

ENTRO

**WATERSHED MANAGEMENT FAST
TRACK PROJECT IN EGYPT/SUDAN**

**Project Brief for the Lake Nasser/Nubia
Management Framework (LNNMF) Project**

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SWECO International**

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Abbreviations

AWPB	Annual work plan and budgets
CBO	Community Based Organisation
CRA	Cooperative Regional Assessment for Watershed Management
DSS	Decision Support System
DST	Decision Support Tools
EIA	Environmental Impact Assessment
ENCOM	Eastern Nile Council of Minister
ENSAP	Eastern Nile Subsidiary Action Project
ENTRO	Eastern Nile Technical Regional Office
FTP	Fast Track project
GOS	Government of Sudan
IDEN	Integrated Development the Eastern Nile
LIU	Local Implementation Unit
LNDA	Lake Nasser Development Authority
LNNCU	Lake Nasser/Nubia Coordination Unit
LNNMF	Lake Nasser/Nubia Management Framework
M&E	Monitoring & Evaluation
MDG	Millennium Development Goals
MIS	Management Information System
MOIWR, Sudan	Ministry of Irrigation and Water Resources
MOWRI, Egypt	Ministry of Water Resources and Irrigation
MTR	Mid-Term Review
NAPs	National Action Plans
NBI	Nile Basin Initiative
NC	National Coordinators
NFP	National Focal Points
NFPI	National Focal Point Institution
NGO	Non-Governmental Organisation
NPES	National Poverty Eradication Strategy
NSDCs	National Social Development Coordinators
NSF	National Stakeholder Forums
NTEAP	Nile Transboundary Environmental Action Programme
PCR	Project Completion Report
PID	Project Identification Document
PJTC	Permanent Joint Technical Committee
PSC	Project Steering Committee
RIMS	Result and Impact Management System
SAP	Strategic Action Plan
SIA	Social Impact Assessment
SPLM	Sudan Peoples' Liberation Movement

SVP	Shared Vision Programme
TA	Technical Assistance
TAC	Technical Advisory Committee
TDA	Transboundary Diagnostic Assessment
WMP	Watershed Management project

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PROJECT BRIEF for the LNNMF Project

1 Executive Summary of Background and Project

The *Watershed Management Fast Track Project (FTP) in Egypt/Sudan – Lake Nasser/Nubia* has emerged from the Nile Basin Initiative and the linked Eastern Nile Subsidiary Action Project (ENSAP). ENSAP is a regional cooperative initiative between Egypt, Ethiopia and Sudan.

The objective of the detailed preparation of the FTP in Egypt/Sudan was to establish an integrated Monitoring System for the Lake comprising surveys/measurements, modelling and databases, with a separate monitoring component for sand encroachment, but also to investigate the possibility to develop a Lake Nasser/Nubia Management Framework to guide future sustainable development of the Lake Basin. To this end, two interlinked project proposals have been prepared, explicitly the 1 - *Outline Project Brief for the Lake Nasser/Nubia Management Framework Project* and 2- *Project Implementation Plan for the Monitoring Systems Implementation Project (FTP)*.

The idea is to build on existing co-operation by - in a first phase - extend the cooperation on a technical level, explicitly by the initiating the *Monitoring Systems Implementation Project*. The second phase of the extended corporation around Lake Nubia/Nasser Management would entail the joint and participatory development of the Lake Nasser/Nubia Management Framework to guide future sustainable development of the Lake Basin, as described in the Project Brief.

1.1 Project Objectives and Justifications

A combination of the climatic, ecological, economic and demographic problems makes the region very susceptible to environmental damage when inappropriately managed.

Recognizing the need to address priority transboundary concerns in the basin, Egypt and Sudan and respective authorities are proposing an initiative on a Lake Nasser/Nubia Management Framework as presented in this LNNMF Project Brief. The joint development and approval of the LNNMF project brief by the two countries is in itself a statement of that both countries are formally agreeing to collaborate on the integrated management of the Lake Nasser/Nubia which is strongly recommended the preparation of a project document seeking funds for this purpose.

The LNNMF project aims at the creation of a regionally agreed Lake Management Framework and Strategic Priority Actions and at building the grounds for its implementation.

The goal is to enhance the ability of the countries to plan socio-economic development interventions and manage the Lake Nasser/Nubia catchment within their territories and aquatic resources and ecosystems on a sustainable basis. The project would address issues such as the lack of capacity, poor coordination, overlapping responsibilities, sectoral approaches to natural resource development, and inadequate enforcement of laws within both countries. In order to achieve these goals, development planning should be based on integrated and participatory approaches and sound technical studies.

To this end it has been realised that although extensive surveys and mathematical modelling is presently being carried out to monitor and understand the processes of sediment deposition and water quality in the Lake Nasser/Nubia, the data is not kept in a proper database, which is an obstruction to efficient data sharing. In the present setup there is no integration between the surveys/measurements, the mathematical modelling and the 'database'. The project will complete/revise the existing setup to create an integrated Monitoring System comprising surveys/measurements, mathematical modelling and databases.

The project will establish new strong technical tools to be used in connection with the future planning of activities with any relation to Lake Nasser/Nubia. The main tools will be state-of-the-art survey and measuring instruments as well as mathematical models. Survey programmes and analysis methodologies will be optimised to obtain the best results from the new tools, adapted to possible future applications. Also a database will be established, capable of storing and presenting the extensive data.

The project designed around the application of the new tools will establish the new methodologies and carry out the capacity building required to ensure that the Monitoring System will be operated smoothly in the future with maximum outcome. On-the-job training combined with sessions of more formal training is essential in order that the counterpart staff in both countries will be able to operate the equipment and models and do the necessary processing and analyses. For the database it is further necessary to carry out a user-level training and information programme. Potential users in both

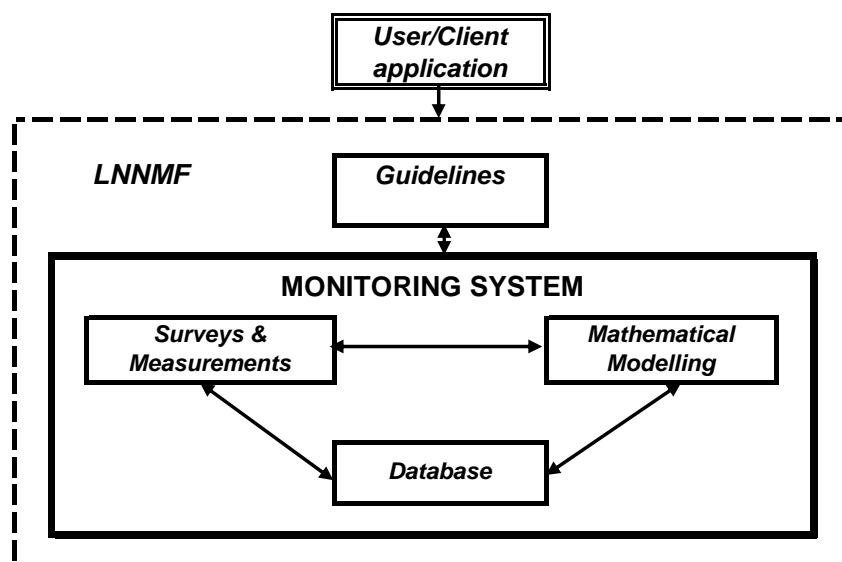
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countries shall be invited for this training. As the sharing of the data between several stakeholders is a main justification for the database it is important to develop a user friendly guideline to the database.

The project will develop:

- survey and measurements procedures and techniques
- mathematical modelling tools and procedures
- database including dissemination
- sand encroachment analyses and recommended mitigations

The Monitoring System and the LNNMF are closely integrated. The Monitoring System will be a tool to the LNNMF, not only in connection with specific projects, but also in the establishment of general guidelines to be applied by the Management Framework.



1.2 Project Costs

The total Project cost excluding contingencies has been estimated at USD 13,8 million, with a distribution on the three proposed Components:

- | | |
|--|--------------|
| • Regional Coordination | 7,47 million |
| • National and Regional Priority Interventions | 6,27 million |
| • Regional LNNM Monitoring Program | 0,06 million |

Details of the cost estimates and the cost allocation during the project period of three years are presented in Section 7 and Annex 5.

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2 Background and Strategic Context

2.1 Introduction

The Watershed Management Fast Track Project (FTP) in Egypt/Sudan –Lake Nasser/Nubia has emerged from the Nile Basin Initiative and the linked Eastern Nile Subsidiary Action Programme (ENSAP). ENSAP is a regional cooperative initiative between Egypt, Ethiopia and Sudan.

The Project Brief has been prepared in several steps and entailed a transboundary diagnostic analysis of Lake Nasser/Nubia and an iterative consensus building process among the stakeholders namely at international, national, governorate/state and local levels and multi-disciplinary analysis i.e. technical, institutional, socio-economic and environmental analysis of Lake Nasser.

2.2 Project Context

The Aswan High Dam, inaugurated in 1970, 7 km upstream the Old Aswan Dam, has created one of the largest man-made reservoir on earth .The total length of the lake is approximately 500 km, about 350 km in Egypt, and the remaining 150 km is in Sudan. The Lake Nasser covers an area of about 6,600 km² out of which 5,600 km² in Egypt at a storage level of 182 m AMSL (Mohammad Abdel-Fadil¹).

In terms of climatic conditions, the Lake Nasser/Nubia is located within the climate zone characterized by arid, hot and very dry desert climate.

The lake was formed mainly to store water for irrigation and power generation but is also used as a source of water for domestic use.

The Lake Nasser/Nubia was built by Egypt and the power generation produced belongs to Egypt, nevertheless it is geographically shared between the two countries, Egypt and Sudan and hence its special status and importance.

The Lake is also shared between two countries which are characterised by high dependency on the river Nile ecosystem services. Due to increased population pressure in both Egypt and Sudan and lack of livelihood assets away from the lake, the lake

¹ Paper: Sediment as a Resource for Development of Eastern Nile Countries by Dr. Mohammad Abdel-Fadil, Associate professor, Nile Water Sector, Ministry of Water Resources and irrigation, Cairo, Egypt

shore region has become more and more attractive from both national and local development perspective.

