in height. Dams that are between 10 and 15m in height are treated as large meters in height are treated as large dams if they present special design complexities –for example, an unusually large flood-handling requirement, location in a zone of high seismicity, foundations that are complex and difficult to prepare, or retention of toxic materials. Dams under 10 meters are treated as large dams if they are expected to become large dams during the operation of the facility.

The ASDP activities will not finance any large dams and small dams will be restricted in height to five (5) meters as an absolute maximum, without exception.

For small dams, generic dam safety measures designed by qualified engineers are usually adequate. The screening procedures and mitigation measures contained in Section 9.0 of this framework contains these requirements.

For large dams, the Bank requires, (i) reviews by an independent panel of experts of the investigation, design, and construction of the dam and the start of operations, (ii) preparation and implementation of detailed plans, a plan for construction supervision and quality assurance, an instrumentation plan, an operation and maintenance plan, and

an emergency preparedness, (iii) pre-qualification of bidders during procurement and bid tendering, and (iv) periodic safety inspections of the dam after completion.

- **5.5 Projects on International Waters (OP 7.50, BP 7.50, GP 7.50)**

This policy applies when potential international water rights may be an issue, for sub projects on the following type of international waterways in Tanzania:

(a) any river, canal, lake, or similar body of water that forms a boundary between, or any river or body of surface water that flows through, two or more states

The Lakes Victoria, Malawi and Tanganyika are on the borders with neighboring states.

(b) Any tributary or other body of surface water that is a component of any waterway described in (a) above.

Many rivers in Tanzania get either their source or flow directly into one these lakes.

(c) Any bay, gulf, strait, or channel bounded by two or more states or, if within one state, recognized as a necessary channel of communication between the open sea and other states, and any river flowing into such waters.

This policy applies to agriculture, water and energy/power type projects funded by the Bank.

Projects on international waterways may affect relations between the Bank and its borrowers and between states (whether members of the Bank or not). The Bank recognizes that the cooperation and goodwill of riparians is essential for the efficient use and protection of the waterway. Therefore, it attaches great importance to riparians' making appropriate agreements or arrangements for these purposes for the entire waterway or any part thereof. The Bank stands ready to assist riparians in achieving this end.

This policy requires the GoT, formally to notify riparians of the proposed activities of the ASDP and its details that are on international waterways as defined in 5.4 (a), (b) and (c) above, as soon as they known .

Summary of Requirements of Bank Safeguards Policies Triggered by the activities of the ASDP.

Bank Safeguards Policy Triggered.	Action Required by Triggered Policy	By Whom	Date action required by.
OP 4.01 Environmental Assessment (including Pest Management OP4.09)	1)Preparation of ESMF and IPMP (this document) 2) Preparation of sub project ESIA's (see section 9.0 of this report)	1) ESMF and IPMP by GoT 2) Sub project ESIA's, Screening forms, and EMP's by sub project sponsors	1) ESMF and IPMP to be approved by NEMC of the GoT and Bank and disclosed in Tanzania and Bank Infoshop before program appraisal date and 120 days before Bank Board date. 2) Category A sub project ESIA's to be approved by NEMC office and disclosed in Tanzania and Category B and C sup projects of DADPs to be approved by zones before DADPs are approved for funding by the respective District Council.
OP 4.12 Involuntary Resettlement	1) Preparation of RPF. 2) Preparation of Sub project RAPs.	1) RPF by GoT 2) RAPS by Sub project sponsors, e.g farmer groups or DALDO.	1) RPF to be approved by Ministry of Lands and Human Settlement and by the Bank and disclosed in Tanzania and Bank Infoshop before program appraisal date and 120 days before Bank Board date. . 2) Sub project RAPs to be approved by zonal land officer and disclosed in Tanzania before DADPs are approved for funding by the respective District Council.
OP 4.37 Safety of Dams	1) Preparation of Dam Safety Measures Report for rehabilitation of existing, construction of new, or use of small dams in DADP investments 2) Use of experienced and competent professional.	1) and 2) By sub project operators, e.g. DALDO's and/or farmer groups.	1) and 2)To be approved by Zonal Irrigation Engineers before DADPs are approved for funding by the respective District Council.
OP 7.50 Projects on International Waters	Notification of Riparian Countries	GoT	Before bank appraisal of the project

Table 5.1

6.0 DESCRIPTION OF THE ADMINISTRATIVE, POLICY, LEGISLATIVE AND REGULATORY FRAMEWORK.

6.1 Administrative Structure

The United Republic of Tanzania is made of mainland Tanzania and the Indian Ocean islands of Zanzibar.

Administratively, the URT is divided into 26 Regions, 130 Districts, Divisions, Wards and Villages. The Village being the smallest administrative area and is closest to the communities.

The role of Government for the Agricultural Sector is to facilitate development, provide stimulus for private investment initiatives, and promote effective regulation, monitoring and co-ordination of the sector.

The agricultural sector lead Ministries, namely MAFS, MCM, and MWLD supervise the implementation of the ASDP at national level and PO-RALG oversees its implementation at LGA level.

Overall policy guidance and coordination of the ASDP will continue to be provided through the National Steering Committee (NSC). The NSC, chaired by the Permanent Secretary (PS), MAFS, is responsible for policy making and coordinating the implementation of the ASDP and monitoring its performance to ensure that the goals of the programme are being achieved. The NSC, which meets at least once in every quarter, comprises PSs of all the Agriculture Sector Lead Ministries (ASLMs), other collaborating ministries and stakeholders including Development Partner representatives.

6.2 The Policy Framework for Decentralization by Devolution

In 1998, the Prime Ministers office decided to make changes in the legislation which will enable the government to: (a) proceed with the implementation of the local government reform according to the government's visions and objectives for a strengthened local government system; (b) co-ordinate and give direction to the work on sector reforms so that they are consistent with objectives for the civil service and local government reform; and (c) to fulfill government commitments.

This policy paper on Local Government Reform is based on recommendations from the National Conference on a shared vision for local government in Tanzania, May 1996; the local Government Reform Agenda of November 1996; discussions and recommendations with the Association of Local Authorities in Tanzania (ALAT), representatives from local authorities, sector ministries and other central government organs in various for fora.

The Tanzania local government system is based on political devolution and decentralization of functions and finances within the framework of a unitary state. Local governments will be holistic, i.e. multi-sectoral, government units with a legal status (body corporate) operating on the basis of discretionary, but general powers under the legal framework constituted by the national legislation. Local governments have the

responsibility for social development and public provision within their jurisdiction, facilitation of maintenance of law and order and issues of national importance such as education, health, water, roads and agriculture. Local governments have constituted unitary governance systems all over the country based on elected councils and committees and a professional administration.

Decentralization of government thus includes four main policy areas;

B. Political decentralization is a devolution of powers and the setting of the rules for councils and committees, etc.
C. Financial decentralization is based on a definition of the principles of financial discretionary powers of local councils, i.e powers to levy local taxes and the obligation of central government to supply local governments with adequate unconditional grants and other forms of grants.
D. Administrative decentralization involves de-linking local authority staff from their respective ministries and procedures for establishment of a local payroll. Local governments will thus have and recruit their own personnel, making them accountable to their local councils.
E. Changed central-local relations: The role of central government vis-a- vis local councils will be changed into a system of inter-governmental relations with central government having the over-riding powers within the framework of the constitution. Line ministries will change their role and functions into becoming , (i) policy making bodies, (ii) supportive and capacity building bodies, (iii) monitoring and quality assurance bodies within the local government legislation framework, and (iv) regulatory bodies (legal control and audit).

The Minister responsible for local government will co-ordinate central-local relations and in particular all initiatives from sectoral ministries on matters relating to local government.

6.3 The Legislative and Regulatory Framework for Decentralization

The principal legislation for decentralization by devolution are the following ;

- The Local Government (District Authorities) Act, No. 7 of 1982
- The Local Government (Urban Authorities) Act, No. 8 of 1982
- The Local Government Finances Act, No. 9 of 1982
- The Local Government Negotiating Machinery Act, No. 11 of 1982
- The Local Government Services Act, No. 10 of 1982
- The Urban Authorities (Rating) Act, No. 2 of 1983
- The Local Authorities Elections Act, No. 4 of 1979
- The Local Government Authorities (Decoration of Building) Act, No. 9 of 1968
- The Regional Administration Act, No. 19 of 1997

6.4 Management and Administration Framework for the Environment

With regards to the management of the bio-physical environment throughout Tanzania, the overall responsibility lies with the Office of the Vice President. There is also a cross-

sectoral technical committee composed of members from various sectors. The members of the Technical Review Committee (TRC) are:

- The Ministry responsible for Environment (Vice President's Office)
- Ministry responsible for forestry, fisheries, wildlife and tourism
- Ministry responsible for Urban and Rural Planning
- Ministry responsible for Agriculture
- Ministry responsible for Water
- Ministry responsible for Minerals
- Ministry responsible for Works and Communication
- Ministry responsible for Industry and Trade
- Institute of Resource Assessment – University of Dar es Salaam
- National Environment Management Council (NEMC)

NEMC is the secretariat to the TRC.

6.5 The Office of the Vice President

The vision of the Ministry of Environment of the Office of the Vice President is " to attain sustainable human development, eradication of poverty, security and equitable use of resources on a sustainable basis to meet the basic needs of the present and future generations without degrading the environment or risking health or safety and also maintain the union between the mainland Tanzania and Zanzibar".

The mission of the Vice-President's office is "to formulate policies and strategies on poverty eradication, protection of environment and non-governmental organizations as well as co-ordinate all issues pertaining to the mainland Tanzania and Zanzibar".

The Office of the Vice President (VP's office) is the ministry responsible for policy, planning and implementation oversight on issues relating to the Environment in Tanzania. The VP's office is therefore responsible for overall policy guidance and advice on the development of strategic environmental vision, including formulation, analysis and appraisal of broad environmental policy, as well as formulation and review of broad environmental goals, in conformity with such vision. The VP's office provides a basis for a broad political legitimacy for the administration of strategic policy decisions on a routine and continuous basis for coordinated environmental management.

6.6 The National Environment Management Council (NEMC)

The National Environment Management Council (NEMC) is under the Division of Environment in the Office of the Vice President.

NEMC has an advisory role in the VP's office and is responsible for enforcing pollution control and performs the technical arbitration role in the undertaking of Environmental Impact Assessment.

NEMC has prepared a comprehensive EIA procedure and guidelines dated March 2002.

6.7 Environmental Units

Environmental units at sectoral and district level are the collaborating partners in the EIA process. The linkages between NEMC and the sectoral and district environmental units are legally binding to ensure clear lines of command to facilitate effective implementation. The roles and responsibilities of these units shall be the following:

Sectoral Environmental Units

a) with assistance from NEMC to develop sectoral guidelines within the framework of the national EIA guidelines,
b) to issues EIA registration forms to operators and provide relevant information on policies and other administrative requirements
c) to assist the general EIA process administration at sectoral level.

District Environment Unit

a) to issue EIA registration forms to operators and provide relevant information on policy, legal and other administrative requirements at the district level,
b) to co-ordinate EIA process at district level
c) to link and liaise with the ENMC on all undertakings within the district.

The composition of the District Environmental Unit;

- District Planning Officer - as coordinator of the planning process.
- District Natural Resources Officer – manages the development of natural resources/forestry,wildlife, bee keeping, fisheries etc.)
- District Agricultural and Livestock Development Officer – responsible for land-use and management
- District Water Engineer
- District Health Officer
- Co-opted members (depending on nature of project)

• 6.8 The EIA Process in Tanzania

The EIA process in Tanzania is presented in the "General Environmental Impact Assessment Guidelines and Procedure", prepared by NEMC (revised March 2002), which contains five volumes as follows:

• Volume 1: The main document that elaborates the proposed EIA procedure.
• Volume 2: Screening and scoping guidelines.
• Volume 3: Guidelines on report-writing.
• Volume 4: Guidelines for EIA review and monitoring.
• Volume 5: A checklist of environmental characteristics (i.e physical, ecological, land use, cultural and socio-economic characteristics).

The EIA procedure involves the following:

• ***Registering a project***: The operator is required to register the project with the NEMC.

• ***Screening***: The project is classified to determine the level at which the environmental assessment should be carried out.

• ***Conducting an EIA***: This involves the three main stages of the EIA process (scoping, preparing terms of reference and preparing an environmental impact statement). It is at this stage that the decision is made whether to conduct the EIA or not.

• ***Reviewing the EIA***: A Technical Review Committee established by the NEMC reviews the EIA and decides whether the EIA is acceptable or not.

• ***Issuing the relevant permits***: If the EIA is approved, the NEMC issues the necessary environmental permit that confirms the EIA has been satisfactorily completed and the project may proceed.

• ***Decision-making***: A decision is made as to whether a proposal is approved or not; a record of decision explains how environmental issues were taken into consideration.

• ***Monitoring project implementation***: The operator prepares and executes an appropriate monitoring program (i.e. an environmental management program).

• ***Auditing the completed project***: The NEMC undertakes periodic and independent audits of the project. Depending on its findings, it will issue an Environmental Auditing Report.

• ***Decommissioning the project upon its completion***: A decommissioning report is prepared at the end of the project life. This report outlines the restoration/rehabilitation activities to be carried out by the operator and is lodged with the NEMC .

6.9 Extent of public participation

Public participation is required during the scoping stages and while fulfilling the terms of reference for the impact assessment of the EIA process. The operator is responsible for identifying interested and affected parties and ensuring that all parties concerned are given adequate opportunity to participate in the process. A public information program is initiated, and public notices are issued during the scoping and EIA stages. Whenever a strong public concern over the proposed project is indicated and impacts are extensive and far-reaching, the NEMC is required to organize a public hearing. The results of the public hearing should be taken into account when a decision is taken whether or not a permit is to be issued.

6.10 Policy Framework for the Management of the Environment

Tanzania published its National Environmental Policy (NEP) in December 1997 and the National Conservation Strategy for Sustainable Development , the National Environmental Action Plan (NEAP) and specific sectoral policies such as those on land, mining, energy, water, agriculture, population and fisheries. The NEP recognizes the EIA process as a means of ensuring that natural resources are soundly managed, and of avoiding exploitation in ways that would cause irreparable damage and social costs.

The NEP seeks to provide the framework for making the fundamental changes that are needed in order to incorporate environmental considerations into the mainstream of decision making. The NEP seeks to provide guidance and planning strategies in determining how actions should be prioritized, and provides for the monitoring and regular review of policies, plans and programs. It further provides for sectoral and cross-sectoral policy analysis, so that compatibility among sectors and interest groups can be achieved and the synergies between them exploited. The overall objectives of the NEP are, therefore, the following:

• To ensure the sustainability, security and equitable use of resources in meeting the basic needs of present and future generations without degrading the environment or risking health and safety.

• To prevent and control the degradation of land, water, vegetation, and air, which constitute our life support systems.

• To conserve and enhance our natural and man-made heritage, including the biological diversity of Tanzania's unique ecosystems.

• To improve the condition and productivity of degraded areas, as well as rural and urban settlements, in order that all Tanzanians may live in safe, healthy, productive and aesthetically pleasing surroundings.

• To raise public awareness and understanding of the essential links between the environment and development, and to promote individual and community participation in environmental action, and

• To promote international cooperation on the environment agenda, and expand participation and contribution to relevant bilateral, sub regional, regional, and global organizations and programs, including the implementation of treaties.

- **6.11 Legislative Framework for the Management of the Environment**

Under Article 27 of the Constitution, the public is called upon to ensure that the natural resources of the country are managed properly:

(1) Every person is obliged to safeguard and protect the natural resources of the United Republic, State property and all property jointly owned by the people ...

(2) All persons shall by law be required to safeguard State and communal property, to combat all forms of misappropriation and wastage and to run the economy of the nation assiduously, with the attitude of people who are masters of the fate of their nation.

At present, The National Environment Management Act 2004 is the main legislation that governs how the Environment is managed in Tanzania.

Table 6.1: Existing key policies and laws relating to Environmental Management

Act or policy Key elements Implementing authority

Act	**Key Elements**	**Implementing Authority**
The Environmental Management Act 2004	The Act provides for legal and institutional framework for sustainable management of environment, outlines principles for different environmental functions, provides basis for implementation of international instruments on environment, provides for implementation of the National Environmental Policy, and repeals the Nation Environment Management Act 1983.	National Environmental Management Council
National Environmental Management Council (NEMC) Act, No. 19 of 1983	The Act provides for the establishment of the NEMC, as well as all functions and other matters related and incidental to its establishment.	National Environmental Management Council
Wildlife Conservation Act, No. 12 of 1974, as amended	The Act protects wildlife and vegetation by restricting the utilization of wildlife to license-holders. The use of sensitive wildlife habitats is restricted during certain times of the year or for specified periods.	Ministry of Tourism and Natural Resources
Fisheries Act, No. 6 of 1970	The Act limits annual catches. Specific regulations were introduced in 1973 and 1982, putting limitations on methods of fish harvesting, including outlawing of dynamiting and poisoning.	Division of Fisheries, Ministry of Tourism and Natural Resources
Water Utilization and Control Act, No. 42 of 1974	The Act establishes temporary standards for public use, as well as effluent discharge standards.	Ministry of Water and Livestock Development
Urban Water Supply	The Act gives the National	National Urban Water

Act, No. 7 of 1981	Urban Water Authority powers to monitor and control surface water and groundwater pollution and specifies punitive measures for violators of this act.	Authority, Ministry of Water and Livestock Development
Mining Act, No. 17 of 1980, as amended	The Act sets out government policy on all forms of mining and is supported by various regulations covering claims, prospecting rights, mining rights and royalties. Mining license applicants are required to submit plans for environmental protection. Each industry is required to establish realistic resource recovery standards and to adhere to them. Mining plans are required to be presented before operations begin.	Ministry of Energy and Minerals
Forestry Policy of 1993	The revised Policy continues to recognize the important role of forests in the maintenance of the environment, the provision of forestry products and the protection of watersheds and biodiversity.	Division of Forestry, Ministry of Tourism and Natural Resources
Land Act, No. 4 of 1999	Private Group Property is given either through Granted Rights in General and Reserved Land (Land Act, Section 19) or through Customary Rights in Village Lands (Village Land Act, Section 22). Provision is also made for holding land by joint occupancy or occupancy in common (Land Act, Part XIII).	Ministry of Lands and Human Settlement
Village Land Act, No. 5 of 1999	The Act requires each village to identify and register all communal land, and obtain the approval of all members of the village for identification and	Ministry of Lands and Human Settlement

	registration (Village Assembly, Section 13). A Register of Communal Land (Section 13(6)) is to be maintained by each Village Land Council, and land cannot be allocated to individuals, families, or groups for private ownership (Section 12(1)(a)).	
Local (District and Urban) Authorities Act, No. 7 of 1982	Local Authorities are empowered to make by-laws regarding the protection of soil, agriculture, water supplies and other natural resources. The Act contains provisions to protect human health and regulate pollution problems.	Local Authorities
Merchant Shipping Act of 1967	Atmospheric pollution is addressed only minimally in Tanzanian legislation. The Act prohibits the emission of dark smoke from ships for more than five minutes in any hour within the limits of a port.	
Town and Country Planning Ordinance, of 1966, Chapter 378	The Ordinance was intended to establish a land-use planning scheme for designated areas. The National Land Use Planning Commission was established to advise Government on land conservation and development.	National Land Use Planning Commission
Public Health, Sewerage and Drainage Ordinance, Chapter 336	The Ordinance prohibits the discharge of certain substances into sewers. Violation of the Ordinance is an offence, and penalties may be imposed on offenders.	Ministry of Health and Social Welfare

- **6.12 International Conventions**

Tanzania is a party to many international agreements on Biodiversity, Climate Change, Desertification, Endangered Species, Ozone layer protection, Marine Life Conservation, etc. Examples are:

- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989)
- Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris (1972)
- Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons, and their Destruction, London (1972)
- Convention on Biological Diversity
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (1973)
- Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes Within Africa, Bamako, Mali (1991)
- UN Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification particularly in Africa (1994)
- Lusaka Agreement on Co-operative Enforcement Operations Directed at illegal Trade in Wild Fauna and Flora (1994)
- Montreal Protocol on Substances that Deplete the Ozone Layer (1987)
- Phyto-sanitary Convention for Africa, Kinshasa (1967)
- UN Convention on the Law of the Sea (1982)
- UN Framework Convention on Climate Change (1983)
- Vienna Convention for the Protection of the Ozone Layer.

6.13 Membership of International River Basin Commissions.

Tanzania is a member of the following international River Basin Commissions:

- The Congo River Basin
- The Nile Basin Commission
- Southern African Development Community (SADC) - Zambezi River Basin
- East African Community – Lake Victoria

The authorities for the international waterways in Tanzania are:

- Pangani River Basin Management Authority
- Lake Victoria Basin Management Authority
- Lake Nyasa Basin Management Authority
- Lake Tanganyika Basin Management Authority
- Ruvuma River Basin Management Authority

The roles of the River Basin Authority include issuing of water Rights to farmers and all water users and monitoring of river flows.

6.14 Notification of Riparian Countries

The Department of Irrigation (Ministry of Agriculture and Food Security) will officially request the Ministry of Foreign Affairs to notify on its behalf, fellow riparian countries on the water extraction needs of the ASDP through the appropriate bodies/Ministry of Foreign Affairs/ Department of Irrigation/ Water Basin Management Authorities in those countries.

7. DETERMINATION OF POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS.

7. 1 Potential Environmental Concerns and Impacts

7.1.1 Generic Environmental Concerns

The National Environment Policy (NEP) identifies the following as the critical environmental problems facing Tanzania today:

- Land Degradation
- Lack of accessible, good quality water for both urban and rural inhabitants
- Environmental Pollution, e.g. Water Contamination
- Loss of Biodiversity, Habitat and Wetlands
- Deterioration of Aquatic Systems
- Deforestation

The Tables 7.1 to 7.7 presents the root and immediate causes for these environmental problems and discusses the impacts and their severity, providing the background against which any potential adverse impacts on the environment from the activities of the DADPs can be determined and analyzed.

Land Degradation: From soil erosion, soil exhaustion and overgrazing. A problem throughout Tanzania.

Particularly around the steep hills in Mwanza, Mara, and Kagera region; lakeshores

Immediate Causes	Root Causes	Impacts	Severity
• Massive continued loss of vegetative cover due to deforestation and loss of other land cover, deterioration of catchment buffer zones. • Inappropriate agricultural practices leading to decreased soil quality and erosion, such as use of marginal lands, overgrazing and free grazing. • Lack of soil and water conservation measures and/or abandonment and poor maintenance of anti-erosion works. • Bush fires and slash and burn practices.	• Population pressure and poverty leading to unsustainable land use practices. • Topography (uneven relief, high stream flow velocities) and rainfall patterns (floods, droughts, climate variability) • Lack of land use policies and improper land use management; weak extension service on soil conservation often connected with prevalent land tenure system. • High livestock density • Lack of awareness of land-water interaction • Lack of systematic implementation of EIA for infrastructure projects due to lack of financial and human resources.	• Loss of top soil and reduction of soil fertility leading to decrease in agricultural production and food security. • Reduction of vegetative cover and loss of habitats and biodiversity. • Water quality degradation from high sediment loads, siltation of shallow lakes, wetlands, reservoirs, and valley bottoms and other low lying lands downstream. • Degradation of river beds and river bank erosion; desertification and wind erosion (northern arid regions), sheet and rill erosion and gully formation (after heavy rainfall) in highlands. • Landslides and flooding leading to destruction of infrastructure (houses, means of communication, communal facilities, etc.)	**HIGH**

Table 7.1

River Bank and Lakeshore Degradation. For e.g. at River estuaries into lakes.			
• Poor land use and agricultural practices such as dry season cultivation near banks and destruction of vegetative cover to increase arable land area; high animal density. • Drop in water levels and drying up of waterways. • Increased urban development and construction and industrial activities near river banks; poorly planned tourism centers.	• Lack of or insufficient national land use plans, laws and regulations, and/or enforcement of existing laws. • Population pressure and rapid growth of urban centers. • Expansion of farm lands and inadequate agricultural practices near river banks and shores, including overgrazing. • Land subsistence; relief and morphological structure of soil. • Climatic variability and conditions; seasonal floods and intermittent increase in lake levels.	• Destruction of vegetative cover especially lake shore buffer zones. • Erosion, landslides, and downstream sedimentation leading to change in river course. • Adverse effects on riverine aquatic life and lake ecosystems.	**MODERATE**

Table 7.2

Mining: For instance, Mara, Mwanza, parts of Shinyanga, and Kagera regions			
Immediate Causes	**Root Causes**	**Impacts**	**Severity**
• Use of toxic chemicals and lack of containment and treatment facilities (esp. mercury use in gold mining). • Lack of adequate site rehabilitation. • Inadequate mining practices. • High demand for construction materials and indiscriminate clearing of vegetation.	• Inadequate policy guidance, lack of or insufficient safeguards (EIA, anti-pollution/environmental legislation. • No regulation/enforcement of private mining entrepreneurs. • Lack of (government) planning and oversight	• Water and air pollution. • Soil degradation and erosion of sites and adjacent river banks; deforestation and landslides leading to river siltation. • Adverse impact on flora and fauna.	**HIGH in certain locations**

Table 7.3

Water Contamination: Pollution. Point source pollution localized around urban/growth centers. Non point sources generally are a regional problem mostly from agricultural sources.

Immediate Causes	Root Causes	Impacts	Severity
• Discharge of run-off of untreated water from urban and industrial sources containing dissolved nutrients, industrial pollutants, agricultural chemicals/fertilizers; lack of recycling of waste matter; uncontrolled dumping of waste. • Non-point source pollution from agriculture due to improper and high application rates of agro-chemicals. • Degradation of vegetative cover especially wetlands, in basins which could act as filters.	• Weak policies, laws and regulations for environmental protections (e.g. EIA); insufficient enforcement and monitoring especially in respect to industrial facilities; low budgetary provision for enforcement of existing regulations, lack of sufficient human resources. • Point Sources: Inadequate funding of investments, high capital costs, high operation and maintenance costs, inadequate containment and treatment of wastes and lack of sanitary facilities. • Non-point sources: Unsustainable land use practices in combination with lack of security of land tenure. • Inadequate zoning regulations and/or enforcement; inadequate environmental and land use planning. • Low environmental awareness and sense of value or environmental protection.	• Degradation of water quality, rendering water unsuitable for domestic, agricultural, industrial and other uses. • Adverse impacts on water dependent flora and fauna, loss of habitats and bio-diversity, nutrient discharges leading to increased eutrophication. . • Pollution of lakes and tributaries, resulting in contamination of drinking water. • Lack of adequate liquid and solid waste disposal systems and accumulation of refuse. • Decrease in environmental quality, disappearance of natural habitats and proliferation of water hyacinth.	MODERATE

Table 7.4

Table 7.5

Deforestation:			
Immediate Causes	**Root Causes**	**Impacts**	**Severity**
• Land use conversion due to increasing need for arable land and grazing areas; burning practices for land clearing and shifting cultivation. • Uncontrolled logging for fuelwood and charcoal production for domestic/household energy consumption, construction material and local industry fuel needs. • Unsustainable and inefficient resource use (e.g. overgrazing, extensive cultivation on steep hill slopes and uncontrolled logging). • Lack of local planting/replanting. • Human migration and resettlement due to increasing numbers of returnees and other war affected groups, encroaching into forested areas.	• Poverty and population pressure leading to unsustainable pressure on resources; absence of alternative livelihoods and weak capacity to increase unit agricultural production. • Insufficient energy alternatives to fuelwood. • Insufficient awareness and knowledge of sustainable land use practices and effects of deforestation. • Land tenure system leading to allocation and use of marginal lands and lack of incentives for sustainable land use practices. • Drought and overall arid climate and topography.	• Decreasing vegetation/forest cover; loss of density and diversity. • Deterioration of watershed: high run-off associated with increased erosion leading to loss of fertile soils and sedimentation and siltation downstream. • Energy crisis associated with price increases due to decreased availability of fuelwood and charcoal. • Large scale habitat destruction and loss of wildlife in terms of numbers and biodiversity; progressive disappearance of National Parks. • Variability in climate and rainfall patterns.	**HIGH**

Water Contamination: **Sanitation Aspects**			
• Lack of water supply systems and/or other reliable drinking water source; drinking water contamination with fecal matter leading to spread of pathogens. • Lack of or insufficient sewerage or alternative sanitation systems ;leaks and insufficient maintenance of existing facilities; lack of urban storm water sewers and solid waste disposal facilities. • Insufficient sanitation and hygiene training in conjunction with widespread poor sanitary conditions. • Increased breeding ground for mosquitoes in water weed infested areas and irrigation canals.	• Lack of environmental regulations and laws, monitoring and enforcement and general waste management strategies. • Rapid growth of urban centers and lack of financial resource base to build needed water supply and sanitation infrastructure, combined with lack of planning for urban expansion and required infrastructure. • High capital costs for investments; high operation and maintenance costs. • Previous low priority given to sanitation by government and agencies, lack of awareness of connection between sanitation and safe drinking water; need for better hygiene education. • Poverty and poor health condition of large parts of the population.	• Pollution of drinking water sources (ground and surface water) and high dissolved nutrient loads resulting in increasing eutrophication and spread of infectious diseases (diarrhea, malaria, bilharzias, dysentery, and intestinal worms). • Risks to public health due to poor sanitation conditions, especially during rainy season and floods. • Increased absence from work due to sickness; increase in malnutrition and death rates especially among vulnerable groups such as small children, the displaced and the elderly.	**SEVERE**