The economy of the Lake Nasser/Nubia region is essentially rural, involving fishing, food fishing production, livestock rearing, agro-industry, and handicrafts as well as pastoralist activities. Industry and the service sectors are not well developed, and social services and other infrastructures are not well established and most indicators of socio-economic development lie below that of most developing countries. Social indicators such as life expectancy, access to health care, education, nutrition level etc. are all considered as low to moderate.

Utilization and development of Lake Nasser and the surrounding area have not yet been fully realized. The present economic activities associated with the Lake region are minimal due to its distant location from the national centres, harsh climatic conditions and low fertility of lands (Egypt side).

Still, the lake, lake shore and basin are obvious engines for economic growth in a country where poverty alleviation is of high priority.

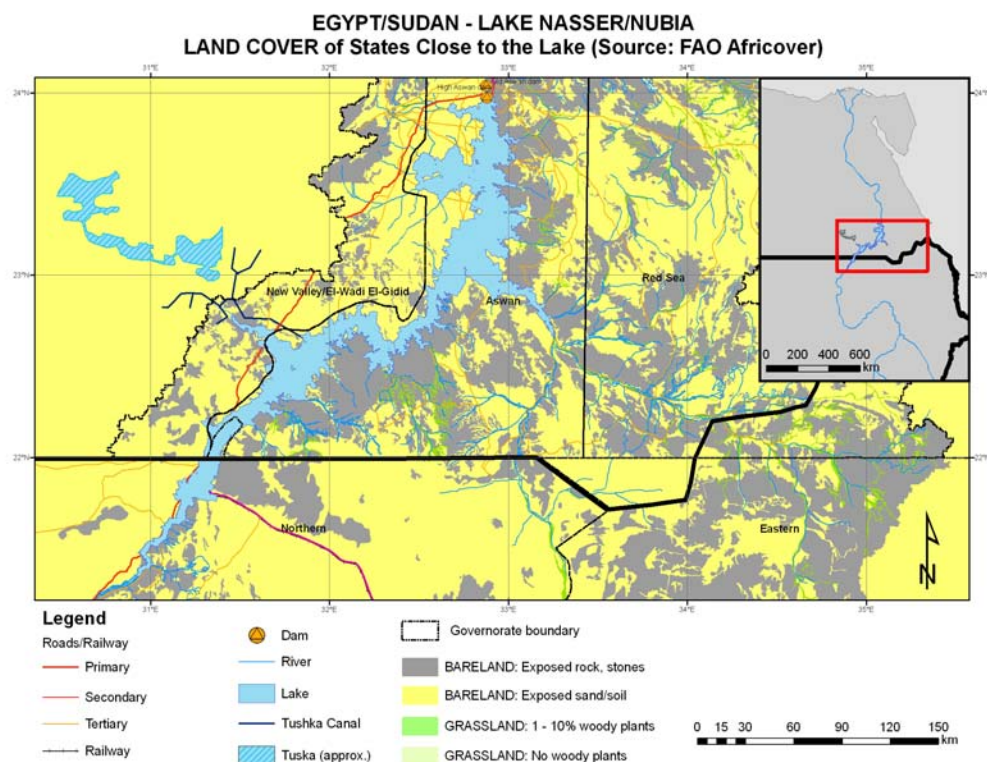


Figure 1 Lake Nasser/Nubia

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The countries are at different stages of both political and economic development. The current economic activity around the Lake is mainly rural, with Aswan as an exception. The poverty situation around the Lake in both countries, gives cause for concern, particularly in terms of over-exploitation of natural resources due to poverty which seriously threatens the ecological integrity of the fragile environment.

The socio-economic and environmental problems of the basin are further exacerbated by the high population growth rate and relatively scarce resources of the region. Currently the Lake Nasser/Nubia basin supports a constantly growing population, predominantly living in fishing and farming communities. As this population embarks on development for economic survival along the lake shore region a lot of pressure is put on aquatic and non-aquatic resources. The region is also an important migration zone for livestock coming from Sudan on route to Egypt markets.

Moreover, large scale industrial development (e.g. mining) is a threat if not strictly regulated and controlled. Point and non-point source pollution on the lake itself and from tributaries have degraded the lake water quality.

The TDA stresses the risks posed by uncontrolled economic development and in particular its consequences on the lake water quality and aquatic ecosystem. On the other hand it also stresses the potential of the Lake shore region and the multiple benefits that can be achieved through controlled economic and pro-poor development.

Changes in the region's climate in recent decades have resulted in decreased precipitation. The area is suffering from desertification and sand dune encroachment which is a major threat to livelihoods and infrastructure.

Lake Nasser –Nubia is also located in the migratory route of bird winter visitors to Africa and seasonally hosts thousands of migratory birds which gives the lake basin ecosystem an international importance. There are several species of plants, birds, reptiles and mammals found in/ or around Lake Nasser and the River Nile. Many are endangered, protected and or found in internationally important numbers. These species include:

- Nile crocodile
- Dorcas gazelle

Likewise it may be stated, that the protected areas in Egypt and the areas in Sudan with unique ecosystems (but not yet declared protected areas) are endangered, as they are not yet managed and, therefore, with the risk that unplanned development occurs.

The indicators of environmental degradation including significant water quality degradation due to sedimentation and pollution, as well as a decline in natural resources and biodiversity, are beginning to become more apparent.

A combination of the climatic, ecological, economic and demographic problems makes the region very susceptible to environmental damage when inappropriately managed.

Recognizing the need to address priority transboundary concerns in the basin, Egypt and Sudan and respective authorities are proposing an initiative on a Lake Nasser/Nubia Management Framework as presented in this LNNMF Project Brief. The joint development and approval of the LNNMF project brief by the two countries is in itself a statement of that both countries are formally agreeing to collaborate on the integrated management of the Lake Nasser/Nubia which is strongly recommended the preparation of a project document seeking funds for this purpose.

The LNNMF project aims at the creation of a regionally agreed Lake Management Framework and Strategic Priority Actions and at building the grounds for its implementation.

The goal is to enhance the ability of the countries to plan sustainable development interventions and manage the Lake Nasser/Nubia catchment within their territories and aquatic resources and ecosystems on a sustainable basis. The project would address issues such as the lack of capacity, poor coordination, overlapping responsibilities, sectoral approaches to natural resource development, and inadequate enforcement of laws within both countries.

The LNNM vision is consistent with the objectives and content of the ENTRO/ENSAP , and with the objectives laid out in Agenda 21, Chapter 18, of the Rio Declaration.

2.3 Joint Management Activities

At the operational and local levels, joint management by the two countries is limited to a few activities that partly emanate from the 1959 Water agreement and partly from a shared concern over Lake Nasser/Nubia. The cooperation is mainly limited to sediment research and to information sharing with respect to water utilization.

- The Nile Waters Directorate maintains a monitoring station with the Nile Water sector under the PJTC mainly to control both countries' water abstractions

- The annual water surveys by the High Dam Authority and Nile Research Institute (NRI) are conducted jointly with Sudanese experts

Both Sudan and Egypt have a proprietary interest in the Lake and the existing cooperative activities e.g. in monitoring sedimentation, need to be expanded to encompass a wide range of mutual concerns. Given the substantial developments that are proposed for Lake Nasser/Nubia and its environs and its very fragile ecosystems there is clearly a need for a comprehensive and integrated framework for the sustainable management of its land and water resources at operational level. The area is within two countries and there are a number of central Government Ministries actively involved in current and planned development activities. However, there is a need for an overarching organization that can undertake the integrated planning, development coordination and monitoring of activities in terms of their environmental, economic and social impacts. As many of the development activities are at an early stage there is an opportunity to establish such an organization. Given the fact that the Lake is shared by both Egypt and Sudan there is an opportunity to establish a joint secretariat that could undertake joint sharing of information on development intentions and monitoring results.

On local authority level, cooperation is emerging. One example is cooperation between Aswan town and Wadi Halfa town concerning business development. The newly bi-lateral agreement on custom free trade between the two countries would most probably boost this cooperation. Another example is that the hospital of Aswan is open to people from Wadi Halfa.

At community level, information exchange and trade would be facilitated by the fact that there are basically the same people on both side of the lake and could be promoted by development of transport infrastructure in the area.

Both Egypt and Sudan are also partaking in a number of transboundary projects under the NBI and ENTRO umbrella.

2.4 Regional Context and Common Goals

2.4.1 Meeting regional goals

The implementation of this project would supplement existing regional- bi-lateral and national efforts to address environmental issues in the Lake Nasser/Nubia Basin.

This LNNMF project based on the preliminary TDA, contains several priority actions that would enhance the ability of countries of the basin to implement existing legal frameworks for the management of natural resources and increase the ability of the riparian states to reduce national and transboundary environmental problems and linked socio-economic issues, i.e. to move the scale of operation from the national level to the regional level.

2.4.2 Nile River Basin Initiative

The Nile River, the longest river in the world, traverses more than 6,700 km from its farthest point at the headwaters of the Kagera River in Rwanda to its delta in Egypt on the Mediterranean Sea. Ten countries share the Nile River Basin, explicitly: Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda. The basin covers 3 million sq.km – one-tenth of Africa’s total land mass. It serves as home to world-class environmental assets, such as Lake Victoria and the vast wetlands of the Sudan. It also serves as home to an estimated 160 million people within the boundaries of the basin, while nearly twice that number – roughly 300 million – live within the ten countries that share the basin.

Despite the extraordinary natural endowments and rich cultural history of the Nile Basin, its people face considerable challenges. The regional population is expected to double within the next 25 years, placing an additional strain on already scarce water, land and other natural resources. Yet the Nile holds significant opportunities for win-win development that could enhance energy availability, food production, transportation, industrial development, environmental conservation, and other related development activities in the region.

The Nile Basin Initiative (NBI), launched in February 1999, is a regional initiative of the riparian states of the Nile and provides a framework to fight poverty and promote sustainable development through improved integrated water resources management at the basin level. The Eastern Nile Subsidiary Action Program (ENSAP), which includes Egypt, Ethiopia, and Sudan, is an investment oriented sub-basin level program.