Table 7.6

Loss of Biodiversity and Habitats.			
Immediate Causes	**Root Causes**	**Impacts**	**Severity**
Species loss and decline of ecosystems and unique habitats. • Poaching and illegal trade in valuable species as well as intensive and unsustainable resource use and land management, such as deforestation, wetlands conversion, expansion of agriculture (crops and livestock farming, overfishing, uncontrolled burning and forest fires). • Lack of alternative income sources especially in areas or resettlement. *Loss of agrodiversity.* • Expansion of hybrid/high yielding crop and livestock varieties leading to decrease of genetic diversity of domestic/national species. • Introduction of exotic species.	• Population pressure and poverty combined with high reliance on primary natural resources and income from agriculture. • Low financial and staff capacity in management of protected areas and associated lack of control and monitoring; poor enforcement of laws protecting gazetted forests and game sanctuaries; lack of financial resources for development and implementation of effective and relevant programs. • Weak agricultural extension services. • Lack of awareness of biodiversity concerns and benefits from conservation. • Lack of regulations to prevent introduction of exotic species. • Inadequate and unregulated land use practices; insufficient integrated programs for people living in protected areas.	*Species loss and decline of ecosystems and unique habitats.* • Disappearance of unique animal and plant species, especially endemic ones; decline of species diversity. • Decrease in numbers of large mammals with negative impact on tourism and associated decrease in revenue. • Decrease in forest cover constituting decrease in food, fuel timber and shelter. *Loss of agrodiversity.* • Loss of genetic base (cattle breeds, crops, vegetables/fruits); loss of benefits from local variety qualities (tolerance productivity, resilience); dependency on exotic seeds and breeds/imported varieties.	**SEVERE**
Wetlands Degradation; e.g. Simiyu River, Lake Victoria Shores, banks of Kagera River/swamps			
• Reclamation of wetlands to expand agricultural production. • Deforestation, erosion and sedimentation. • Overuse of natural resources (overfishing/hunting/over-grazing,farming practices) • Pollution from industrial, agricultural and domestic sources.	• Lack of wetland protection and management regulations and measures and/or lack of implementation . • Poverty and population pressures; shortage of land; inadequate land use policies • Lack of awareness of wetlands function and value, cultural habits.	• Decrease and degradation of wetland areas (reclamation, siltation, flood damage; water weed infestation) • Decreased benefits from functioning wetlands, e.g. less groundwater re-charge, decreased buffering of floods, loss of filter function to absorb and degrade pollutants and associated decrease in water quality; decreasing ability to act as sediment trap; destruction of habitats and loss of biodiversity.	**SEVERE**

Table 7.7

7.2 Some Potential Environmental Concerns for the ASDP

Land Degradation – rainfed agriculture and livestock grazing are the most widespread land uses in Tanzania and these activities are associated with serious and accelerating environmental degradation. Degradation in this sense means a diminution of the biological productivity expected of a given tract of land being used in a particular way. On a farm it may be reflected in lower crop yields, on a savannah in fewer livestock units and in a nature reserve in fewer plant and animal species. The soil on degraded lands is typically impoverished or eroded, there is less water available due to increased surface runoff or contamination, plant and animal productivity is lower, and wildlife less diverse.

Soil erosion impacts include dramatic increase in the frequency and intensity of floods and droughts, habitat damage related to sedimentation impacts downstream and disruption of natural ground water recharging. Degradation on arid, semi-arid and sub humid lands leads to desertification, as desert like conditions appear when none existed before.

There are relatively few hard data measuring the extent of degraded land in Tanzania, but the anecdotal evidence supporting accelerated deterioration in land productivity is compelling. The most causes are deforestation, cultivation of unsuitable marginal lands, inappropriate or excessive use of agricultural technologies and chemicals, over-grazing, and poor management of cultivated land, often exacerbated by drought.

Soil erosion harms productivity by depositing silt in dams, irrigation systems and river transport channels, and by damaging fisheries resulting in increased deficits in food production, declining food security, and increase in poverty.

General Water Stress – drought, shortage of potable water, increased demand for agricultural, energy and industrial purposes is leading to a critical water stress situation. Management of water rights issues among and between formal and informal users will continue to be particularly challenging if irrigation is significantly scaled up. This would be required to ensure conflict conditions among users are dissipated, water and riparian rights are respected and ecosystems sustainability is not sacrificed.

For instance, in a shortage of water situation, wetlands can be lost, threatened or degraded by drainage for agriculture resulting in loss of biodiversity or conversion from wetlands to agricultural land.

Point and non- Point Pollution of Water Sources – affects water quality which in turn affects aquatic life (leading to fish loss), human health (due to water borne diseases) and loss of livelihoods for those communities who depend on these basins.

The main threats to basin wide water quality are insufficiently treated domestic, urban and industrial wastes and irrigation drainage water, and non-point source pollution from pesticide and fertilizer residues.

To achieve a wider and deeper understanding of these and with the ultimate goal of ensure a more informed policy and planning decision making process, the GoT through MAFS supported by the NEMC will undertake a Strategic Environmental Assessment (SEA) of the National Irrigation Master Plan, which will address these issues and more, and come up with tangible recommendations. The SEA is expected to be complete by mid term review of the ASDP.

7.3 Some Potential Social Concerns for the ASDP

The main social issues in Tanzania today are:

Acute Poverty – poverty is wide spread in Tanzania. Despite its potential and rich resource endowment, Tanzania is one of the poorest countries in the world with a per capita GNP[26] of about US$280 in 2003. Official estimates suggest that over half of its 36 million population is poor and 36% is very poor.

About 80% of Tanzania's poor live in rural areas and agriculture accounts for 75% of rural household incomes, hence significant reductions in overall poverty levels, particularly rural poverty, will require raising agricultural incomes.

The Tragedy of HIV/AIDS – Life expectancy in Tanzania has declined to 48years as result of the aids epidemic. HIV/AIDS affects both education coverage and quality. It dampens the demand for education as affected households have fewer resources to spend on education either because of reduced income due to morbidity of income earners or diversion of scarce resources for health care. Children in these households are often taken out of school to care for ill parents or have to work to make up for lost household income, and an increasing number are becoming orphans. At the same time, the epidemic affects the supply of educational services at all levels through increased mortality, morbidity and absenteeism among teachers and education personnel.

These effects impact all aspects of rural life, including agriculture in areas such as availability of farm labor, extra household expenditure on health needs and farming knowledge transfer to the rural youth.

The Crisis in Energy and ICT– Tanzania's low electricity and ICT access rates are serious constraints in rural areas. Despite healthy real economic growth (above 5% p.a. since 2001), low inflation and adequate foreign exchange reserves, access rates remain low for electricity and modern Information and Communications Technologies (ICTs): less than 10% of the overall population and only about 1% of the rural population have access to these services. These low rates are a major constraint to higher rural non-farm incomes and an improved quality of life that can be gained not just from improved household lighting and communications, but also from improved service delivery in rural health, education and water facilities.

85% of the total energy is consumed in the rural areas where the majority of Tanzanians live. Biomass, particularly wood-fuel, constitutes 95% of rural energy consumption.

Gender Issues – Women are often poorer than men, own less land and livestock, have fewer years of schooling and have the responsibility of sourcing and providing the household energy and growing the main subsistence crop (hence responsible for households food security) .Therefore, women need an equal seat at the empowerment table. Gender imbalances are rooted and sustained by traditional and cultural values. In 1990, the Government established the Ministry of Women Affairs and Children with a view to promote gender equality. A gender committee has been created to ensure that sectoral investments respond to the priority needs of both men and women. The new land legislation has represented an encouraging step towards securing the right of

[26] World Bank Source

women to own, dispose of and inherit land[27]. Additionally, all stakeholders within the ASDP need to participate and take deliberate sensitization actions to encourage women participation in agriculture related education, training, programs and projects, planning, decision-making and, not least, policy implementation. Thus during the implementation of the DADPs, the following should be supported;

i) To promote gender equality within the participatory planning, implementation and operations of the DADP investments
ii) To facilitate education and training for women in all ASDP components and activities.
iii) To promote awareness on gender issues concerning men and women's social roles in the agriculture sector, including training on appropriate technologies.
iv) To promote awareness and advocacy on gender issues in the agriculture sector.

Inclusiveness - Exclusion of vulnerable groups from participating in and benefiting from program activities, i.e., from barriers to access to due to stigmatization, harmful cultural practices, acute poverty among vulnerable groups, discrimination, lack of participation in the planning process etc.

Resettlement - Land acquisitions/use resulting in involuntary resettlement from impacts on people, land, property, including access to natural and other economic resources.

Lack of access to social services – very limited and often too distant access to health care, schools, potable water, feeder roads, etc.

Lack of access to micro-credit/micro-finance – many of those consulted specifically stated that lack of access to micro-credit was keeping them in poverty as they had no access capital to engage in micro-enterprises and expand their small businesses.

The environmental and social screening form and checklist contained in Annex ... and Annex ... are specifically designed to ensure that adverse social impacts from ASDP activities are identified and captured in the planning stages and there-in effectively mitigated. Both environmental and social mitigation measures would be verifiable monitored during the various stages of the program cycle.

[27] See the Resettlement Policy Framework for this project for more information on land regulation.

8.0. INSTITUTIONAL ASSESSMENT AND FRAMEWORK FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT

8.1 ASDP Institutional Roles and Responsibilities at the National Level

The main institutions with key responsibilities for environmental and social management are:

- **8.1.1 National Level**

Overall policy guidance and coordination of the ASDP will continue to be provided through the **National Steering Committee (NSC).** The NSC, chaired by the Permanent Secretary (PS), MAFS, is responsible for policy making and coordinating the implementation of the ASDP and monitoring its performance to ensure that the goals of the programme are being achieved. The NSC, which meets at least once in every quarter, comprises PS's of all the Agriculture Sector Lead Ministries (ASLMs), other collaborating ministries and stakeholders including Development Partner representatives.

The equivalent of the ASDP NSC for capital development grant transfers to Local Government Authorities (LGA's) is the Local Government Capital Development Grant (LGCDG) Steering Committee. The composition of the NSC will be expanded to include development partners contributing to the Basket Fund for select meetings.

An ASDP Secretariat supported by an ASDP Facilitation team will coordinate the ASDP basket funded activities.

- **8.1.2 Zonal Level**

Agricultural services, primarily research and development, will be provided on the basis of the seven broad agro-ecological zones, corresponding to the coverage of the existing seven Zonal Agricultural Research and Development Institutes (ZARDIs). Overall, the management of the Zone will follow the Client Oriented Research and Development Management Approach (CORDEMA).

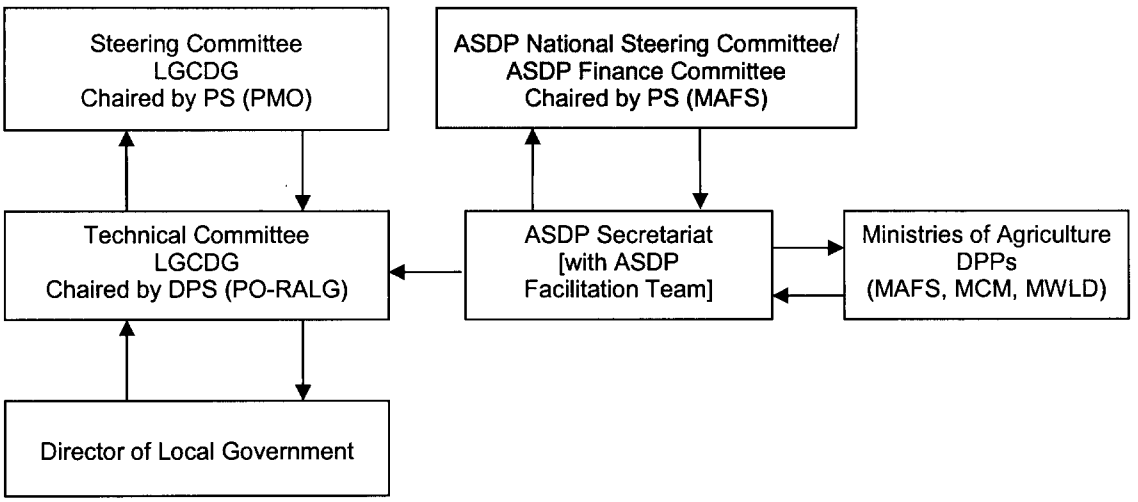
- **8.1.3 Regional level.**

Regional Secretariats will assist LGAs on matters related to DADPs including: assisting councils in the preparation of DADPs and quarterly reports; evaluating DADPs and LGA quarterly reports and compliance with DDP guidelines; collate LGA plans and quarterly reports; undertake regular monitoring visits to review quality of supported investments and services; and advise LGA on required improvements and make recommendations to PO-RALG as to the qualifications of councils for funds disbursements. The Regional Secretariats may also host temporary contracted technical assistance to support LGAs in the implementation of their agricultural services reform and empowerment interventions.

- **8.1.4 Local Government Authorities (LGA) Level, i.e. Districts.**

LGAs will implement the program under the leadership of their executive directors, usually District Executive Directors (DEDs). Day-to-day facilitation and backstopping will be the responsibility of the District Agricultural and Livestock Development Officer (DALDO) and the District Agricultural Sector Team. LGAs will formulate and implement DADPs as part of the District Development Plans (DDPs) based on the DADP Guidelines; undertake monitoring and reporting of DADP activities; supervise and coordinate the delivery of support services such as extension, the cooperatives' inspectorate, agricultural information and animal health services; and mobilize resources (financial, human and facilities/equipment) for local development programs. Program funds for preparing and implementing the reform of districts, as well as for financing operations, such as the contracting of service providers by client groups, will be handled by the District Treasurer, on the basis of a Memorandum of Agreement.

Figure 8.1: National Level Institutional Arrangements



8.2 Institutional Roles and Responsibilities at all levels for Environment and Social Management

The main institutions with key responsibilities for environmental and social management are:

• 8.2.1 District Level Authorities

The District Agricultural Development Plans (DADPs), which would be based on the District Agricultural Development Strategy (DADS) and would be part of the overall District Development Plan (DDP), and which would provide a comprehensive plan for LGA uses of resources.