2.4.3 Eastern Nile Subsidiary Action Program (ENSAP)

The Eastern Nile Subsidiary Action Program (ENSAP) – which includes Egypt, Ethiopia and Sudan – seeks to initiate a regional, integrated, multipurpose program through a first set of investments. Within this regional context, the Eastern Nile riparian countries decided that the first ENSAP program, referred to as the Integrated

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Development the Eastern Nile (IDEN), would be to initiate a regional, integrated, multipurpose development program that confirms tangible win-win gains and demonstrates joint action for the Eastern Nile countries. IDEN comprises seven subprojects that recognize the severe toll that droughts and floods have on the people and economy of the Eastern Nile, as well as the potential benefits of a regional approach to the management of such events. The Watershed Management Project (WMP) is one of the seven cooperative projects that address issues pertaining to Watershed management and mitigation. Other cooperative projects with potential benefits are the Flood Preparedness and Early Warning project and the Joint Multipurpose Program.

ENSAP is governed by the Eastern Nile Council of Minister (ENCOM), its highest decision making organ. This Council is made up of Water Affairs Ministers of the Eastern Nile Basin states. It is supported by a Technical Advisory Committee (TAC), consisting of three senior officials from each member country. To facilitate the implementation of ENSAP activities, the Eastern Nile Council of Ministers (ENCOM) resolved to establish an Eastern Nile Technical Regional Office (ENTRO) in Addis Ababa, Ethiopia, with powers to perform all the functions entrusted to it by ENCOM, including the power to receive and administer grant funding for its activities. ENTRO assists the Eastern Nile Council of Ministers and Technical Advisory Committee in the implementation of the ENSAP.

The goal stated in the Project Identification Document (PID) for ENSAP regional cooperation on watershed management and approved by the Eastern Nile Council of Ministers in March 2001, is: “ensure efficient water management and optimal use of the resources through the equitable utilization and no significant harm; ensure cooperation and joint action between the Eastern Nile Countries seeking win-win goals; target poverty eradication and promote economic development; and to ensure that ENSAP results in a move from planning to action”².

2.4.4 The Watershed Management Project (WMP)

The project is being coordinated by ENTRO with full participation of riparian through an arrangement that comprises National Coordinators, a Regional Coordinator hired from the region, and a Regional technical committee group, consisting of about five members from each country.

² Eastern Nile Subsidiary Action Program (ENSAP) – Project Identification Document, Eastern Nile Council of Ministers, 2001.

To achieve regional objectives the ENSAP countries -among other efforts - have jointly launched two parallel programmes under the umbrella of ENTRO/ENSAP and NBI, explicitly i) the Cooperative Regional Assessment (CRA) for Watershed Management; and ii) the Watershed Management Fast Track Projects (FTP).

International cooperation within the Nile Basin is essential and generates a wide range of benefits for the riparian states. The ENSAP FTPs in Watershed Management aim at building commitment for national interventions to achieve regional objectives and to generate and share the benefits of cooperation at all of these levels.

2.5 National Context and Goals

2.5.1 Meeting National Goals

The LNNMF Project has been designed to contribute to national goals and reform processes by providing local tools to lead the major management transition in the area of pro-poor and environmental governance.

2.5.1.1 Millennium Development Goals

Both countries are striving at achieving poverty alleviation and sustainable development including the main objectives and targets of the Millennium Development Goals (MDG), which were agreed upon at the United Nations Millennium Summit in September 2000 to provide a benchmark of indicators to measure development progress. The Eastern Nile Subsidiary Action Program (ENSAP) would support the MDG agenda of poverty alleviation and sustainable development, and in addition would promote regional peace and security. Specifically, Millennium Development Goal 1, eradicate extreme poverty; Goal 7, ensure environmental sustainability; and Goal 8, develop a global partnership for development, would be addressed directly by the ENSAP FTPs in watershed management and the FTP in Sudan in particular.

2.5.2 Egypt

One of the top priorities of the Government of Egypt and the Governorate of Aswan is to develop the lake area for agricultural development to increase food security; to move the population away from the densely inhabited area in Upper Egypt; and poverty alleviation.

Several attempts have been made at formulating comprehensive development plans for the area. The principle development areas comprising agricultural and agricultural processing, fishing and mining activities are described in the following section.

The Government of Egypt plans to resettle 1 million people in the area around the lake by 2017. Total reclaimable land area is estimated at 150.000³ to 200.000⁴ feddans. By 2004, only 15,500 to 23,000⁵ feddans of these lands have been cultivated in addition to 3,000 feddans in the upland areas of Abu Simbel. The main crops grown around the lake are tomato and water melon.

In addition, the Government has initiated the Toshka project which would enable the reclamation of 540.000 feddans and the resettlement of about two million people⁶.

For Egypt a fundamental challenge at present and in the future is to ensure high biodiversity and good quality water in Lake Nasser and the River Nile. The purpose of protecting the water is twofold, first Egypt is dependent on this source for various purposes (drinking, irrigation, and fisheries) and second the land around Lake Nasser is expected to be essential to encompass the population increase in terms of new settlement areas and production of foods (irrigated crops and fisheries) for the growing population.

In the Egyptian National Water Policy for the year 2017, the three main themes are (i) optimal use of available water resources; (ii) development of water resources; and (iii) protection of water quality and pollution abatement. Thus only through sustainable use and development, protection and awareness raising the future use of the River Nile and the Lake Nasser would allow coming generations to enjoy the richness of the aquatic biodiversity and clean water.

2.5.3 Sudan

Development of the Sudanese part is characterised by the area's previously subsidiary status within the country's and Northern State's

³ JICA report, 1980

⁴ Scudder, 2004

⁵ Environmental Management Unit, Aswan Governorate

⁶ According to the Aswan Governorate Draft Environmental Action Plan, July 2004, the Toshka project would reclaim over one million feddans and create new communities to absorb some five million Egyptians.

overall priorities. Therefore, development efforts in Wadi Halfa Locality have been very slow compared to the development efforts on the Egyptian side of the Lake. The institutional preconditions for regional planning and management are not well developed as the level of development interventions is much lower than in Egypt. Comprehensive and coherent plans do not exist and it appears that ongoing development efforts are poorly documented and the result of informal and local initiatives by Halfa Locality and Halfa Administrative Unit.

Several policy issues have been highlighted by Wadi Halfa Locality. These were:

- 1) Development and management of agriculture and some other natural resources is priority. To this end, 25 cooperative societies have been established for the distribution and development of the alluvial soils that has been formed through sedimentation. Moreover, agricultural mechanization is intended to be introduced to facilitate agricultural production.
- 2) Protection of the Lake from desert encroachment is a priority and requires concerted efforts. Afforestation around the Lake is also one of the government concerns.
- 3) Encouragement of tourism.

Despite that Sudan has turned around a struggling economy with sound economic policies and infrastructure investments, its people still face considerable challenges. Today, Sudan is characterized by poverty, political instability, rapid population growth, and environmental degradation. Estimates on poverty range between 70% in Northern Sudan and up to 90% in Southern Sudan and other conflict affected areas. Poverty in Sudan is a rural phenomenon. Under the current reconstruction and peace building efforts, the budgetary framework of the Government of National Unity and the government of southern Sudan would be closely monitored for their pro-poor spending in sectors such as health, education and rainfed agriculture.

In 2004, the Government of Sudan (GOS) and the Sudan Peoples' Liberation Movement (SPLM) reached an agreement on a joint concept note detailing the vision and key objectives of the policy framework for a **National Poverty Eradication Strategy** (PES). The PES has two overarching goals: (i) achieving peace and reducing the risk of future conflicts; (ii) making a lasting impact on poverty and progress on other MDGs.

The Goal of Water Resources Policy is “To lay the foundation for a rational and efficient framework to sustain the water needs of national economic development, poverty alleviation, peace, environmental protection and social well-being of the people through sustainable water resources management”.

The present land and water governance structure is inadequate to provide security of access to land and water resources, conservation of natural resources, equitable and economic use of these resources. At stake are the discretionary powers of the federal and state governments to allocate land without due consideration to customary use and environmental impact.

2.6 Major Perceived Threats, Problems and Issues

As a part of activities in the project preparation phase the preliminary TDA was produced, which provides information on the problems relating to the priority transboundary environmental concerns in the Lake Nasser/Nubia Basin. The preliminary TDA identified the following list of major perceived problems and issues. The main existing concerns identified in the basin are:

- Water quality degradation
- Sedimentation caused by bank erosion and up-stream activities
- Wind-born erosion and drifting sand-dunes
- Low fertility of land on the Egyptian side
- Aridity
- Water scarcity
- Overfishing
- Loss of biodiversity
- High ground water table
- Population increase and near shore economic development including increase in agricultural, industrial, mining and tourism activities

In order to overcome the above listed problem which are in their initial stage, the LNNMF would focus on capacitate the two countries to plan and manage the Lake Nasser/Nubia catchment within their territories and aquatic resources and ecosystems on a sustainable basis. The project would address issues such as the lack of capacity, poor coordination, overlapping responsibilities, sectoral approaches to natural resource development, and inadequate enforcement of laws within both countries.

The root causes to the above listed environmental problems are interlinked and include the many problem areas, which are listed below in a non-priority order:

- Arid climatic conditions
- Low government priority on environment
- Poverty
- Insufficient demonstration projects
- Inadequate legal/regulatory basis
- Insufficient economic incentives
- Inadequate intersectoral coordination
- Insufficient regional agreements
- Insufficient knowledge/understanding
- Inadequate institutions
- Inadequate technology

2.7 Mitigation Strategies and Identified Priority Actions

In order to overcome, the above mentioned challenges and to create a foundation for long-term sustainable development and prospering economy of the LNN basin area. the TDA also identified a number priority actions to be undertaken under the LNNMF. These are listed below and further elaborated on under Section 4: Project activities and expected results.

2.7.1 Coordination, Capacity Building, Training and Studies

- Trans-boundary organisations
- National government institutions
- Research organisations
- Local authorities, civil society and local communities
- Equipment support

2.7.2 Environmental Interventions

- Sedimentation control
- Wind erosion control
- Bank erosion control
- Pollution control including improved waste management
- Protection of endangered ecosystems, habitats and species

2.7.3 Investments in Sustainable Livelihood Improvements

- Agriculture (land reclamation, recover silt as fertiliser)
- Forestry (community nurseries and community forestry)
- Animal husbandry
- Fisheries (reservoir utilization))
- Non-agricultural income generation
- Social development including gender issues

2.8 Identified Complementary Actions

There are actions which are deemed necessary to create a foundation for the successful implementation and long term sustainability of the above listed priority action but which may not fit within a Lake Management Framework. Such complementary interventions are exemplified below.