The DADP's are to be approved by the respective District Councils.

The DALDOs and District Environmental Coordinators on their own, or when supporting the beneficiaries of the DADPs such as farmer groups (who in turn can be assisted by extension services) will be responsible ; (i) for complying with all national laws regarding the environment and with all social/poverty guidelines, parameters and targets set by the GoT, and of all triggered World Bank Safeguards policies, (ii) to implement their DADP sub project activities according to and consistent with the provisions of this ESMF, implementing, inter alia, all appropriate mitigation measures identified in their completed ESIA and/or environmental and social management plan (ESMP) into the construction planning cycle, technical and engineering designs and drawings, and civil works contracts, etc. (iv) to ensure that these mitigation measures are complied with during construction and post construction (i.e. operations) stages of their activities, by self monitoring of their activities and by periodically reporting to their respective District Environmental Coordinator and , (v) to maintain an adequate budget to implement the appropriate maintenance procedures and practices for their operations , to ensure relevant mitigation measures identified in the ESIA and/or environmental and social management plan (ESMP) are implemented and sustained in their operations and (vi) to comply with any directives that may be issued from time to time from the NEMC, ASDP SC, ASDP Secretariat, the Zones and Regional authorities.

• 8.2.2 Regional Level Authorities

The regions would be responsible for, (i) receiving, reviewing and commenting, requiring revisions where necessary for category C type DADP sub projects and their corresponding environmental and social management plans (ESMP), prior to approval of the DADP by the District council, (ii) to carry out a regular and intrusive monitoring regime during planning, implementation, construction, operations and maintenance stages of the all DADP sub projects/activities (incl. category A, B and C) (iii) for preparing periodic monitoring reports on the DADP sub projects/activities at all stages of the operations and to send these reports on a regular basis to their respective Zonal administration for compiling and monitoring of cumulative impacts across Tanzania, (iv) to comply with (consistent with national laws) the directives of the NEMC and the zonal authorities (v) to issue directives to the districts consistent with national laws on environmental requirements.

- **8.2.3 Zonal Level Authorities**

For the purposes of environmental and social management of the DADPs, the roles of the zonal authorities are as follows:

For environmental management – the zones will act as coordinators and reviewers of the periodic monitoring and oversight process, collecting and compiling monitoring reports of the regions for direct reporting on this to the NEMC. Also, the zonal irrigation engineers and zonal environmental specialist will carry out routine and periodic monitoring and backstopping the regions as may be required.

Further, when Dam Safety issues are involved, the zonal irrigation engineers will serve as the experts on this issues and advice and support the districts on what may be required of them on these issues, for planning, design, contracting, construction, supervision during construction and for monitoring and operations, when dam is in use.

For issues involving resettlement, the zonal land authorities would be directly responsible for reviewing and clearing the resettlement action plans and for monitoring the process of delivery of the emoluments on the resettlement plans.

- **8.2.4 The National Environment Management Council (NEMC)**

The NEMC is responsible for ensuring that all development projects in Tanzania comply with all relevant environmental laws. The new law, the Environment Management Act, 2004, specifically states that NEMC's role, among many other others is to review and recommend for approval/clear EIA's. Therefore, the overall role of the NEMC will be to review and clear ESIA's for all but Category A and B type sub project activities in the DADP's.

Since the NEMC is centrally located in Dar es Salaam with no decentralized structure, and an inadequate capacity to carry out on the ground monitoring of implementation of the mitigation measures and other activities of the DADP's, regular and intrusive monitoring would have to be carried out at the district level, with NEMC providing only monitoring oversight. Therefore, NEMC would provide periodic and oversights monitoring to ensure no adverse cumulative impacts from the activities of the DADPs are occurring at the national level and will provide oversight and technical assistance to the districts when required.

NEMC will perform three critically important and significant roles as follows;

(i) Review, Clearance and Approval of the ESIA's/process for Category A and B sub projects/activities of the DADP's.
(ii) Training of District Staff (DALDO, District Environmental Coordinators and Zonal Environmental Specialists) to carry out monitoring.
(iii) Monitoring Oversight.

Thereby NEMC will provide (i) on the ground ESMF performance reviews/audits both for enforcement purposes, but more importantly to reinforce the training and to keep farmer groups and the District Environmental Coordinators cognizant of their ESMF responsibilities, (ii) training and (iii) periodic/oversight monitoring. With regards training,

the NEMC will train District Environmental Coordinators according to the Training Program contained in section 8.4 of this chapter, thereby providing capacity for the Districts to fill this position with suitably trained personnel.

The NEMC will also be responsible for carrying out the following; (i) ensuring the National, Zonal, Regional and District activities of the ASDP comply with Tanzania's environmental laws and requirements, and that of the World Bank's triggered Safeguard Policies, (ii) for receiving, reviewing and commenting on, requiring revisions where necessary and clearing[28] of DADP category A and B sub project activity ESIA's prior to approval of the DADPs by their respective District Council, (iii) reviewing and compiling monitoring reports of the zonal level authorities (iv) issue directives based on monitoring and evaluation reports, to the operators and the District Environmental Coordinators.

8.2.5 National River Basin Offices

The nine national river basin offices are responsible for issuing and managing water rights. They will issue water rights only when the ESIA's have been reviewed and cleared by the NEMC.

8.3 Capacity Assessments

As more development assistance pours into Tanzania, the country's technical capacity for effective environmental management is being addressed. As stated earlier, the entire regulatory and legislative framework that manages the Environment Sector has been significantly strengthened by the passing of a new environment law, the Environment Management Act, 2004.

Also, other ongoing and planned Bank financed operations such as the Secondary Education Development Program (SEDP), the Agricultural Sector Development Program (ASDP) , Second Tanzania Social Action Fund (TASAF) and the Participatory Agricultural Development Project (PADEP), will all be implementing sub project type activities at the District level and will be providing some form of training to District staff on environmentally similar issues, and hence the synergies and complimentarity of these ongoing efforts will build enormous capacity at the district level which will support the ASDP.

On the other hand, the farmer groups, districts, regions and zones are expected to clearly have the capacity to carry out the environmental and social management requirements in this ESMF either from their own staff or through the use of private consultants, and in the case of farmer groups' support through extension services.
The District Councils have the post for an Environmental District Coordinator, but many of these positions are not filled. The Regional staff where they exist will review and clear ESMPs for Category C sub projects and monitor sub project implementation, as per section 8.2.1 above. The Districts will also be assisted by service providers in situations where there is no in-house capacity to perform these roles or when the District Environmental Coordinator of their District and/or the DALDO are unavailable or not in post. The NEMC will have access to funds under this program to cover their additional

[28] To aid this process, Annex G contains and Environmental and Social Appraisal Form for use by the NEMC and the District Environmental Coordinator.

costs required to carryout their responsibilities identified in Section 8.2.4 above, either for expenses or cost of local consultants. The costs for this are accounted for in Table 11.1 or elsewhere in overall program budget.

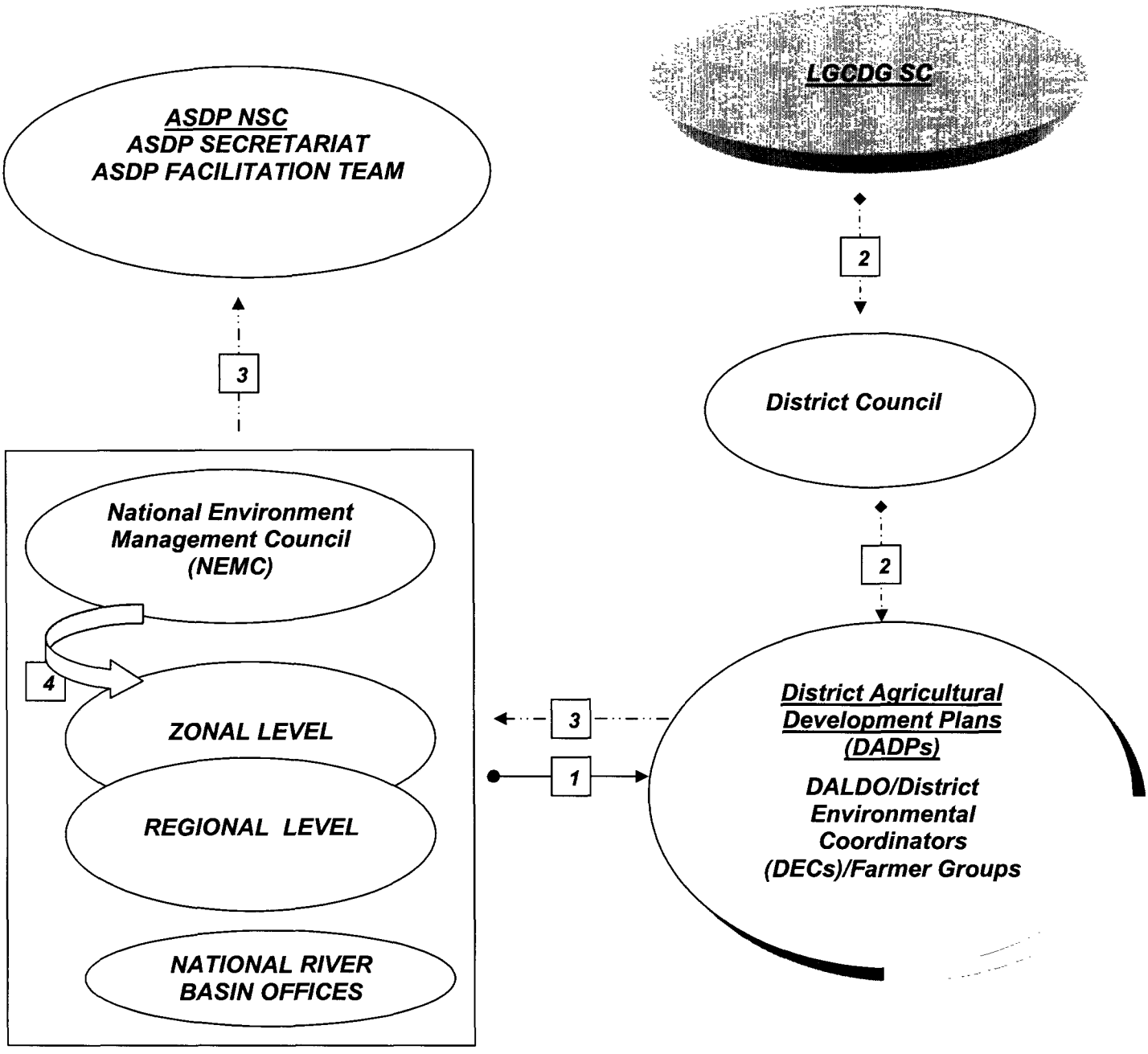
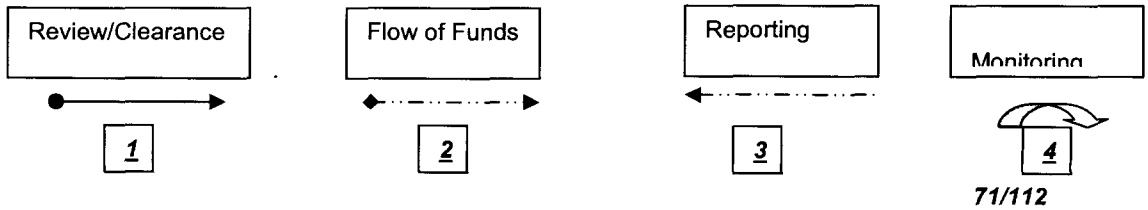


Fig 8.1: Linkages between Institutions with Environmental and Social Management Responsibilities.



8.4 Proposed Training Program

Duration

Environmental and Social Management process **5 days**

- Review of Environmental and Social Management Process.
- Review of DADP guidelines.
- Review of Annexes and Section 9. in this ESMF.
- EA classification of DADP sub project activities.
- How to prepare ESIA's and ESMP's.
- How to measure cumulative adverse impacts.
- Design of appropriate mitigation measures.
- How to review and clear the investment activities if the DADPs.
- The importance of public consultations in the EA process.
- How to monitor mitigation measures.
- How to embed the Environmental and Social Management process into the civil works contract.

Environmental and Social policies, procedures and guidelines **3 days**

- Review and discussion of Tanzania's national environmental policies, procedures, and legislation.
- Review and discussion of the Bank's safeguards policies.
- Strategies for consultation, participation and social inclusion.

Selected topics on environmental protection **3 day/course**

- Land use, land degradation and soil erosion in the local community area.
- Natural resource management, sustainable soil conservation and prevention of Deforestation.
- Pollution of water resources and water borne diseases.
- Wetland Degradation.
- Ground and surface water management.
- Preparation of Dam Safety Reports.
- Use of Integrated Pest Management Plans (IPMP).

- Safe management of Pesticides.
- Environmental protection of Water resources.
- Disaster Preparedness for floods and Droughts.
- Loss and destruction of valuable species and ecosystems

8.4.1 Training Cost Estimates

The Training program is to be implemented by the National Environment Management Council (NEMC). The costs estimates are based on the assumption that the training program for the District Environmental Coordinators, DALDOs, farmer groups and key regional and zonal staff, and potential service providers will be held at the regional or district levels; resource persons and these stakeholders are likely to come from other parts of the country and therefore will require travel allowances and per diems. These estimates include an allowance for travel expenses and all costs of the consultants. It is proposed that the training program will be implemented four times a year, at least once in each quarter in each participating Region over the first two years of the program cycle.

The Total Training Budget is estimated at US$400,000.

9.0 ENVIRONMENTAL AND SOCIAL PLANNING, REVIEW AND CLEARING PROCESS FOR THE AGRICULTURAL SERVICES DEVELOPMENT PROGRAM

9.1 ENVIRONMENTAL AND SOCIAL MANAGEMENT PROCESS

At the time the ASDP program was being prepared, the subprojects activities in the DADPs were not identified. Consequently, specific information on numbers of subprojects, site location of sub projects, land requirements, farmer groups, local communities, geo-physical land features, nature, type and use of equipment/plant, etc. was not available. Therefore, exact details and intensity of social and environmental impacts and their effective mitigation cannot be determined during ASDP preparation. This document referred to as the Environmental and Social Management Framework (ESMF) is thus prepared to establish the mechanism to determine and assess future potential adverse environmental and social impacts of sub projects that are to be identified and cleared based on a participatory process described here below, and then to set out mitigation, monitoring and institutional measures to be taken during implementation and operation of the DADP subprojects to eliminate adverse environmental and social impacts, offset them , or reduce them to acceptable levels.

This section therefore, identifies and illustrates the specific steps involved in the environmental and social assessment process leading towards the clearance and approval of the DADPs sub projects from an environmental and social management standpoint. This process is embedded into the overall DADP cycle, timeline, phasing and project implementation process for the entire ASDP. The steps in the flow chart incorporate the requirements of both, relevant national laws and the Bank's triggered safeguards policies.

The steps of the environmental and social management process as illustrated in Fig. 9.1 are:

a) The **FIRST** step in the process begins at the start of the planning cycle for the preparation of the DADP's.

b) The first step is for the potential sub project owner, implementer or operator to assign an Environmental Category for their sub project type, using table 9.1 below.

c) This group can either be the **DALDO** or the **farmer group**. But in either case they will be assisted by the **District Environmental Coordinator's (DEC),** and in the case of farmer groups further assistance can be sought from the empowerment services (extension services) of the ASDP.

The guidelines in this ESMF are specific to the water harvesting, irrigation, small scale watershed management infrastructure and small market type infrastructure works expected to be typical investments in the DADPs in rural areas. The categorization in Table 9.1 is based on the extent of the potential impacts and their intensity of impacts and not the generic "sub-project type", which in turn determines the extent of the environmental assessment required for it. Depending upon the nature of the sub project, its extent, and the extent of the potential impacts, the Category, and hence the level of rigor for environmental analysis, is determined. Table 9.1 provides a list of sub project types that may be considered by for inclusion in the DADPs.

Table 9.1: Potential DADP Sub Project Types, Major Environmental and Social Concerns and Probable Category

DADP Sub Project Type*	Potential Major Environmental and Social Concerns	Sub Project+ Environmental Category
A. Irrigation		
Large scale irrigation defined in this case as over 300ha	Water pollution and water quality, water extraction and water rights, land loss and resettlement, natural habitats, species loss, land degradation, Dam safety. Significant construction issues such as spoil disposal management.	**A**
Medium Scale, i.e between 50 ha and 300ha	Water pollution and water quality, water extraction and water rights, land loss and resettlement, natural habitats, species loss, land degradation. Construction issues. Significant construction issues such as spoil disposal management.	**B***
Small scale, i.e. less than 50 ha and with no resettlement.	Land degradation, water pollution	**B**/ C**
B. Other types of sub projects		
Water harvesting, small watershed management, ground water charging, etc.	Soil erosion, water source contamination. May involve significant construction issues such as spoil disposal management.	**B**

* Resettlement is also likely to be a factor for most sub project types involving land acquisition or restriction for new irrigation sites or extension of existing sites.

** Although most irrigation sub projects are expected to be medium scale and therefore fall within a **Category B**, it is possible that some may require the use of dams and involve water storage/reservior. This could include the impoundment of large relatively flat areas. As such, these areas could remove land from cultivation and possibly result in involuntary resettlement. In such cases, the sub project would fall into a **Category A.**

*** Any sub project with resettlement will be **Category B, at a minimum**, even if they are less than 50 ha irrigation or small market.

+ The ASDP Category is B for the program as a whole. Not to be confused with sub project category.

d) The **SECOND** step is to determine which of the World Bank's safeguards policies may be triggered by the sub-project and what the requirements are to comply with the triggered policy.

e) This requires the sub project potential owner/implementer/operator to use the Safeguards Tables in Annex A. Further information on these policies is available on the Bank's website, www.worldbank.org.

f) The assumption is that the Environment Assessment OP 4.01 is already triggered and hence the need for compliance with this ESMF. OP 4.01 is included in Annex A to provide additional guidance and information to the sub project potential owner / implementer / operator. Therefore, compliance by the sub project potential owner/implementer/operator with this ESMF process is deemed to be accepted as compliance with OP 4.01.

The following Safeguards Policies are not included in Annex A, because they are not likely to apply for the reasons noted in brackets next to the OP.;

1.Indigenous Peoples (OD 4.20) (no recognized indigenous people in URT)
2.Projects in Disputed Areas (OP 7.60, BP 7.60, GP 7.60) (no disputed borders with neighbors of Tanzania).
3.Projects on International Waters (OP 7.50, BP 7.50, GP 7.50) (To be addressed at the national level by the government of the URT by bank appraisal of the ASDP and **not** by sub project owner/implementer/operators.)

g) However, Annex A contains information to help the potential operators determine which of the following Bank safeguard policies may be triggered by their sub project;

1. Environmental Assessment (OP4.01, BP 4.01, GP 4.01) (Always Applies)
2. Pest Management (OP 4.09)
3. Natural Habitats (OP 4.04, BP 4.04, GP 4.04)
4. Forestry (OP 4.36, GP 4.36)
5. Cultural Property (OPN 11.03)
6. Involuntary Resettlement (OP/BP 4.12)
7. Safety of Dams (OP 4.37, BP 4.37)

h) If any of the Bank safeguards policies are triggered by sub project, the owner / implementer/operator will modify the design, implementation, operation, maintenance and decommissioning phases to ensure that the sub project satisfies the requirements of that particular policy.

i) The **THIRD** step is for the owner/ implementer/ operator to prepare a comprehensive sub project Environmental and Social Impact Assessment (ESIA) including an environmental and social management plan (ESMP) (see Annex C for guidelines on how to prepare and ESMP). Additionally, for situations where OP 4.12 apply, the Owner/ Implementer/ Operator will prepare a Resettlement Action Plan (RAP) consistent with the separately disclosed RPF. For situations where OP4.37 applies, the owner/implementer/operator will prepare a Dam Safety Measures Report and similarly where Pest management issues apply, the use of the IPMP is mandated. Annex H has specific guidelines for the assessment and preparation of the Dam Safety Measures Report.

j) Annex B contains an example of a comprehensive terms of reference (tors) for the ESIA.

k) For Category C sub projects, the owner/implementer/operator is only required to prepare an Environmental and Social Management Plan (ESMP).

L) Annex C contains guidelines for the preparation of an ESMP for Category C sub projects and what the ESMP in Category A or B sub project ESIAs should also contain.

m) According to Tanzanian Law and World Bank OP4.01, Public Consultation is required as part of the ESIA and/or ESMP process.

n) Annex F has a generic guide to an acceptable public involvement process.

o) Step **FOUR**: Following compliance with these steps the operators submit their ESIA and or ESMP to the required authority as specified.

p) The ESIA for Category A and B sub projects will be reviewed and cleared by the NEMC.

q) The ESMP for Category C sub projects is to be reviewed and cleared by the respective Regional Environmental Engineers/Specialist, with assistance of Zonal Irrigation Engineers as required.

r) Annex G contains a generic Environmental and Social Appraisal Form to be used by NEMC and the Regional and Zonal technical staff, to provide guidance to their review process and to notify the District Councils of their decision before final approval and funding is made.

s) The first set of cleared ESIA's for Category A and B sub projects would also have to be reviewed and cleared by the World Bank, to ensure compliance with its safeguards policies. The World Bank reserves the right to not allow funds under the ASDP be applied to sub projects that do not meet the requirements of its safeguards policies.

Summary of Key roles in the Environmental and Social Review process:

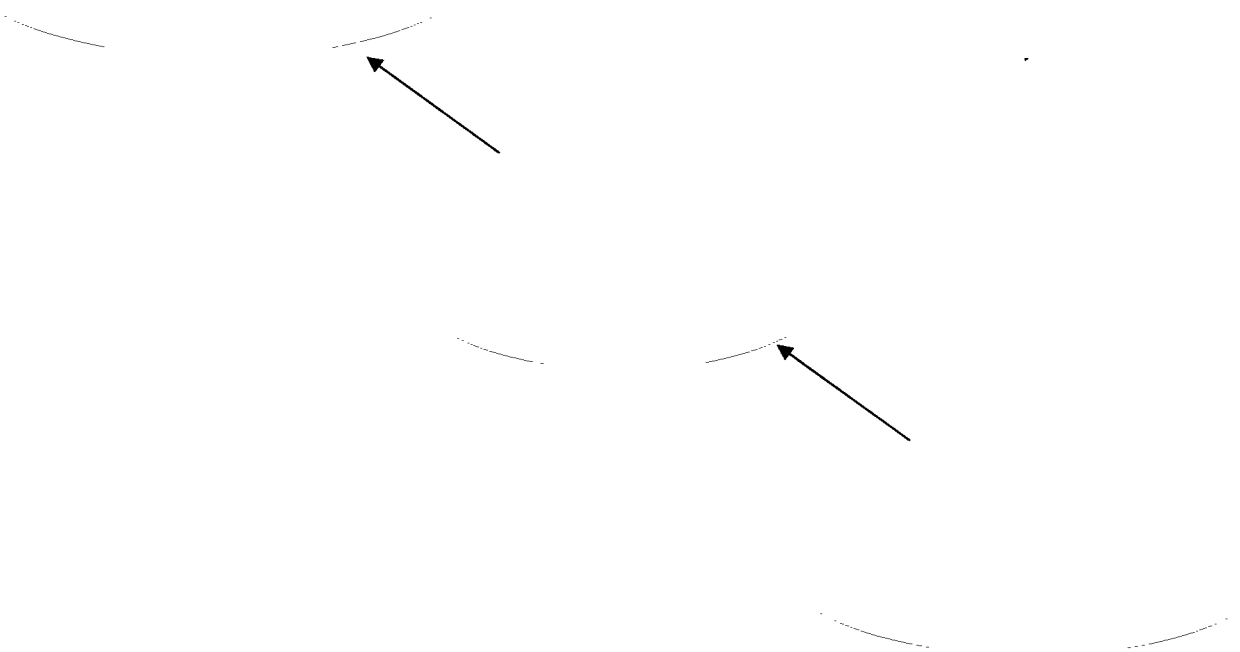


Fig. 9.1

9.2 Environmental and Social Management Plan (ESMP) for Individual DADP Sub Projects.

Additional to completing/using the screening form and checklist, the District Environmental Coordinators/ DALDO/ Farmer groups, are also required by this ESMF to prepare an Environmental and Social Management Plan (ESMP), for each sub project, before it is sent to NEMC (for A and B sub projects) or to the Regional Environmental Specialist (for C sub projects) for clearance and the District Council for approval, that will consist of a set of mitigation, monitoring and institutional measures to be taken during implementation and operations to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The ESMP is sub project specific plan, for every sub project and need not be more than a couple of pages long (which will be part of the sub project designs, dossier) but must also include the actions needed to implement these measures, including the following features:

Mitigation: Based on the environmental and social impacts identified through the checklist, the ESMP should describe the technical details of each mitigation measure, together with designs, equipment descriptions and operating procedures as appropriate.

Monitoring:. The ESMP should include a monitoring section that will be linked to the mitigation measures. Specifically, that monitoring section of the ESMP should provide:

- A specific description and technical details of monitoring method, including the indicators to be measured, how they will be measured and by whom, the sampling locations, the frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions, e.g. the need for on-site construction supervision, or the need to test and have a water quality monitoring plan, etc.

- Monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and to furnish information on the progress and results of mitigation.

The ESMP should also provide a specific description of institutional arrangements for the sub project, (i.e. who is responsible for implementing the mitigation measures and carrying out the monitoring regime for operations, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting and staff training.)

Additionally, the ESMP should include an estimate of the costs of the measures and activities recommended so that the District or the farmer group can budget the necessary funds. Similar to the process for planning of sub projects, the mitigation and monitoring measures recommended in the ESMP should be developed in consultation with all the affected groups to include their concerns and views in the design of the ESMP.

9.3 Costs of the Environmental Social Management Process

The costs associated with this process would be made up of the cost of service providers/technical assistance/allowances of staff etc, to support the efforts of the District and/or the farmer group.

These costs are already included and budgeted elsewhere, in the overall ASDP budget.

10.0 MONITORING AND EVALUATION

10.1 Goals of the Monitoring and Evaluation

This monitoring and evaluation is not to be confused with the ESMP discussed in section 9.2. The ESMP is sub-project specific and therefore site specific only.

The monitoring plan discussed here is for the entire ASDP project at the national level.

The objective for monitoring and evaluation plan is two fold.

1) to alert program authorities (e.g. ASDP NSC, LGCDG SC, District Environmental Coordinators, etc.) and to provide timely information about the success or otherwise of the Environmental and Social Management process outlined in this ESMF in such a manner that changes can be made as required to ensure continuous improvement to the process.

2) to evaluate the performance of the ESMF by determining whether the mitigation measures designed into the DADP sub project activities have been successful in such a way that the pre- program environmental and social condition has been restored, improved upon or worst than before and to determine what further mitigation measures may be required.

A number of indicators would be used in order to determine the status of the ASDP's beneficiaries and targeted farmer groups in the qualifying district areas, as well as their environment (land being used compared to before, number of people with access to social services compared to before, level of new investment in soil conservation or irrigation compared to before, how many clean water sources than before, how many people employed than before, are the poorest groups being included etc). Therefore, the program's Environmental and Social Management Framework will set three major environmental and social performance indicators by which to evaluate its success:

- Has the pre-project environmental state of natural resources, bio-diversity and flora and fauna, been maintained or improved upon, and

- The extent to which access to irrigation services by the rural poor and vulnerable communities has been improved.

In order to assess whether the goals of these environmental and social mitigations measures are met, the DADP sub-projects will indicate parameters to be monitored, institute monitoring milestones and provide resources necessary to carry out the monitoring activities.

10.2.1 Monitoring and Evaluation Indicators

The following are some pertinent parameters and verifiable indicators to be used to measure the ESMF process, mitigation plans and performance;

a) ESMF Procedure

- Number of farmer groups, DALDO's, District Environmental Coordinators (DECs), Regional and Zonal level authorities, who have successfully received ESMF training in screening methods etc., evaluate the training content, methodology and trainee response to training through feedback.
- Number of qualifying Districts familiar with the ESMF procedure.
- Number of Districts using the ESMF procedure
- Number of DADP sub projects using the screening form and checklist.
- Number of DADP sub projects having a Consultation Plan
- Number of Districts applying a Consultation Plan
- Number of DADP sub projects with a soil conservation component/aspect.
- Number of DADP sub projects with a large scale or medium scale component/aspect.
- Improvement of the environmental health and bio-physical state of the participating District's.
- Rating of improvements in the sustainable use of land resources.
- Rating of DADP sub projects maintenance and operating program.
- Number of farmer groups implementing and operating their own sub projects.
- Of these, how many successfully adopting the ESMF procedure.
- Number of farmer groups who have adopted the ESMF procedure.

b) Sub-projects implementation

- Number of irrigation sub projects, water harvesting facilities and water points are in good working condition one year after completion
- Number of Districts with facilities maintenance program.
- Categories of vulnerable farmer groups/individuals identified in each qualifying District, including their estimated populations number
- Categories of vulnerable individual farmers or associations identified and targeted for provision of access to social services.
- Types and scope of social services, provided to beneficiary including targeted vulnerable groups.
- Types and scope of social services, provided exclusively to vulnerable groups.
- Nature and scope of specific action(s), if any, provided exclusively to vulnerable farmer groups and or individuals.
- Number of sub project's proposals submitted by vulnerable groups
- Number of sub project's proposals submitted by vulnerable groups that have been funded.
- Number of sub project's proposals submitted by vulnerable groups that have not been funded.
- Percentage number of impacts successfully mitigated in sample number of sub projects using measures contained in approved ESIA/ESMP, at certain periodic intervals in the sub projects life.