2.8.1 Investments in basic community services

- Health services
- Educational services

2.8.2 Improve Regional Trade and Tourism

- Intensify ferry traffic between Aswan and Wadi Halfa
- Roads construction between Egypt and Sudan
- Marketing of Sudan sites and linking them to Egypt tourism packages

3 Rationale and Project Objectives

3.1 Rationale for trans-boundary management and LNNMF

As with any transboundary water body, the management of Lake Nasser/Nubia is an international concern, which must be managed in a jointly manner within an agreed framework.

Furthermore, as listed above there are a number of transboundary issues which cannot be addressed without joint response strategies.

Due to the growing population, among other reasons, there is a pressure from the key stakeholders both in Egypt and Sudan to develop and intensify economic activities around the Lake Nasser/Nubia in order to support economic growth and the poverty alleviation.

Hence, the need for sustainable development and environmental protection is probably the most important key driving force for the joint development and implementation of the Lake Nasser/Nubia Management Framework.

The overall aim of the LNNMF would be to ensure that development around the lake is planned and implemented in an integrated, environmentally and socially sustainable and cooperative manner. The LNNMF is envisioned to marry potentials, opportunities, priorities, constraints and tradeoffs.

There is also a need, as seen from the above list, for joint prioritisation and implementation of poverty alleviation interventions in the area.

Hence an important step is to go from awareness and capacity building to an intervention that uses the information and capacity developed to promote environmentally and socially sustainable economic development.

The LNNMF would make use of existing institutions as far as possible.

3.2 Development and Project Objectives

3.2.1 Introduction

The LNNMF project aims at the creation of a regionally agreed Lake Management Framework and Strategic Priority Actions and at building the grounds for its implementation. The overall aim of the LNNMF would be to ensure that development around the lake is planned and implemented in an integrated, environmentally and socially sustainable and cooperative manner.

The goal is to enhance the ability of the countries to plan and manage the Lake Nasser/Nubia catchment within their territories and aquatic resources and ecosystems on a sustainable basis. The project would address issues such as the lack of capacity, poor coordination and information sharing, overlapping responsibilities, sectoral approaches to natural resource development and lack of multi-disciplinary monitoring and information management systems and sharing, as well as inadequate enforcement of laws within both countries.

3.2.2 Development Objective

The long-term project development goal of the Fast Track Watershed Management Project (FTWMP) in Sudan is the same as the goal stated in the Project Identification Document (PID) for ENSAP regional cooperation on watershed management and approved by the Eastern Nile Council of Ministers in March 2001, namely:

“Ensure efficient water management and optimal use of the resources through the equitable utilization and no significant harm; ensure cooperation and joint action between the Eastern Nile Countries seeking win-win goals; target poverty eradication and promote economic development; and to ensure that ENSAP results in a move from planning to action”

3.2.3 Project Objective

The proposed specific LNNMF project objective is to:

Provide the overall framework for integrated Lake Nasser/Nubia basin management to guide development within the lake basin in order to ensure sustainable and integrated development without endangering the lake basin ecosystems

3.3 Project Components and Outputs

In order to achieve the above objective the project is proposed to be divided in three components, explicitly:

1. **Component 1:** Regional coordination.
2. **Component 2:** Initiate national and regional priority measures and interventions as a response to the prioritized key transboundary and national concerns.
3. **Component 3:** LNNM Monitoring Programme.

3.4 Key Performance Indicators

- Comprehensive and multidisciplinary Lake Nasser/Nubia knowledge base created to underpin environmental protection and poverty eradication
- Systems and procedures information exchange developed to strengthen collaboration between Egypt and Sudan for environmental management and sustainable of the Lake Nasser/Nubia basin
- No of local interventions, elaborated and implemented on the basis of integrated and participatory plans for lake basin management and local development.

3.5 LNNMF Project Approach and Principles

It is assumed that both countries share a common desire for the sustainable management of the natural resources and biodiversity of the Lake Nasser/Nubia for the benefit of present and future generations, and recognize their role and responsibility in conserving the global value of the natural resources.

The key governing principles recommended for the LNNMF are:

- Cooperation in studies and execution of projects;
- Exchange of available information and data;
- Obligation to cause no harm;
- Proper balance between development for socio-economic purposes and environmental concerns, aiming towards sustainable socio-economic development;

These governing principles have been translated into the following project approaches and guiding principles:

Sustainable development

The activities implemented (and decisions made) shall ensure prudent support and rational utilization of living resources and the preservation of the rights of future generations to a viable environment. Development planning should be based on integrated and participatory approaches and sound technical studies.

The polluter pays principle

The cost of preventing and eliminating pollution, including clean-up costs, shall be paid by the polluter.

Anticipatory action

Contingency planning, environmental impact assessment and strategic impact assessment (involving the assessment of the environmental and social consequences of governmental policies, programmes and plans) shall be undertaken for the future development of the Lake.

Joint procurement and review of EIAs

For projects which will have significant transboundary impacts specific requirements of the EIA procedure would be necessary. On the basis of national legislation, the EIA procedure to be applied in those cases shall be developed between Egypt and Sudan. These procedures may include:

- Procedures for information exchange regarding development project likely to have transboundary impacts;
- Procedures for procurement EIA studies by independent and impartial experts
- Procedures for joint review of EIA studies

The preventive action

Timely action shall be taken to alert the responsible and relevant authorities of likely impacts and to address the actual or potential causes of adverse impacts on the environment before they occur. Many adverse impacts are irreversible or, if they can be reversed, the cost of remedial action is higher than the costs associated with prevention.

Environmental and health considerations

All relevant policies and sectoral plans and programmes, including, *inter alia*, urban planning, industrial development, fisheries, aquaculture and tourism shall take into consideration environmental and health considerations.

Clean technology and clean energy

Clean technology should be promoted when replacing or phasing-out high waste and waste generating activities. Clean and renewable energy sources should be promoted.

Integrated approach

Development and environmental planning and processes should be integrated to the maximum extent. The use of economic instruments that foster sustainable development shall be promoted through, *inter alia*, the implementation of economic incentives for introducing environmentally friendly technologies, activities and practices; the phasing-out of subsidies which encourage the continuation of non-environmentally sound technologies, activities and practices; and the introduction of user fees.

Accessibility of information

Information on the pollution of the environment in the Lake as well as on the best practices and lessons from the countries shall be provided with the maximum possible amount.

Public participation and transparency

All stakeholders, including communities, individuals and concerned organizations shall be given the opportunity to participate, at the appropriate level, in decision-making and management processes that affect the Lake Basin. Public authorities shall widely disseminate information on the work proposed within the Lake Basin.

4 Project activities and expected results

4.1 Component 1: Regional coordination

4.1.1 Objective

The main objective of this key component is to define and build a mechanism for enhancing regional cooperation, and to ensure the exchange of regional experiences and information.

4.1.2 Narrative

A broadened and intensified regional coordination is required to facilitate dialogue and direct integrated development planning and management. It is crucial to define a management structure and mechanisms for enhancing regional cooperation, and to ensure the exchange of regional experiences and information.

A step wise process is proposed. To this end, it is proposed that a **LNN Coordination Unit** should be established in one of the two countries according to their agreement to develop and manage the LNN knowledge base and manage the implementation of LNNMF project. This management unit could as progress is reached change its status to a lake management **committee** or **commission**.

The mandate of this unit should be shared between the two countries. This unit should enhance regional cooperation through disseminating information and coordinate the participatory formulation of network activities and capacity building. It is envisaged that the unit would establish a knowledge base related to different aspects (e.g. social, environmental, technical, and institutional). The unit would also facilitate the dialogue between the countries to reach consensus for the sustainable management of the natural resources and biodiversity of the Lake Nasser/Nubia for the benefit of present and future generations, and recognize their role and responsibility in conserving the global value of the natural resources management.

As regards the development, management and dissemination of the LNN knowledge base, the main objective of this responsibility would be to maximize the benefit from existing data through effective knowledge sharing processes. The desired outcome is significantly enhanced knowledge flow from cross cutting institutions at national and regional levels. This knowledge base would be the key tool to alleviate poverty and enhance development intervention and environmental security through management improvements. The Unit would undertake poverty, environmental, institutional and technical analysis and be responsible for data management and dissemination

to the public and key stakeholders such as local authorities responsible for development planning within the basin area.

Project results will be data base to facilitate access to high quality data, knowledge-exchange that ensure input from and access for all key stakeholders, accessible information on high potential interventions and their impacts, and accepted strategies for promoting knowledge to application.

An inter-sectoral steering committee and a stakeholder forum would be linked to and guide the work of the management unit.

The outputs and activities under this component are summarized briefly in the following sections.

4.1.3 Output 1a: Establishment of Lake Nasser/Nubia Coordination Unit (LNNCU)

4.1.3.1 Activities

Activity 1a.1: Set rules of operation and guidelines incl. set protocol for data format and exchange, establish manuals for development and interventions, assess needs for capacity building, organize forums, workshops, seminars and establish a platform, websites and network activities.

Activity 1a.2 Establish and furniture office and contract the required staff; and prepare and install required equipment (computers, communication, dedicated internet, transportation, etc).

4.1.4 Output 1b: Development and application of LNN base knowledge

4.1.4.1 Activities

Activity 1b.1: Poverty analysis and development of recommendations

The main objective is to gain insight into the status of poverty within the two countries, its causes and main opportunities for poverty alleviation. Review of tools and methods for poverty assessment, vulnerability, alleviation opportunities and challenges. Prepare indicators.

Activity 1b.2: Technical monitoring and analysis and development of recommendations

To improve the understanding of basic technical aspects (sedimentation, water quality and sand encroachment) through

measurements, modelling, and data bases. The main result of this activity is to define a regional Monitoring System to assess sedimentation and windblown sand problems, and project impacts.

The main outputs would be:

1. Monitoring of sediment deposition and morphological parameters
2. Monitoring of water quality.
3. Monitoring of sand encroachment.
4. Selection of suitable model.
5. Design of simple database.