- Efficiency of operator's maintenance and operating performance.
- How many RAPS have been fully executed before PAPS are physically displaced?
- How many recorded grievances cases have been settled within one year.
- For sub projects involving Dams, Number of Dams implementing Dam Safety Measures during construction and 1yr, 2yr 3yr, 4yr after construction.
- Typologies of reasons why sub-project's proposals submitted by vulnerable groups associations have not been funded.

c) Overall Project's implementation

- Frequency and rate of Regions monitoring of District's activities
- Number of Regions that are up-to-date with their periodic monitoring reports.
- Number of Zonal periodic monitoring reports received by NEMC.
- Nature of monitoring concerns (if any) expressed by NEMC.
- Is the NEMC compiling the periodic reports of the zones and is it forwarding it to the ASDP NSC?
- ASDP' mid term environmental and social impact evaluation
- ASDP's overall environmental and social impact evaluation
- Has the SEA for the ASDP been finalized by mid term review.
- Number of SEA recommendations incorporated into the ESMF.

Other indicators can be developed based on the findings from the screening form.

10.3 Monitoring Roles and Responsibilities[29] (refer to Fig. 8.1)

10.3.1 DADP Sub project owners/ implementers/operators (e.g. farmer groups/fora, DALDO, District Environmental Coordinators): It is planned that the environmental and social impacts and their designed mitigation measures are to be monitored during implementation (construction/rehabilitation works) and operation (including maintenance) stages of the sub projects by the owners/implementers/operators, themselves. No assignment of monitoring responsibilities to other parties will absolve whatsoever, the owners/operators of their responsibility to successfully manage, mitigate or monitor any adverse impacts caused by their sub project. The main roles and responsibilities of the owners/operators for monitoring impacts of their sub projects and their corresponding mitigation measures will be as follows; the owners/operators assisted by their service providers/consultants/experts/extension agents, will monitor the environmental and social impacts and mitigation measures of their own sub project activities as contained in their cleared and approved ESIA/ESMP and all other documents in their individual sub project package[30]. The owners/operator's will monitor and evaluate the environmental and social impacts of their sub project and the mitigation measures designed, regularly and as frequently as specified in their cleared package and will maintain suitable records to be made available to their respective District, Regional , Zonal , NEMC and the ASDP NSC/FT. The owners/operator's will monitor the impacts and mitigation measures during all phases of their sub project execution cycle, i.e., from planning stage

[29] Capacity building needs to achieve and sustain this have been addressed in Section 8

[30] Package refers to the complete set of operators bid/tender documents including the completed ESIA, ESMP, Dam Safety measures report, IPMP, technical designs, drawings, civil works contracts, etc.

to construction, operations and maintenance stages. The owners/operators will also be responsible for monitoring the environmental and social impacts and mitigation measures resulting from the action of their contractors, sub contractors, transporters, suppliers and all other third parties in the course of their duties. Further, the owners/operators would also be responsible for monitoring the environmental and social impacts and mitigation measures of their sub project activities at other locations beyond their sub project sites, at end user locations such as in rights of way, servitudes etc. and on nearby wetlands, game parks etc.

Therefore, wherever environmental and social impacts are or can be attributed to their sub project activities the appropriate mitigation measures will apply consistent with this ESMF and their ESIA and/or ESMP, and the owners/operators would be responsible for monitoring and evaluating the same. The owners/operators will prepare and submit periodic monitoring reports to their respective Districts, Regions and Zones.

10.3.2 Districts (Environmental Coordinator and or District Agriculture and Livestock Development Officer and or Farmer Groups): The Districts will play the leading role of monitoring the activities of the owners/operator's in their District. The District will carry out this role by ensuring that the owners/operators environmental and social management plan (ESMP) contained in the cleared sub project design package is being implemented as specified therein. That is to say that the Districts will monitor the owners/operators monitoring procedures and reports on a regular basis, perhaps quarterly. They will rely on a bottom up feed back system to them from the owners/operators by going through their monitoring reports and making regular site visits to inspect and verify for themselves the nature and extent of the impacts and the success or lack off, of the mitigation measures.

The Districts will prepare consolidated periodic monitoring reports for submission to the Regions. The Districts will need equipment and transportation to carryout their task effectively and this will be provided by the ASDP and is budgeted for in Section 11.0 of this ESMF.

10.3.3 The National Environment Management Council (NEMC) assisted by Regions and Zones: The NEMC, assisted by the regions and zones will do on the ground ESMF performance reviews/audits both for enforcement purposes and to reinforce the training and to keep the owners/operators and the District Environmental Coordinators cognizant of their responsibilities. The NEMC/Zones/Regions will carry out this role by reviewing in each ASDP participating District; (i) the ESIA for Category A and B sub projects and the ESMP for Category C sub projects submitted to their District Environmental Coordinator, (ii) the appraisal form completed by the District Environmental Coordinators and the clearance decision contained therein (iii) a visit to the sub project site during construction to ensure construction activities are going on as per ESMP and civil works contract and after construction completion to ensure sub project is being implemented and is operational as designed.

In addition to on the ground environmental reviews and implementing the training program, the role of the NEMC will be monitoring as detailed in Section 8.0. They will perform this role by reviewing consolidated periodic reports from the Zones and prepare a national consolidated periodic monitoring report for the ASDP and make spot/unannounced site inspections at the District level and at sub project site locations. The NEMC will report its findings to the ASDP NSC and LGCDG SC.

10.3.4 The ASDP National Steering Committee and LGCDG Steering Committee (ASDP NSC and LGCDG SC): The ASDP NSC and LGCDG SC will monitor the activities of the Districts and the roles of the Zones and Regions by reviewing the consolidated periodic monitoring reports of the NEMC and by conducting periodic technical audits of the activities of the DADP owners/operators and their sub projects.

In conclusion therefore, the system for monitoring functions on a bottom up approach, on the one hand, in terms of placing monitoring responsibilities on the owners/operators and local communities who are then supervised and monitored by their District who in turn are accountable to their Regions, Zones and the NEMC. On the other hand, this system is made functional by the transfer of appropriate technology, capacity building through training (mostly through learning by doing) and technical assistance and, budget support in the top down direction. This system for monitoring is thus strengthened and sustainable and should yield successful results overall.

Table 10.1: Environmental Mitigation Plan for the ASDP

Program Activities	Mitigation Measures	Implementing Agencies	Monitoring Responsibility	Timing	Costs
DADPs	Environmental and social Impact Assessments (ESIA) containing Environmental and Social Management Plans (ESMP) Public consultations/ sensitization Prepare RAPs as necessary Prepare Dam Safety Measures Report as necessary Use of IPMP Environmental guidelines for contractors Regular maintenance of owners/operators operations.	Owners/Operators service providers/Consultants/extension agents NEMC, Zones, Regions Owner/Operator. District Governments Owners/Operator Owners/Operatorservice providers/Consultants./extension agents. Owners/Operator Owners/Operator NEMC, Zones, Regions	District Environmental Coordinator/DALDOs, Farmer groups/farmer fora. NEMC, Zones, Regions ASDP NSC/LGCDG SC	**During preparation of sub project EA packages** During DADP planning and preparation TBD Before implementation of sub projects. TBD Ongoing	Included in program **Included in sub-projects** Included in program Included in contract Included in program.
Training of (District Environment Coordinators /Regional and Zonal staff) and use of training service providers for NEMC)		NEMC	ASDP NSC and secretariat	TBD	$400,000
				Total Costs	**$400,000**

11.0 ESMF Implementation Budget

Cost for Environmental and Social Management of the ASDP (in US$)	
Training	*400000*
Review of ESIAs/ESMPs	*250,000*
Monitoring Plan	*400,000*
Total Costs	***US$ 850,000***

Table 11.1

Annex A: Verification of Safeguards Policies triggered by DADP Sub Projects.

I. Environmental Assessment (OP 4.01)
Summary: The Bank requires environmental and social impact assessment (ESIA) of sub-projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable. The environmental assessment is a process that is conducted to identify the negative impacts that a project may have on aspects of the biophysical and social environment. It analysis the impacts of project alternatives, provides mitigation measures to be undertaken to eliminate or minimize the impacts identified. A more comprehensive description is provided in Section 5 of these guidelines.
Objective: To identify potential impacts that a project may have on the environment and to provide mitigative solutions to eliminate or minimize these impacts.
The Sub project operator automatically complies with this policy by complying with the measures described in this ESMF. Preparation of ESIA's including ESMP's are required for Category A and B sub projects, and only an ESMP is required for Category C sub projects.

II. Natural Habitat (OP 4.04)	
Summary: The conservation of natural habitats is essential for long-term sustainable development. The Bank supports, and expects sub project operators to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. The Bank will not support sub projects that, in its opinion, involves the significant conversion or degradation of critical natural habitats.	
Objective: To ensure the protection, maintenance and rehabilitation of natural habitats and their functions within the financed sub project.	
Questions:	**Actions:**
i) Will the sub project be sited on lands that were converted from natural habitat in anticipation of the sub project?	If 'yes', and in the Bank's opinion that site had been a significant habitat, the Bank will not support the sub project.
ii) Will the project be sited on lands that require conversion of natural habitat?	If 'yes' and in the Bank's opinion the natural habitat is not significant, the project may proceed. If 'yes', and the natural habitat is significant, proceed to question iii). If 'no', proceed with the sub project.
iii) On a site with significant natural habitat, are there feasible alternatives for the sub project?	If, 'yes' go to the feasible alternative. If 'no', go to question iv)
iv) Do the overall benefits of the sub project substantially outweigh the environmental costs?	If 'yes', the Bank may support the sub project. If the environmental and social impact assessment indicates that a project would significantly convert or degrade natural habitats, the sub project will include mitigation measures acceptable to the Bank and these could include minimizing habitat loss, and/or establishing and maintaining an ecologically similar protected area. Other forms of mitigation will be approved if they are technically feasible. If 'no', the Bank will not support the sub project.
Other comments:	

i) In deciding whether to support a sub project with potential impacts on a natural habitat, the Bank takes into account the operator's and the GoT's ability to implement the appropriate conservation and mitigation measures. If there are potential institutional capacity problems, the sub project and overall ASDP includes activities that develop the capacity of national and local institutions for effective environmental and social planning and management.
ii) The Bank expects the operator and the GoT to take into account the views, roles and rights of interest groups including NGOs and local communities affected by the sub project. It expects that such interested parties be involved in the planning, design, implementing and evaluating of such sub projects.

III. Forestry (OP 4.36)	
Summary: The Bank's lending operations in the forest sector are conditional on government commitment to undertake sustainable management and conservation-oriented forestry. It does not finance commercial logging operations or the purchase of logging equipment for use in primary tropical moist forest. Where logging is being carried out in borrowing countries the Bank seeks government's commitment to move towards the sustainable management of those forests.	
Objective: To reduce deforestation, enhance the environmental contribution of forested areas, promote afforestation, reduce poverty, and encourage economic development.	
Questions:	**Actions:**
i) Will the sub project involve the harvesting of tropical moist forest cover or the purchase of harvesting equipment to undertake such harvesting?	If 'yes', the Bank will not approve the sub project.
ii) Will the project involve the management of forests?	If 'yes' the Bank will require that GoT and the operator to demonstrate its commitment towards sustainable management and conservation oriented forestry. This will include the adoption of appropriate policies and a legal and institutional framework. It will also require the adoption of a comprehensive and environmentally and socially sound forestry conservation and development plan identifying the roles and rights of government, the private sector and local people.
iii) Does the forest area have high ecological value?	If 'yes', the Bank will only finance preservation and light, non-extractive use of forest resources.
Other comments:	
i) The Bank requires that that GoT and operators identify and consult with local interest groups involved in the forest area within which the project will occur.	
ii) The Bank finances plantations only on non forested areas (including previously planted areas) or on heavily degraded forest land.	

IV. Involuntary Resettlement (OP 4.12)	
Summary: Bank experience indicates that involuntary resettlement under development projects, if left unmitigated, often gives rise to severe economic, social and environmental risks: production systems are dismantled; people face impoverishment when their production assets or income sources are lost; people are relocated to environments where their productive skills may by less applicable and the competition for resources greater; community institutions and social networks are weakened; kin groups are dispersed; and cultural identity, traditional authority, and the potential for mutual help are diminished or lost. Where people are forced into resettling as a result of a Bank project or a component of the project that may be under other financial arrangements, the Bank requires that those who are affected are treated in such a way so as way as to minimize their disruption and to compensate for their losses. The borrower will be responsible for preparing, implementing, and monitoring a resettlement plan, a resettlement policy framework, or a process framework, as appropriate, that conforms to the policy. The GoT has prepared and disclosed the Resettlement Policy Framework (RPF) which the operator is supposed to comply with should his sub project trigger this policy.	
Objective: Involuntary resettlement will be avoided where feasible, or minimized. Where resettlement is required, resettlement activities will be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them to levels prevailing prior to the beginning of project implementation.	
Questions:	**Actions:**
i) Is there any land acquisition resettling in loss of access, restriction or denial of access to that acquired land?	If the answer to one or more of the questions is yes, then a resettlement action plan (RAP) consistent with the disclosed RPF is to be prepared by the operator. Depending upon the significance of the impacts (e.g. minor or less than 200 resettled) an abbreviated resettlement plan would be required only). The plans will ensure that: i) people are informed of the their options and rights pertaining to resettlement; ii) they are consulted and given feasible resettlement alternatives; iii) they are provided prompt and full compensation for losses incurred. If physical relocation is required the plan will: i) provide assistance during relocation; ii) be provided with housing, housing sites, or agricultural sites; iii) offered support after resettlement; iv) provided with development assistance, monitored and granted access to grievance redress mechanisms. Resettlement planning includes early screening, scoping of key issues, the choice of resettlement instrument, and the information required to prepare the resettlement component. To prepare the plan the borrower will draw upon appropriate social, technical, and legal expertise and on relevant community based organizations and NGOs.
ii) Will the taking of land result in relocation or loss of shelter?	
iii) Will the taking of land result in a loss of assets or access to assets?	
iv) Will the taking of land result in the loss of income sources or means of livelihood?	
Other comments:	
i) At the GoT's request the Bank may provide technical, legal and financial support for resettlement planning and for institutional capacity strengthening as this relates to resettlement planning and implementation.	
ii) The full cost of resettlement activities to achieve the objectives of the project is included in the total costs of the sub project to be paid for by the operator.	
iii) The borrower is responsible for adequate monitoring and evaluation of the activities set forth in the resettlement instrument (i.e RAP).	

V. Cultural Property (OP 4.11)	
Summary: Cultural property includes sites having archaeological (prehistoric), palaeontological, historical, religious and unique natural values. The Bank will normally decline to finance a sub project that will significantly damage non-replicable cultural property, and will assist only those sub projects that are sited or designed so as to prevent such damage. The policy pertains to any project/sub project in which the Bank is involved, irrespective of the whether the Bank is itself financing the part of the project that may affect cultural property.	
Objective: To assist in the preservation, and to seek to avoid elimination of cultural property.	
Questions:	**Actions:**
i) Will the sub project damage or remove cultural property?	If 'yes', the operator must take appropriate action to meet the Bank requirements of cultural property protection. If the project benefits are great and the loss or damage of the cultural property is judged by competent authorities to be unavoidable, minor, or otherwise acceptable, the Bank may waive the policy. If significant damage to non-replicable cultural property is likely, the Bank will normally decline its support for the sub project.
Other comments:	
i) The Bank will assist in the protection and enhancement of cultural properties encountered in Bank-financed projects, rather than leaving their protection to chance. In some cases, the sub project is best relocated in order that sites and structures can be preserved, studied, and restored in situ. In other cases, structures can be relocated, preserved, studied, and restored on alternative sites. Often, scientific study, selective salvage, and museum preservation before destruction is all that is necessary. Such actions, including the necessary training and strengthening of the relevant institutions (e.g. local museum specialists) should be included in the scope of the sub project.	
VI. Safety of Dams (OP 4.37)	
Summary: For the life of any dam, the owner is responsible for ensuring that appropriate measures are taken and sufficient resources provided for dam safety, irrespective of its funding sources or construction status. For new dams, construction must be supervised by experienced and competent professionals and the GoT/operator must adopt and implement certain dam safety measures for the design, bid tendering, construction, operation and maintenance of the dam and associated works.	
Objective: To ensure that all dams designed and built/rehabilitated with, in part or whole, Bank funding will function properly and will not fail under any circumstances.	
Questions:	**Actions:**
i) What is the height of the proposed dam?	Dams less than 15 meters in height, generic dam safety measures designed by qualified engineers are usually adequate. Dams between 10 and 15 meters in height are treated as large dams if they present design complexities. Dams fewer than 10 meters in height are treated as large dams if they are expected to become large dams during the operation facility. Construction of Large Dams will not by financed by the ASDP.
ii) Is the dam an existing dam or one under construction?	If yes, the operator/GoT must arrange for one or more independent dam specialists to inspect and evaluate; review and evaluate owner's O and M procedures; and provide written report of remedial work or safety measures required to upgrade existing dam

Other comments:
i) If substantial remedial work is required the work must be designed and supervised by trained and competent professionals and, a panel of experts may be required in the case of high-hazard dams involving significant and complex remedial work.

Annex B

Outline for an Environmental and Social Impact Assessment Report

The following is a recommended outline for an ESIA that would be required for Category A and Category B DADP sub projects. The owner/operator of the sub project for which use of ASDP funds is being sought, will be required to submit such a report if the activity falls within one of these two categories. The rigor of the environmental analysis for a Category B report will be significantly less than that required for a Category A report. In the outline accompanied by brief descriptions, the differences for addressing each of the Categories are provided where appropriate and necessary for clarity.

Report Sections	Category A	Category B
Executive Summary	Stand alone document; comprehensive and summarizing all of the salient points of the ESIA; not to exceed 15 pages	Same but may be shorter in length
Acknowledgements	Acknowledgements to all of those who were instrumental in the carrying out and completion of the ESIA.	Same
Introduction	Explains the purpose of the ESIA, its structure and audience; describes the WB and Tanzania's needs for an ESIA	Same
Sub Project Description	Describes the sub project in detail. Describes sub project goals, objectives, beneficiaries, outcomes, value, schedule, and implementing bodies	Same but the more general description of the sub project may be given.
Legal and Administrative Framework	Describes the main legal instrumentation for environmental control and management, particularly specific instrumentation relating to the type of sub project (e.g. irrigation/dams), and the general effectiveness of the legal instruments. Indicates government bodies responsible for each of the relevant instruments. Lists relevant ratified international conventions and where appropriate and relevant, track record of ensuring that conventions are adhered to. Describes the institutional framework for the administration of the relevant environmental legislation and implementation of policy, and analyzes the capacity and effectiveness of the institutions.	Same, but the analysis may not be as rigorous.
Alternatives	Discusses the various sub project alternatives that were considered and weighs the environmental merits of each. Rationalizes the selected project on various grounds including environmental.	Same
Methodology	Describes how the assessment was conducted including: screening, scoping and bounding; the composition of the assessment team; the impact scoring system (if utilized) employed; the public participation program (refer to Annex H); sources of data and information; field studies conducted and other major inputs to the assessment	Same

The Bio-physical and Social Environment	Describes both the physical and social environment within which the project will take place. This will include the soils, fauna, flora, protected areas, other special areas, biodiversity, population, ethnicity, relevant cultural patterns and traits, employment, health and relationship of the people to the resources, land use, and development patterns. Selected areas of the above will involve surveys to obtain primary data.	Same but will rely mostly on secondary data
Potential[31] Environmental and Social Impacts	Identifies the important potential impacts (biophysical and social), the most effective mitigation to conduct, the residual impacts to be expected, and the cumulative effect to be expected. Impacts may or may not be rated on a scale of, for instance, very significant, significant, moderately significant, low significance, or no significance. Description of those safeguard policies that may be affected and how these will be addressed.	Same, but some assessment examinations may not be as rigorous
Environmental Management[32]	A detailed description of how each of the impacts will be mitigated included cost, scheduling and the responsible body. Includes a monitoring procedure with schedule, cost and responsibilities, including monitoring feedback mechanism. Includes a self assessment of institutional capacity building needs for effective environmental management with a schedule and cost of various types of capacity building required.	Same
Literature cited	A complete reference to all literature cited in the conducting of the assessment and preparation of the ESIA report.	Same
Annexes	Various volumes covering separate studies (e.g. social assessment, biological studies, etc.) as well as an annex including detailed descriptions of impacts and most effective mitigation.	Same, but separate studies probably not required since most of the data will be secondary.

[31] Annex D contains screening forms.
[32] Annex E contains Generic Mitigation Measures for adverse impacts in Annex D.

Annex C

Guidelines for an Environmental and Social Management Plan (ESMP)

EMP Contents usually are:

- Description of adverse impacts: The anticipated impacts are identified and summarized.
- Description of Mitigation Measure: Each measure is described with reference to the effects it is intended to deal with. As needed, detailed plans, designs, equipment description, and operating procedures are described.
- Description of monitoring program: Monitoring provides information on the occurrence of impacts. It helps identify how well mitigation measures are working, and where better mitigation may be needed. The monitoring program should identify what information will be collected, how, where and how often. It should also indicate at what level of effect there will be a need for further mitigation. How environmental impacts are monitored is discussed below.
- Responsibilities: The people, groups, or organizations that will carry out the mitigation and monitoring activities are defined, as well as to whom they report and are responsible. There may be a need to train people to carry out these responsibilities, and to provide them with equipment and supplies.
- Implementation Schedule: The timing, frequency and duration of mitigation measure and monitoring are specified in an implementation schedule, and linked to the overall sub project schedule.
- Cost Estimates and Source of Funds: These are specified for the initial sub project investment and for the mitigation and monitoring activities as a sub project is implemented. Funds to implement the EMP will be part of the DADP budget.

Monitoring methods:

Methods for monitoring the implementation of mitigation measures or environmental and social impacts should be as simple as possible, consistent with collecting useful information, so that the sub project implementer/farmer group can apply them. For instance, they could just be regular observations of the sub project activities or sites during construction and then when in use. Are plant/equipment being maintained and damages repaired, does a water source look muddier/cloudier different than it should, if so, why and where is the potential source of contamination. Most observations of inappropriate behavior or adverse impacts should lead to common sense solutions. In some case, e.g. high emission of green house gases or loss/death of flora and fauna, there may be need to require investigation by a technically qualified person.

ANNEX D

ENVIRONMENTAL AND SOCIAL SCREENING FORM

The Environmental and Social Screening Form (ESSF) has been designed to assist in the evaluation of sub-projects in the DADPs that are to receive funding from the ASDP basket. The form is designed to place information in the hands of reviewers so that mitigation measures, if any, can be identified and/or that requirements for further environmental analysis be determined.

The ESSF contains information that will allow reviewers to determine if endangered or threatened species or their habitat, protected areas or forest are likely to be present, and if further investigation is, therefore, required. The ESSF will also identify potential socio-economic impacts that will require mitigation measures and or resettlement and compensation.

Name of Sub project:

Name of Sub-project's sponsor:

Name of the District:

Name of the Region and Zone:

Name, department, job title, and contact details for the person who is responsible for filling out this form.

Name:

Department and title:

Name of District Body:

Telephone number:

Fax number:

E-Mail address:

Date :

Signature:

1. Sub project Description

Please provide information on the type (irrigation or not) and scale of the sub project, sub project area, area of plants and buildings , amount of waste (solid, liquid and air generation), location and lengths of channel networks, buried and or surface located pipes, etc.) including construction work areas and access roads. (Complete on a separate sheet of paper if necessary).

2. The Natural Environment

(a) Describe the vegetation/trees in/adjacent to the Sub project area

_____

_____

(b) Estimate and indicate where vegetation/trees might need to be cleared

_____

_____

(c) Are there any environmentally sensitive areas or threatened species (specify below) that could be adversely affected by the sub project? Yes_____ No_____

(i) Natural Forests Yes_____ No_____

(ii) National Parks Yes_____ No_____

(iii) Rivers Yes_____ No_____

(iv) Lakes Yes_____ No_____

(v) Wetlands (swamps, polder areas, seasonally inundated areas) Yes_____ No_____

(vi) Habitats of endangered species for which protection is required under Tanzania laws and/or international agreements. Yes_____ No_____

(vii) Others (describe). Yes_____ No_____

3. River Ecology

Is there a possibility that, due to installation of structures, such as weirs and other irrigation structures, the river ecology will be adversely affected? Attention should be

paid to water quality and quantity; the nature, productivity and use of aquatic habitats, and variations of these over time.

Yes_____ No_____

4. Protected areas

Does the sub project area (or components of the sub project) occur within/adjacent to any protected areas designated by government (national park, national reserve, world heritage site etc.)

Yes_____ No_____

If the sub project is outside of, but close to, any protected area, is it likely to adversely affect the ecology within the protected area areas (e.g., interference with the migration routes of mammals or birds)

Yes_____ No_____

5. Geology and Soils

Based upon visual inspection or available literature, are there areas of possible geologic or soil instability (erosion prone, landslide prone, subsidence-prone)?

Yes_____ No_____

Based upon visual inspection or available literature, are there areas that have risks of large scale increase in soil leaching and/or erosion?

Yes_____ No_____

6. Landscape/aesthetics

Is there a possibility that the sub project will adversely affect the aesthetic attractiveness of the local landscape?

Yes_____ No_____

7. Invasive plant species along feeder road routes

Is the sub project likely to result in the spread of invasive plant species (along feeder road routes)?

Yes_____ No_____

8. Historical, archaeological or cultural heritage site

Based on available sources, consultation with local authorities, local knowledge and/or observations, could the sub project alter any historical, archaeological or cultural heritage site (including cemeteries, memorials and graves) or require excavation near same?

Yes_____ No_____

9. Resettlement and/or Land Acquisition

Will involuntary resettlement, land acquisition, or loss of access to land as defined by World Bank OP4.12 be caused by sub project implementation?

Yes_____ No_____

10. Loss of Crops, Fruit Trees and Household Infrastructure

Will the sub project result in the permanent or temporary loss of crops, fruit trees and household infra-structure (such as granaries, outside toilets and kitchens, etc)?

Yes___ No_____

11. Noise pollution during Construction and Operations

Will the operating noise level exceed the allowable decibel level for that zone?

Yes___ No_____

12. **Will the project have adverse impacts on Natural Habitats that will not have acceptable mitigation measures according to OP 4.04 Natural Habitats.?**

Yes..... No.....

13. Solid or Liquid Wastes.

Will the sub-project generate solid or liquid wastes?

Yes____ No___

If "Yes", does the sub project include a plan for their adequate collection and disposal?

Yes____ No____

14. Public Consultation Process:

Briefly describe the sub project consultation process in terms of when consultations took place, where they took place, who participated and how the criteria used to select participants in this process, what were the contributions form the participants, was it recorded and were contributions from participants included in decision making. Use separate sheet if necessary and *attached a consultation report.*

15. Vulnerable Groups: Were members of associations from the following vulnerable groups consulted?

Women: Yes_____No _____
Youth groups Yes_____No_____
Other groups
(e.g. orphans, widows/widowers, the elderly,) Yes____No____

If answer is Yes, provide names of groups consulted :

16. Will these groups (in 15. above) have access to and benefit from this sub project.?

Yes_____ No _____

If answer is Yes, specify which groups and describe how they will benefit.