The activities under each output are further described in Annex 2: Monitoring Systems Implementation Project.

Activity 1b.3: Environmental analysis and development of recommendations

Undertake environmental analysis of environmental degradation and causes. Prepare environmental sensitivity maps. Identify environmental quality objective and indicators of the Lake Nasser/Nubia and lake integrity and establish lake environmental management priorities to guide integrated effort between the two countries. Define intervention requirements.

Activity 1b.4: Institutional analysis and development of recommendations

The main objectives is to improve insight on the institutional context, constrains, challenges, and opportunities for lake management. The expected output include the documentation of and gaps and needs, analysis of policy objectives, policy instruments, policy actions, legal frameworks, institutional arrangements and governance processes where these affect lake Nasser/Nubia management and poverty alleviation, social and environmental security. Requirements to improve the institutional context would be defined.

Legal and Institutional review of and harmonization of relevant national policies, legislation and regulatory framework and enhance and develop legal basis and policy framework to sustainably manage the basin.

Concrete national policy/legal/institutional gaps would be identified and processes established for correcting these gaps

Activity 1b.5: Capacity building needs assessment and development and implementation and /or purchase of training programmes and awareness campaigns

Activity 1b.6: Intervention Analysis

The main objective is to define significant high potential interventions for poverty alleviation based on the knowledge developed through the undertaking of the activities 2.1-2.5 and to harmonize response strategies and priority actions for the lake basin management (environmental protection and sustainable development) of stakeholder groups across sectors, countries and levels of governance. Formulate Strategic Action Plans (SAPs)

4.2 Component 2: Intervention Priority and Action Plan

4.2.1 Objective

To prioritise and initiate national and regional measures and interventions as a response to the prioritized key concerns and to lay foundations for economic prosperity, poverty alleviation and social and political stability without compromising the sustainability of Lake Nasser/ Nubia environment and its aquatic ecosystem.

4.2.2 Narrative

To go from awareness and capacity building to an intervention that uses the information and capacity developed to promote environmentally and socially sustainable economic development, there is a need for demonstrating results on the ground through priority interventions.

Component 2 is composed of a menu of potential interventions which will be prioritised during project implementation based on the outcome of activity 1.b.6: Intervention analysis.

4.2.3 Output 2.1: Livelihood Improvements

4.2.3.1 Objective

General objective is to demonstrate immediate local benefits of enhanced community livelihood planning and development at existing problem areas and align development on the ground with LNNMF priorities and guidelines. The immediate output is the realisation of a number of demonstration projects on the ground of enhanced community livelihood planning and development.

4.2.3.2 Activities

Activity 2a.1: Community mobilization and involvement through creating and/or revitalize the cooperative societies in the management of the proposed activities.

Activity 2a.2: Demarcation and distribution of agricultural and residential lands to members of the cooperative societies in the high terrace area.

Activity 2a.3: Technical packages provided to the Cooperative Societies, and enriched by the information exchange between the countries on experience in the irrigation of desert land and conversion of desert into agricultural production.

Activity 2a.4: Technology transfer i.e. Use new technologies and ideas that will raise crops yields and increase farmers' income, and use high technology irrigation systems to increase water use efficiency and enhance agricultural services (land preparation, improved seeds). Introduce new cash crops in the area

Activity 2a.5: Integrate livestock as part of agricultural system and enhance livestock (veterinary) and rangeland services.

Activity 2a.6: Improve foreshore agriculture in Sudan to be more sustainable and environmentally sound and if necessary determine alternatives

Activity 2a.7: Establishment of fish farms and provision of training and build capacity for enhanced fish catch, processing and marketing.

Activity 2a.8: Encourage establishment of fruits gardens, including dates. Maintain Wadi Halfa Locality-specific dry date varieties from extinction.

Activity 2a.9: Establish shelterbelts around agricultural and residential lands to combat sand encroachment of the Lake and improve environment.

Activity 2a.10: Promote and support usage alternative energy sources

Activity 2a.11: Improve water supply and sanitary infrastructure

Activity 2a.12: Promote non-farm income generating activities for women in particular such as fish processing, marketing of non-wood products of forests and tourism

Activity 2a.13: Establish micro-finance mechanisms

Activity 2a.14: Exchange visits between local stakeholders to share experience in different methods of settlement, agriculture and fishing

Activity 2a.15: Involve NGOs in process facilitation and ensure cooperation between NGOs from the two countries.

4.2.4 Output 2b: Lake Pollution Control Procedures

4.2.4.1 Objective

Reduction of the point and non-point pollution to the lake in order to ensure sustained Lake Nasser/Nubia aquatic ecosystem quality. Recommendations formulated for improved regulation and enforcement of point source pollution and priority measures identified.

4.2.4.2 Activities

Activity 2b.1: Review existing regulation and enforcement modalities on point source pollution from industrial, mining activities and lake transport (including Nile cruises) and other point sources.

Activity 2b.2: Make recommendations for improved regulation and enforcement

Activity 2b.3: Based on pollution monitoring results, identify priority measures in solid waste management, waste water treatment and sanitary solutions

4.2.5 Output 2c: Desert Ecosystem and Wildlife Protection

4.2.5.1 Objective

To protect unique desert ecosystems and wildlife of national and global value. Management plans developed for selected species and habitats in order to protect unique desert ecosystems and wildlife of national and global value.

4.2.5.2 Activities

Activity 2c.1: Define endangered ecosystems and species and develop management plans for these (fauna e.g. Nile crocodile and Dorcas Gazelle and flora).

Activity 2c.2: Develop management plans for protected areas and areas of unique desert ecosystems in order to avoid unplanned development occurs and endangering of specific habitats

Activity 2c.3: Develop modalities to engage communities in protection and joint and sustainable management of endangered habitats and species.

Activity 2c.4: Develop the knowledge of Desert Advising (living with the desert)

4.3 Component 3: Evaluation of LNNMF Performance

4.3.1 Objective:

This component aims at evaluating effectiveness toward reaching the LNNMF objective and planned targets.

4.3.2 Narrative

Evaluation is assessment of the relevance, performance, efficiency, efficiency, impact and sustainability of a project or any intervention.

The purpose of evaluating the LNNMF performance is to assess lake basin activities undertaken under the LNNMF and to inform the process in order to achieve agreed objective.

Purpose:

- Visualise impacts (positive and negative) of upstream and lake basin activities
- Improve decision quality
- Facilitate decision process
- Harmonise decision-making
- Improve stakeholder involvement
- Improve communication

4.3.3 Output 3.a: Performance monitoring and evaluation procedures established

4.3.3.1 Activities

Activity 3a.1: Definition of baseline indicators and targets for each thematic issue.

Use data from the studies for the four thematic areas to create poverty, technical, environmental and institutional base-lines

Activity 3a.2: Definition of monitoring and evaluation methods, sampling points and frequencies

Activity 3a.3: Information and data management

Activity 3a.4: Reporting and dissemination methods and frequencies

Activity 3a.5: Evaluation and up-dating of action plans and procedures

The monitoring activities could be grouped according to user needs i.e.:

- Impact monitoring – poverty and vulnerability reduction and improvement of local environment/ecosystem.
- Process monitoring – monitor compliance with agreed project modalities e.g. enforcement of national and regional policies and regulation, participatory approach and gender mainstreaming.
- Progress monitoring- monitor progress of achievements of set targets against work plan and budget

Preliminary impact and process indicators for each thematic areas are presented in the Lake Nasser/Nubia TDA. Details on the LNNMF project progress monitoring and evaluation is provided in section 10.

5 Workplan

Workplan for the LNNMF project is presented in Annex 3.

6 Assumptions and Risks

- Long term commitment: Sustainability is the most important factor in such project; especially concerning planning and finance.
- The political considerations and their effect on such project.
- Effect of climatic changes on the implementation of the project.
- Understanding the importance of information exchange.

On transboundary level, the main assumptions are:

1. Both Egypt and Sudan agree and willing to operate in the management of Lake Nasser/Nubia project for the development of their nations.
2. They have the same perception of the environmental problems.
3. There is strong need for cooperation to overcome the climatic changes especially in Lake Nasser/Nubia area and in general in both countries.
4. They have a number of previously successful agreements for integration in various aspects such as mineral resources, transportation, etc.

On the national level:

1. Such project supports the development of human and economic resources (labour, health, etc).
2. Each country needs to build an integrated system for cooperation between the various authorities and particularly with respect to information exchange.
3. Each country needs modern equipment and technology to monitor the environmental changes (metrological stations, sand dunes movement stations, etc).
4. Building of mathematical modelling systems for forecasting became a necessity and both Egypt and Sudan should adapt and is one of the most important criteria that help in completing such a project.

7 LNNMF Project Costs

Detailed project costs and financing sources as well as schedules for procurement and disbursement actions are provided in Annex 5. Methodology for the financial analysis and results are briefly explained below.

7.1 Project Costs

Summary of Project Costs: The project costs are estimated at US\$ 17.07 million, including physical and price contingencies. Baseline costs without contingencies are estimated at about US\$ 13.79 million, while physical contingencies at 10% reach US\$ 1.46 million, and price contingencies yields about US\$ 1.82 million in total price contingency.

In terms of components, Component 1: Regional Coordination and Capacity Building has an estimated allocation of US\$ 7.47 million corresponding to 54% of total baseline costs. Component 2: Initiate National and Regional Priority Interventions have US\$ 6.27 million in allocation corresponding to 45% of the baseline costs. Component 3 deals with the Regional LNNM Monitoring Programme. It has total allocation of US\$ 60 000 corresponding to 1% of the baseline. Contingencies have a share of 24% of the baseline, hence adding up to US\$ 17.07 million.

Egypt-Sudan Lake Nasser/Nubia Management Framework Components Project Cost Summary			
	Total	% Foreign Exchange	% Total Base Costs
Component 1: Regional Coordination			
Output 1a: Establishment of Lake Nasser/Nubia Management Unit (LNNMU)	4 610 000	48	33
Output 1b: Development and Application of LNN Base Knowledge	2 856 850	62	21
Subtotal Component 1: Regional Coordination	7 466 850	53	54
Component 2: Intervention Priority and Action Plan			
Output 2a: Livelihood Improvements	6 000 000	11	44
Output 2b: Lake Pollution Control Procedures	124 000	16	1
Output 2c: Desert Ecosystem and Wildlife Protection	142 000	14	1
Subtotal Component 2: Intervention Priority and Action Plan	6 266 000	11	45
Component 3: Evaluation of LNNMF Performance	60 000	50	-
Total BASELINE COSTS	13 792 850	34	100
Physical Contingencies	1 459 285	34	11
Price Contingencies	1 821 745	26	13
Total PROJECT COSTS	17 073 880	33	124

It is useful to look at the project costs in terms of expenditure accounts. This is done below with the enclosed explanation.

Egypt-Sudan Lake Nasser/Nubia Management Framework Expenditure Accounts by Years -- Base Costs (US\$)						
	Base Cost					Total
	08/Jul-Dec	09/Jan-Jun	09/Jul-Dec	10/Jan-Jun	10/Jul-Dec	
I. Investment Costs						
A. Works /a	40 000	180 000	460 000	600 000	320 000	1 600 000
B. Technical Assistance						
1. International Consultants	848 125	698 125	312 500	12 500	12 500	1 883 750
2. National Consultants	594 400	456 400	247 000	187 000	187 000	1 671 800
Subtotal Technical Assistance	1 442 525	1 154 525	559 500	199 500	199 500	3 555 550
C. Training	112 000	88 000	88 000	88 000	88 000	464 000
D. Miscellaneous Equipment and IT						
1. Specialized Monitoring Equipment	449 000	-	-	-	-	449 000
2. Hardware and Software	114 300	15 000	15 000	15 000	-	159 300
3. Office Furniture and Equipment	60 000	-	20 000	-	-	80 000
Subtotal Miscellaneous Equipment and IT	623 300	15 000	35 000	15 000	-	688 300
E. Goods and Materials	30 000	720 000	1 080 000	1 080 000	720 000	3 630 000
F. Grants	-	80 000	120 000	120 000	80 000	400 000
G. Technical Services						
1. LIDAR Survey	450 000	-	-	-	-	450 000
2. Sub-Bottom Sampling	210 000	90 000	-	-	-	300 000
3. Logistics for National Meetings	90 000	90 000	40 000	40 000	40 000	300 000
4. Logistics for International Meetings	250 000	250 000	250 000	250 000	250 000	1 250 000
Subtotal Technical Services	1 000 000	430 000	290 000	290 000	290 000	2 300 000
Total Investment Costs	3 247 825	2 667 525	2 632 500	2 392 500	1 697 500	12 637 850
II. Recurrent Costs						
A. Operating Costs	30 000	30 000	30 000	30 000	30 000	150 000
B. LNN Office Staff	201 000	201 000	201 000	201 000	201 000	1 005 000
Total Recurrent Costs	231 000	231 000	231 000	231 000	231 000	1 155 000
Total BASELINE COSTS	3 478 825	2 898 525	2 863 500	2 623 500	1 928 500	13 792 850
Physical Contingencies	349 883	298 853	309 350	292 350	208 850	1 459 285
Price Contingencies	95 718	243 800	412 669	543 997	525 561	1 821 745
Total PROJECT COSTS	3 924 425	3 441 178	3 585 519	3 459 847	2 662 911	17 073 880
Taxes	296 816	166 758	170 538	187 727	154 939	976 779
Foreign Exchange	2 195 049	1 313 227	978 521	661 036	548 754	5 696 587

a Mainly for wind and riverbank erosion control, and sand dune encroachment.

Goods & Material has the highest financing share of US\$ 3.63 million (26%). The next highest item is Technical Assistance with US\$ 3.56 million in funding, most of which is TA for the Monitoring system and extension service to the farmers. Collectively, TA and training have an allocation of some US\$ 4.02 million (29%). The O&M and other recurrent costs are in the order of US\$ 1.16 million (8%). The lowest allocations are for miscellaneous equipment and IT, 5% corresponding to US\$ 688 300. The use of contingency funds lends flexibility to project implementation at later stages, and they could be allocated in favour of any expenditure account where needed.

7.2 Schedule of procurement and disbursement actions

Procurement Arrangements and Distribution over the Years:

Procurement arrangements would be considered under seven major procurement accounts (A-G) as shown above. The recommended procurement methods consist of: ICB, NCB, LCB, Consultant Qualifications, Limited Tender and other methods. Procurement packaging can only be done during project implementation, because such an effort would need for procurement thresholds to be defined as well as the exact needs of the communities and other beneficiaries, which are demand driven and cannot be predicted at this point in time. Community participation in procurement (a new procurement method) is an avenue which should also be considered and explored.

8 Implementation Arrangements

8.1 Overview

The LNNMF Project involves two countries and three administrative levels in each country: in Sudan- federal, state and locality levels; in Egypt- national, regional and governorate levels. All those levels have a stake in the LNNMF Project as supporting institutions. Beneficiaries are communities within the lake basin and lake basin ecosystems.

The structure for project management, governance and implementation arrangements assumes a Joint Lake Nasser/Nubia Coordination Unit (LNNCU) and two Local Implementation Units (LIUs) and steering arrangements as described below.

1. Joint Lake Nasser/Nubia Coordination Unit (LNNCU) to coordinate LNNMF activities, develop LNNM guidelines and build improved data and access, sharing and partnership among relevant agencies within and between countries;
2. Lake Implementation Units (LIU) to implement basin level Priority Actions;
3. Project Steering Committee (PSC) to be drawn from ENSAP-TAC;
4. National Focal Point Institutions (Implementing Agencies) (i.e. MOWRI, Egypt and MOIWR, Sudan) and National Stakeholder Forums (NSF) appointed by PSC and National Focal Point Institution (NFPI) to provide close linkage, continuous interaction and effective coordination among the National Agencies and the Region/ State Governments and the Governorates/Locality involved in the implementation of the project;
5. A Project Coordination Agency i.e. ENTRO to function as and administrative and steering support to the PSC.

These focal point implementing units and their responsibilities are further described in the following sections.

The figure below illustrates the institutional arrangement for implementing the LNNMF project.

SWECO

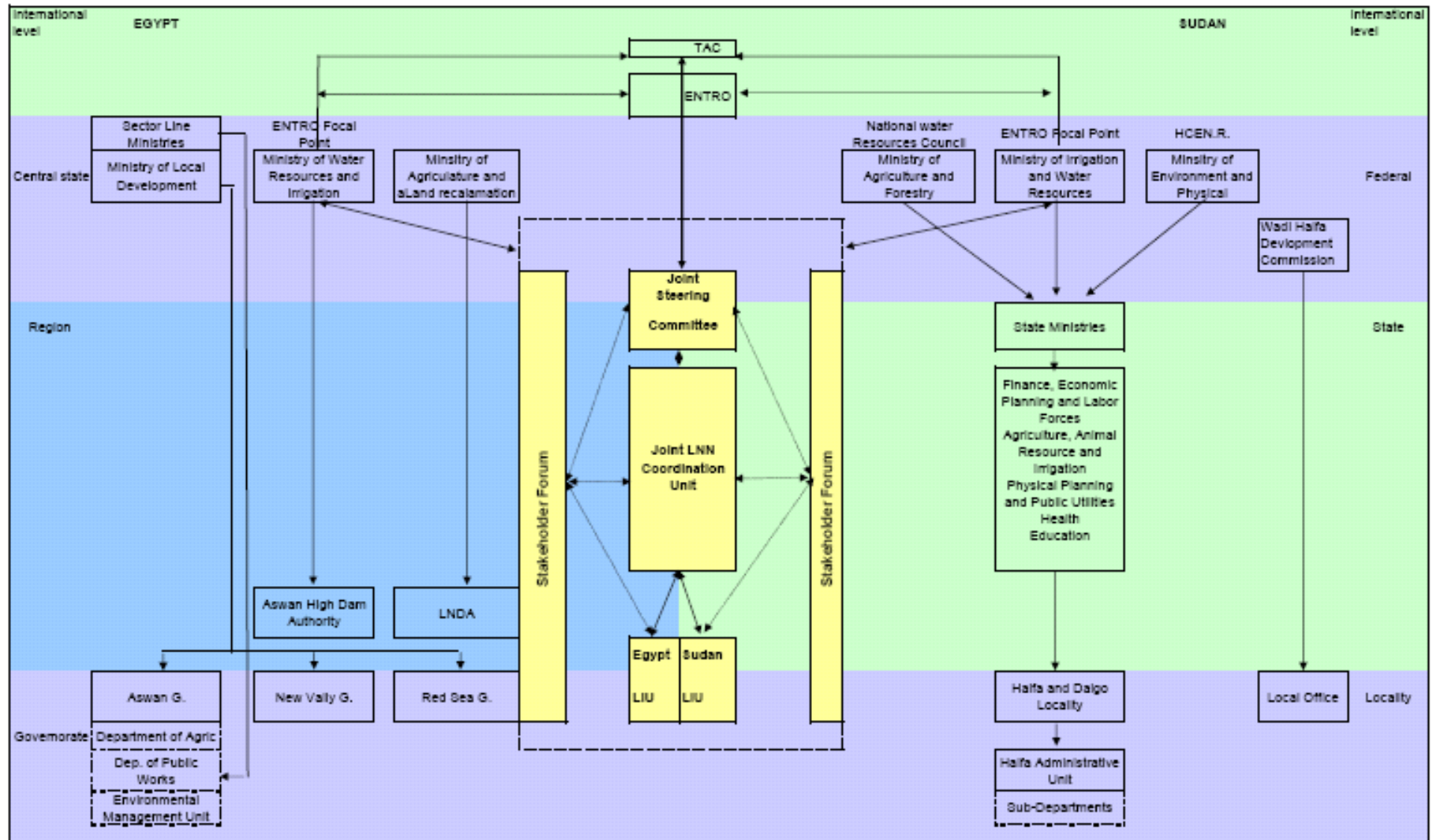


Figure 1: Proposed LNNMF Implementation Structure



8.2 Project Management

8.2.1 Joint Lake Nasser/Nubia Coordination Unit

The mandate and objective the proposed **Joint LNN coordination Unit** would be:

- Increase communication, consensus and coordination among local state and federal institutions and other stakeholders groups to strength information and data collection and exchange, share expertise and tools and implement cooperative solution to lake management problems
- Identify environmental quality objective and indicators of the Lake Nasser/Nubia and lake integrity and establish lake environmental management priorities to guide integrated effort between the two countries
- Provide stronger partnership among federal, state, local government ,and organization to more effectively address lakes problems
- Coordinate existing public communication, educational and environmental awareness forums and develop new venues for participation of the public and local cooperative in lake management in order to promote a strong resource conservation ethic and better understanding of Lake Ecosystem.
- Inform and recommend best practices to national level
- Coordinate joint and priority projects

The LNNCU would be responsible for channeling the project funds and delegate project execution as an independent unit with administrative and financial autonomy. The LNNCU would be hired by the two focal point institutions. The staff would be composed of seconded government staff, selected on competitive basis. Each country would appoint three staff positions.