ANNEX E[33]

GENERIC ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES CHECKLIST

	Land Degradation	**Water**	**Bio-diversity, Natural Habitats and Wetlands**	**People**
Planning	Soil Erosion: (i) Training of Subsistence and Cash Crop Farmers and Pastoralists on soil conservation methods. (ii) Rehabilitate anti-erosion infrastructure such as, micro-basins, micro dams, hill side terracing, soil bunds etc. (iii) Construct new anti-erosion infrastructure as listed in(ii) above. (iv) Introduce crop rotation management, use of fertilizers, tree planting and soil drainage. (v) Control bush burning and fires. vi) Protection of roadsides by planting of vegetation. vii) Protection of outlet of drainage canals and culverts to avoid gully forming downstream of the canal or culvert. viii) Prepare an effective and sustainable maintenance plan.	i) Promote potable water and sanitation sub projects. ii) Promote environmental health measures and public health education. iii) Improve management of household and solid waste, including infrastructure for collection and treatment of liquid waste and waste water. iv) Review, update and enforce pollution control legislation. v) Strengthen enforcement capacity. vi) Develop and implement rural water supply and sanitation policy. vii) Locate sub projects at far/safe distances from water points and sources. viii) Increase public awareness.	i) Consideration of alternative locations/siting of sub projects. ii) Reduce biomass use through provision of alternative energy sources and construction materials (cooking stoves, photovoltaics). iii) Strengthen natural resource management capacities iv) Develop alternatives to slash and burning clearing, decrease overgrazing. v) Promote agroforestry. vi) Wetlands management and small irrigation development. vii) Protect sensitive ecosystems such as forests and wetlands, prevent further encroachment in protected areas. viii) Enforce existing laws. ix) Locate sub projects appropriately. x) Training of communities of sustainable uses of resources. xi) Identify certain species of trees and animals that must be protected. xii) Exclude ecosystems that provided and important habitat for protected species. xiii) Establish buffer zones around	i) No involuntary settlement allowed due to land acquisition, denial or restriction of access to economic resources such as trees, buildings etc., used by members of communities. ii) Provide social services in areas of : • Primary education • Primary health care • Water supply • Micro-finance • Feeder roads • Soil conservation and natural resources *management.* • Basic and required training at district and community levels. Ensure that theses services are equitably distributed throughout the districts and that as access is open to all ethnic groups irrespective of status. iii) Ensure that vulnerable groups in sub project areas are included in project activities and benefit from them levels of decision making and implementation. iv) Provide employment opportunities during contracting of

[33] On completion of the screening form, the Districts would have identified their potential sub project adverse impacts. The District's will then use this checklist (Annex E) to identify the corresponding mitigation measures to successfully manage these impacts.

			protected parks and wetlands	civil works etc.
Construction	• Construction in dry season. Protection of soil surfaces during construction. • Adequate protection from livestock entry by fencing the site perimeters. • Employ all unskilled labor from local districts and semi-skilled labor first from local districts when available there in. • Source goods and services from local districts first, when available. • Control and daily cleaning at construction sites. • Provision of adequate waste disposal services. Proper disposal of chemicals and other hazardous materials. • Dust control by water, appropriate design and siting, restrict construction to certain times. • Appropriate and suitable storage of building materials on site. • Siting of Latrines at safe distances from wells and other water points and using closed systems for sewage drainage. • Restrict construction to certain hours • Minimize loss of natural vegetation during construction; alternative sites; various special measures for sensitive species • Restoration of vegetation; cleanup of construction sites. • Safety designs (signage) • Ensure availability of clean potable water for use in latrines, canteens and for drinking. Use of appropriate building materials. No asbestos etc.			
Day to Day Operations	i) Use facilities/infrastructure as designed and as intended. ii) Employ trained staff to man and secure facilities. iii) Log and report any damages done and repairs needed. iv) Perform periodic monitoring of al aspects as contained in the sub project Environmental and Social Monitoring Plan.			
Maintenance	i) Prepare and adopt suitable maintenance plan. ii) Maintain appropriate budget necessary to implement maintenance plan. iii) Implement maintenance plan in two stages : for activities requiring day-to-to maintenance such as repairs to damages done, regular inspections etc and longer/periodic term maintenance. iv) Have suitably trained staff to carry out maintenance and access to materials/goods/equipment.			

Annex F

Generic Guidelines for Preparing and Implementing a Public Consultation Plan for an ESIA

The purpose of community involvement is not to find the 'right' answer from the community, but to engage the community in the sub project so that they can share ownership and to give them the opportunity to inform the design process. It will also give the community the comfort of knowing early on in the process the mechanism through which affected individuals/households will be treated. In developing a strategy for public involvement there are a number of key issues that must be considered:

- Define goals clearly
- Secure commitment to effective implementation
- Plan consultation timing and phasing
- Provide adequate resources
- Be aware of site specific sensitivities
- Be aware of the historical context
- Recognize the interest of developers/operators
- Be prepared to hear different views.

In planning for the process of a public involvement program, the following principals must be followed:

- Identify all stakeholder groups (typically integrated with social assessment). Who will be affected directly and indirectly? Who else might have an interest or feel that they are affected?
- Identify the key issues around which public involvement will be required (scoping). These key issues would include:
  - . environmental and social issues or decisions at stake
  - . key organizations and interested parties involved
  - . local authorities and the agencies involved
  - . size of the issue or importance of the decision
  - . urgency and time frame

- Understand the decision making process
  - . identification of parties making the decisions
  - . where in the project cycle decisions are made

- Determine the necessary level of involvement. Meaningful public involvement takes place at three levels:
  - . conveying information to the public
  - . listening to the opinions and preferences of the public
  - . involving the public in making decisions

  The nature and size of the project, combined with both the nature and number of stakeholders and the status of national legislation, will largely define when,

where, and at what level public involvement is required for an EA and the environmental management plan.

- Identify key points to be included in the public involvement process

Timely disclosure of information is key and it may be useful to develop systems to ensure that stakeholders receive information on time and in an accessible format. Whilst it is important that consultation take place before major decision points, the aim should be to facilitate consultation throughout the preparation and implementation phases. This implies that consultation will often be necessary as part of the research effort of the EA and in the development of mitigation measures during the analysis phase of the study.

- Select most effective involvement techniques to be used
- Define a communication methodology
- Develop a budget

ANNEX G

ENVIRONMENTAL AND SOCIAL APPRAISAL FORM (ESAF)

The Environmental and Social Appraisal Form (ESAF) has been designed to assist in the evaluation of DADP sub project packages sent for review. The form is designed to place information in the hands of the District Environmental Coordinators, the Regional Level Environmental specialists and the NEMC so that the respective DADP sub project proposal/package applications for environmental and social clearance can be reviewed and cleared.

The ESAF contains information that will allow reviewers to determine the characterization of the prevailing local bio-physical and social environment with the aim to assess the potential sub project impacts on it. The ESAF will also identify potential socio-economic impacts that will require mitigation measures and or resettlement and compensation.

DADP Sub project Application Number:.....

Part 1: Identification

1. Name of District: Name of Owner/Operator:

2. Sub project Location (this may be more than one location for a sub project package):

3. Reason for Field Appraisal**:** *Summarize the issues from the ESIA or ESMP that determined the need for a Field Appraisal.*

4. Date(s) of Field Appraisal:

5. Field Appraisal Officer and Address:

6. Extension Agent/Service Provider/Owners/Operators ESIA Consultant's Representative and Address:

7. Owners/Operators Representative and Address:

Part 2: Description of the Owners/Operators Sub project Application

8. DADP Sub project application Details*: Provide details that are not adequately presented in the sub project application. If needed to clarify application details, attach*

sketches of the subproject component(s) in relation to the community and to existing facilities

Part 3: Environmental and Social Issues

9. Will the sub project:

- Need to acquire land? Yes..... No.....
- Affect an individual or the community's access to land or available resources? Yes..... No.....
- Displace or result in the involuntary resettlement of an individual or family? Yes..... No.....

If "Yes", tick one of the following boxes:

☐The Resettlement Action Plan (RAP) included in the subproject application is adequate. No further action required.

☐The RAP included in the subproject application must be improved before the application can be considered further.

☐A RAP must be prepared and approved before the application can be considered further.

10. Will the sub project:

- Encroach onto an important natural habitat? Yes..... No.....
- Negatively affect ecologically sensitive ecosystems? Yes..... No.....

If "Yes", tick one of the following boxes:

☐The ESIA and or ESMP included in the operators application is adequate. No further action required.

☐The ESIA and or ESMP included in the operators application must be improved before the application can be considered further.

☐An EMP must be prepared and approved before the application can be considered further.

11. Will this project involve or result in:

- Diversion or use of surface waters?
- Construction and/or rehabilitation of Dams?

If "Yes", tick one of the following boxes:

☐The application describes suitable measures for managing the potential adverse environmental effects of these activities. No further action required.

☐The application does not describe suitable measures for managing the potential adverse environmental effects of these activities. An Environmental Management Plan must be prepared and approved before the application is considered further.

☐The application describes suitable Dam Safety measures. No further action required.

☐The application does not include a Dam Safety Measures. A Dam Safety Measures Report must be prepared and approved before the application is considered further.

☐The application describes Dam Safety measures that are not adequate. A Dam Safety Measures Report that provides suitable and acceptable dam safety measures must be prepared and approved before the application is considered further.

12. Are there any other environmental or social issues that have not been adequately addressed?

If "Yes", summarize them:

_____

_____

_____

and tick one of the following boxes:

☐ Before it is considered further, the application needs to be amended to include suitable measures for addressing these environmental or social issues.

☐ . An Environmental Management Plan needs to be prepared and approved before the application is considered further.

Part 4: Field Appraisal Decision

☐**The sub project application can be considered for approval.**

Based on a site visit and consultations with both interested and affected parties, the field appraisal determined that the community and the proposed operator adequately address environmental and/or social issues as required by the ASDP's ESMF and meets the requirements of Environment Act, in Tanzania, NEMC and the World Bank OP4.01

☐**Further subproject preparation work is required before the application can be considered further.**

The field appraisal has identified environmental and/or social issues that have not been adequately addressed. The following work needs to be undertaken before further consideration of the application:

_____

_____

_____

All required documentation such as an amended application, EMP, RAP, Dam Safety Measures Report. Screening Forms, draft Civil works contracts, etc., will be added to the operators application package before it is considered further.

Name of District Environmental Coordinator, Regional Environmental Specialist and NEMC's Head of EIA Division (each to sign and print name):

.....

Signature:

..... Date: .....

Annex H

Guidelines for Assessment of Dams and Preparation of a Dam Safety Measures Report

Purpose and Scope of Work:

The purpose of the dam safety assessment is to prepare a reconnaissance-level assessment of quality management of a dam or weir, and of the reliability of the water source. The work will involve initial and wrap-up meetings with personnel responsible for the dam/weir; a field examination; and a Dam Safety Report of findings and recommendations. If deemed necessary, the report will provide terms of reference for more thorough follow-up activities to identify (to feasibility level with cost estimates) the investments and other measures needed to ensure the safety of the dam/weir.

Qualifications of the Dam Specialist:

The work will be carried out by a Dam Specialist (DS) of suitable independence from the owner/operator of the dam/weir, and who has not been associated with the design, construction, and operation of the dam/weir. The DS will have appropriate qualifications and substantial experience with the design, construction, operation and maintenance of dams, especially in developing countries.

Investigations of Operating Conditions:

The owner/operator of the dam/weir will provide the DS with the following information:

a) Construction year, first impoundment;
b) Dam size: height (m), crest length (m);
c) Reservoir size (m3);
d) Dam type;
e) Estimated population downstream that would be threatened by dam failure; and
f) Estimated replacement cost.

The DS will discuss with the owner/operator past and current O&M practice with particular reference to:

a) Existing records;
b) Maintenance logbooks;
c) Instrumentation and monitoring;
d) Emergency preparedness;
e) O&M resources (human and financial); and
f) Status of reservoir sedimentation and measures to prolong the life of storage (reservoir conservation).

Investigations of Structural Conditions:

Depending on the type of dam/weir, a suitable checklist for the inspection activities will be used. Inspection details are left to the DS who will carry out the task, however the inspection report should contain the following information:

a) Construction year, first impoundment;
b) Dam/weir size: height (m), crest length (m);

c) Reservoir size (m3);
d) Dam type;
e) Geotechnical aspects of foundations;
f) Design flood return period (years);
g) Availability of as-built drawings;
h) Spillway reliability assessment;
i) Bottom outlet reliability assessment;
j) Seepage;
k) Deformations, settlements;
l) Conditions of slopes/concrete structures;
m) Active storage (m3);
n) Estimated population downstream that would be threatened by dam failure; and
o) Estimated replacement cost.

Investigations of Regulatory Framework:

The DS will:

- Discuss with relevant authorities (regulator, line ministries, utilities, etc.) the existing regulatory framework for dam/weir safety;
- Compare the existing regulatory framework, in a matrix format, with comments as necessary, to the "essential elements" identified in the World Bank publication "Regulatory Frameworks for Dam Safety - A Comparative Study"[34];
- Identify opportunities and constraints to the achievement of the "essential elements"; and
- If judged feasible, develop terms of reference for an action plan aimed at achieving the "essential elements" in the national context (priorities, institutional reforms, incentives, enforcements, etc.)

Dam Safety Report:

The DS will produce a Dam Safety Report that includes:

- Description of the dam/weir, ownership, and regulatory framework.
- Dam safety assessment according to international standards (ICOLD).
- Structural measures required to bring safety to acceptable standards, including a preliminary cost estimate differentiating interventions in three categories: a) emergency (human life at immediate risk); b) urgent (likely to pose a risk to human life, major assets at risk); c) significant (any needed rehabilitation beyond meaningful maintenance).
- Non-structural measures (instrumentation and monitoring, stand-by electricity supply, training, dam safety plans) to be implemented to make dam safety sustainable after rehabilitation; reference should be made to OP4.37 "Safety of Dams", and appendices to the publication "Regulatory Frameworks for Dam Safety - A Comparative Study".
- Preliminary assessment of reservoir sedimentation status, and recommendations aimed at prolonging the life of storage facilities.
- Resources needed for reliable O&M (human resources and recurrent costs).

[34] D. Bradlow, et al. (2002) "Regulatory Frameworks for Dam Safety – A Comparative Study" The World Bank Law, Justice, and Development Series. ISBN 0-8213-5191-5.

- Overall assessment of challenges and opportunities for the management of the dam/weir.
- Terms of reference for the preparation of feasibility studies for any required rehabilitation measures (structural and non-structural).

ANNEX I[35]

ENVIRONMENTALLY SENSITIVE AREAS (ESA'S) and ECOSYSTEMS in TANZANIA

1. Areas prone to natural disasters (geological hazards, floods, rain storms, earthquakes, landslides, volcanic activity, etc.)

2. Wetlands: (Flood plains. Swamps, lakes, rivers, etc.) water bodies.

3. Areas susceptible to erosion e.g. (a) hilly areas with critical slopes and (b) unprotected or bare lands.

4. Areas of importance to threatened cultural groups.

5. Areas with rare/endangered/or threatened plants and animals.

6. Areas of unique socio-cultural, historic archaeological, scientific, tourist areas.

7. Polluted areas.

8. Area subject to desertification and bush fires.

9. Coastal areas and Marine ecosystems, such as coral reefs, Islands, lagoons and estuaries, continental shelves, beach fronts and inter tidal zones.

11. Areas declared as, national parks, water shed reserves, forest reserves, wildlife reserves and sanctuaries, sacred areas wildlife corridors and hot spring areas.

12. Mountainous areas, water catchment areas and recharge areas of aquifers.

13. Areas classified as prime agricultural lands or range lands.

14. Green belts or public open spaces in urban areas.

15. Burial sites and graves.

[35] Culled from Appendix 10 of Vol. 1, Tanzania Environmental Impact Assessment Procedure and Guidelines (rev. March 2002).