The LNNCU would comprise of six staff positions:

1. LNNCU Director /Coordinator
2. LNNCU Deputy Director and M&E Officer
3. Transboundary Lake Management Advisor
4. Financial Controller
5. Social and Stakeholder Communication Facilitator
6. Database Management Specialist.

Additional assistance would be availed from backstopping from subject matter specialists

8.2.2 Local Implementation Units

The two LIUs at basin level would coordinate the interventions related to the identified Priority Actions to be implemented in one Governorate in Egypt and one Locality in Sudan as separate but interlinked sub-projects, each one with its own specific implementation arrangement and time line etc.

In Egypt the LIU is proposed to be located within the Aswan Governorate.

In Sudan the LIU is proposed to be located within the Wadi Halfa Locality.

The LIUs would be composed of project staff positions divided in two categories of staff, explicitly externally recruited staff and seconded governmental staff. The seconded staff would also be recruited on competitive basis.

The staff to be externally recruited includes one LIU Manager/ Rural Development Specialist and one Social Facilitator/M&E Officer to be located at the two LIUs.

Governmental staff to be seconded to the LIU include; financial manager, procurement officer, agricultural, forestry, livestock and rangeland staff. The seconded staff would be allocated on 50-100% basis, making a total of four seconded full time positions

The LIU Manger would report to the LNNMF Project Director.

Additional assistance would be availed from backstopping by subject matter specialists at locality and state levels as well as from educational and research institutions. In this manner the LIUs would supplement the governorate/ locality capacity.

The mandate of the LIU consists of: i) managing funds from the LNNCU; ii) facilitating the execution of the project interventions through the provision of necessary investments, capacity building and resource development; iii) strengthening and assist stakeholders' organizations for the improved utilization of natural resources for livelihood activities; iv) facilitating the process for the development and institutionalization of improved governance framework (i.e. local guidelines, procedures and bi-laws); v) ensuring replication through mobilization of additional resources; and vi) monitoring of project activities, results and impacts and reporting on implementation, and accounting for resources to the PSC as defined below.

Training of LIU staff would be provided by LNNCU staff.

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8.3 Project Steering and Supervision

8.3.1 Project Steering Committee

The LNNMF Project Steering Committee is proposed to be high-level and composed of the permanent members selected from ENSAP Team.

The Project Steering Committee would:

- Oversee implementation;
- Ensure support for the project from all stakeholders and relevant constituencies;
- Approve the project's annual work plans, including operations and budgets;
- Approve amendments to the project's OM in consultation with donors' representative;
- Act as the main liaison between the project and all national and foreign entities;
- Act as the official governments' counterpart to the donors' representative on all matters related to the project: policy and implementation;
- Review progress reports prepared by the LNNCU and supervise the preparation of the mid-term review report and the implementation completion report;
- Approve all reports submitted by the LNNCU to the Donors' representatives; and
- Monitor closely the Project's progress without interfering in the daily operation of the LNNCU.

8.3.2 National Focal Points Institutions and National Coordinators

The national coordinators would be appointed by the National Focal Point Institutions i.e. Ministry of Irrigation and Water Resources in Egypt and Ministry of Irrigation and Water Resources in Sudan. The national coordinators would be responsible to coordinate the National Stakeholder Forums and ensure follow up of Project Steering Committee comments.

8.3.3 National Stakeholder Forums

In order to ensure proper consultations on strategic level, national stakeholder forums (NSFs) would be established and would be gathered to discuss findings and guidelines prepared by the LMU and specific priority actions to be implemented by LIUs.

The NSFs would be represented by stakeholders from federal, regional/state, Governorate/Locality and beneficiary levels.

8.3.4 The Coordinating Agency

A coordination unit ENTRO has been established for ENSAP including the FTWPs in Egypt, Ethiopia and Sudan. ENTRO is a sub-regional organ that is linked to the Nile Basin Initiative (NBI) and its organization. At country level ENSAP has the National Focal Points (NFP), National Coordinators and Working Groups for the individual investment projects, and National Social Development Coordinators (NSDCs).

ENTRO, as a sub-regional organization, has a distinct role and profile in working for the sustainable integrated development of the Eastern Nile under the umbrella of the NBI. It serves ENCOM and ENSAP-TAC in their pursuit to ensure cooperation and joint action in the Eastern Nile and has been instrumental during the preparation of the Fast Track Watershed Management projects in Egypt, Ethiopia and Sudan.

The LNNMF Project may be supported from several sources, it is thus proposed an organisation is appointed as the Coordinating Agency representing the Borrower/s. ENTRO would act as the coordinating agency for the LNNMF Project. In its capacity as the Coordinating Agency, it would undertake the following:

- Management of Contractual matters
- Assessment of the adherence of the Borrower and project management to the fiduciary requirements;
- Provision of implementation support, based on assessment of progress against agreed indicators (project logframe and AWPB);
- Identification of problems and reaching agreement on suitable actions with the Government for improved results on the ground;
- Assessment of project poverty targeting and mainstreaming of gender issues with special attention to poor women.

It would also undertake project evaluation missions jointly with the two Governments and the Donors. These missions would focus on the following aspects of project implementation:

- Progress in implementation according to the physical and result targets;
- Cost efficiency of project service delivery to the communities;
- Sustainability of project activities by assessing effectiveness of cost recovery mechanisms in place, and alignment of locality revenue and expenditures Exit strategy of project activities from communities.
- Review relevance of Project Objectives and performance and impact indicators
- Sharing and discussion of findings.

8.4 LNNMF Supporting Institutions

8.4.1 Supporting institutions for Component 1

8.4.1.1 Egypt

Ministry of Finance - as the designated representative of the Government of Sudan for the purposes of external loans and provides counterpart funding to externally funded projects.

Ministry of Water Resources and Irrigation (MWRI) – in its capacity as responsible for international water affairs. MWRI is also the National Focal Point Institute for ENSAP Watershed Programme under the umbrella of ENTRO.

Lake Nasser Development Authority (Ministry of Agriculture and Land Reclamation) – as the responsible body for the environmentally sustainable development and management of the lake area with the exception of the Toshka depression. It is an organisation under the

Ministry of Environment and Higher council for environment and natural resources. – in its capacity as the controlling body for environmental aspects

Ministry of Housing and New Community in its capacity as the controlling body for develop new communities' aspects

Supporting Institutions for the development of knowledge base:

- Aswan High Dam Authority has a record of 30 years of monitoring within an area of 350 km in Egypt and 150 km in Sudan.
- Nile Research Institute
- Desert Research Center
- Agriculture Research Center
- Southern Valley University
- Hydraulics Research Institute
- Environmental and Climate Change Research Institute
- Egyptian Survey Authority ESA
- National Authority for Remote Sensing
- Ain Shams University
- General Authority of planning

8.4.1.2 Sudan

Ministry of Finance and National Economy- as the designated representative of the Government of Egypt for the purposes of external loans and provides counterpart funding to externally funded projects

Ministry of Irrigation and Water Resources- as the designated body governing the water sector in Sudan. MOIWR is also the National Focal Point Institute for ENSAP Watershed Programme under the umbrella of ENTRO.

Ministry of environment and physical planning– in its capacity as the controlling body for environmental aspects

Supporting Institutions for the development of knowledge base:

- Faculty of Earth Sciences, Dongola University, Wadi Halfa Branch
- Agricultural Research Institute
- Hydraulic Research Institute
- Energy Research Institute

8.4.1.3 Others

The Permanent Joint Technical Commission (PJTC) would be an important stakeholder for Component 1/ Activity 1b.2: Technical analysis and development of recommendations. PJTC could act as a consultation and advisory entity in this context.

8.4.2 Focal point institutions for Component 2

8.4.2.1 Egypt

Lake Nasser Development Authority (LNDA) – in its capacity to enforce environmental regulations in the Lake basin.

Aswan Governorate – in its capacity as responsible for regional planning and development. Aswan Governorate reports to Ministry of Local Development. However, technical departments report to different Ministries e.g Ministry of Water and Ministry of Agriculture.

Egyptian Survey Authority **ESA** (in mapping and GIS)

National Authority for Remote Sensing (responsible for the RS data from the Egyptian Satellite)

General Authority of Planning in its capacity as responsible for regional planning and development of the new community.

NGOs

8.4.2.2 Sudan

Wadi Halfa Locality– in its capacity as responsible for regional planning and development. Wadi Halfa Reports to the Government of Northern State and to some federal Ministries e.g. Forestry.

Nubia Lake Development Commission – in its capacity as responsible for resettlement planning and development

NGOs

8.4.3 Beneficiary Organizations

- i. Farmers
- ii. Fisheries
- iii. Semi-nomadic and nomadic pastoralists
- iv. Women
- v. Civil Society organizations
- vi. Southern Valley Development Project in Aswan Governorate
- vii. Local Cooperative Societies in Wadi Halfa

The CBOs or interest groups would constitute the link between the project and the communities and would be legal entities which have been formed following democratic and gender and equity principles.

8.5 Regional Coordination with Parallel Interventions

8.5.1 Parallel interventions at regional level

The LNNMF project would be undertaken in parallel with national and regional efforts working towards the same overriding goals. Several projects under the NBI and ENSAP umbrella are therefore relevant for information exchange and coordination and in particular those listed below.

Project Name and Primary Objective of the NBI/ SVP Projects:

- 1. Nile Transboundary Environmental Action Programme (and NTEAP micro-grant project.)
- 2. Efficient Water Use for Agricultural Production
- 3. Water Resources Planning and Management (incl. DSS)
- 4. Confidence Building and Stakeholder Involvement.
- 5. Applied Training
- 6. Socioeconomic Development and Benefit Sharing

The SVP all have implications for the future management principles of Lake Nasser/Nubia. The LNNCU would be requested to keep abreast with the regional developments and latest state-of-art management tools and principles. For instance, the LNNCU would advise and develop MIS and DSS tools and to this end the LNNCU would be requested to assess the various DST's and especially the Nile DSS under development under the above mentioned "SVP-Water Resources Planning and Management".

Project Name and Primary Objective of the ENSAP/IDEN Projects:

- 1. Baro-Akobo Multi- Purpose Water Resources Sub-Project
- 2. Irrigation and Drainage Project
- 3. Flood Preparedness and Early Warning in the Eastern Nile
- 4. Eastern Nile Watershed Management Project

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The most important project for coordination purpose out of the above listed Eastern Nile Watershed Management Project under which two parallel programmes are undertaken, explicitly i) the Cooperative Regional Assessment (CRA) for Watershed Management; and ii) the Watershed Management Fast Track Projects (FTP).

ENTRO's role would be to ensure information exchange between this project and the parallel initiatives. It would also be able to coordinate this project with parallel initiatives under the NBI umbrella in order to promote synergy. For instance to facilitate that focal point institutions benefit from training under the Shared Vision Programme.

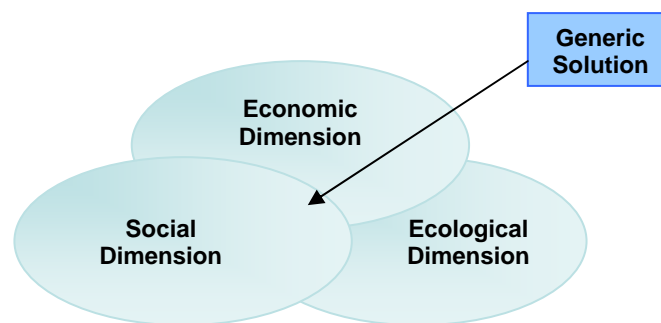
ENTRO would also play an important role in the follow up of the programmatic aspects of the project and documentation of the lessons learned and knowledge generated. ENTRO would pay regular visits to the Project with the following scope of work:

- Facilitating self-evaluation by project management on their experiences in the implementation of integrated and participatory livelihood improvements;
- Documentation of lessons learned from project implementation;
- Dissemination of lessons learned both of a strategic nature and an operational nature through the sharing of mission reports and through the thematic discussions held during the annual country programme implementation review workshops.
- Sharing and discussion of the findings of the mission with the Coordination Agency and the National Steering Committee as well as other ENSAP projects.

9 Project Implementation Approach

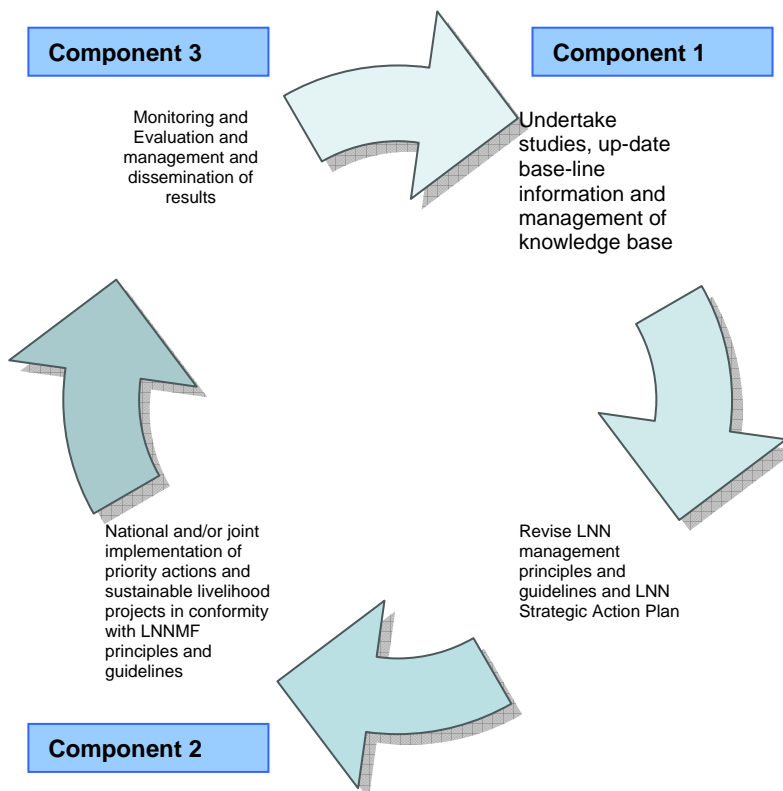
The purpose of a Joint LNNMF would mainly be to guide future development within the area of influence in order to ensure sustainable socioeconomic development without endangering the lake basin ecosystems.

The cooperation would commence by the joint undertaking of studies and development of a LNN knowledge base. In particular, socio-economic and environmental base-line data would need to be updated and consolidated. Generic solutions would thereafter be developed through an extensive consultation and consensus building processes to be coordinated by the LNNCU.



The recommendation would be translated by the LNNCU into an LNN Strategic Action Plan to be endorsed by the joint Project Steering Committee and disseminated to the national institutions to guide and ensure sustainable socio-economic development. Selected priority interventions would be initiated under the joint LNNMF and would serve as demonstration interventions to build confidence in the management approach, to build national capacity for up-scaling and to learn for practical experience. The lessons learnt would thereafter feed into the revision process of the LNN Strategic Action Plan as visualized in the below figure. Regular revision of LNN SAP is recommended to take place approximately every 5 years in order to adapt to the new base-line situation e.g. to changes in socio-economic conditions around LNN as a result of the intervention. To visualize impacts and benefits of implementation, interventions would be closely monitored and evaluated.

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The following implementation approaches would be applied to ensure mainstreaming of poverty and gender aspects,

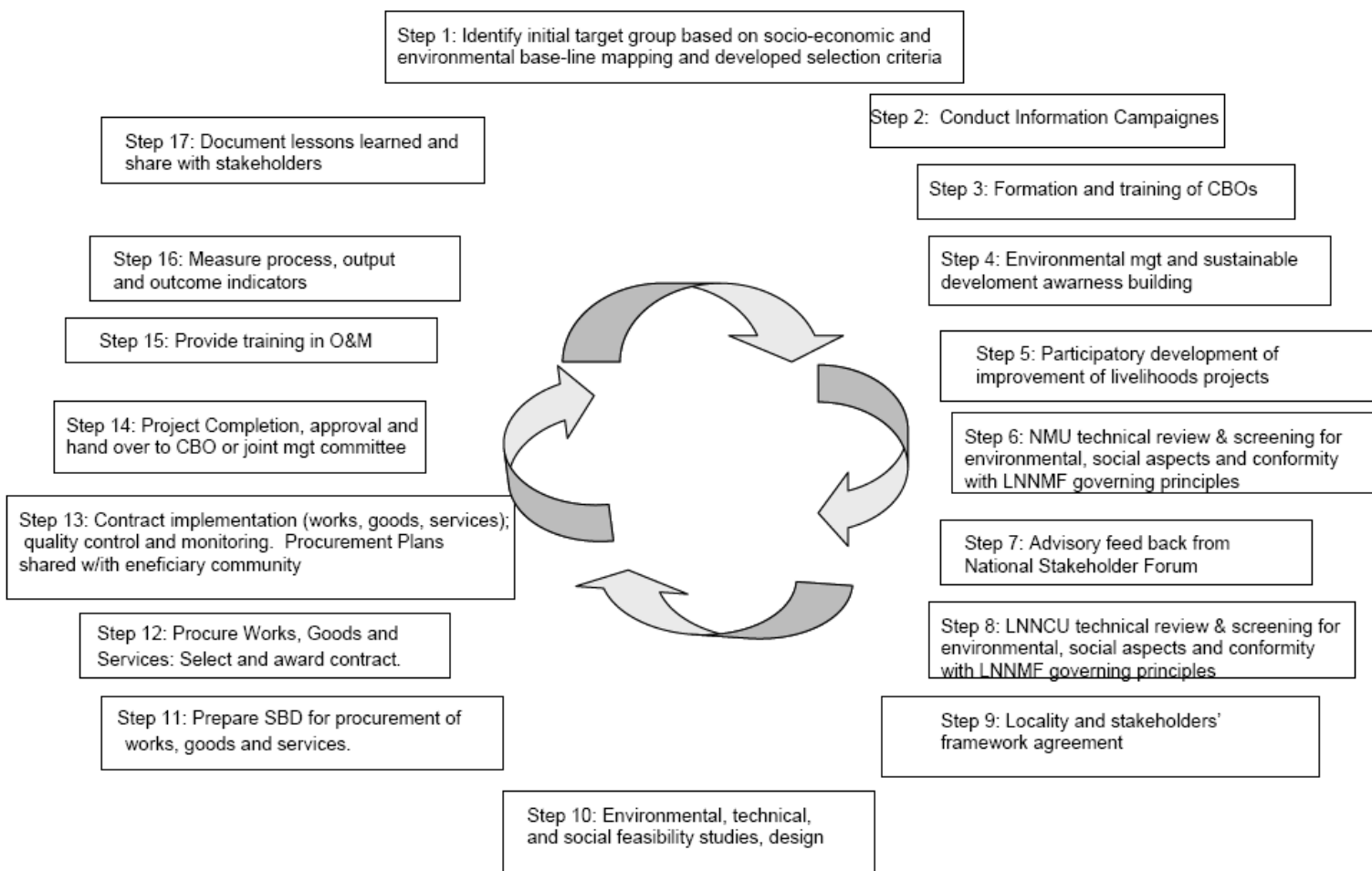
- Introduce awareness building for national authorities of such aspects as in particular of the risks of excluding poverty and gender aspects.
- Provide training in SIA and participatory planning tools and produce leaflets and check-lists to be used by staff in their day-to-day work
- Introduce communication strategies.

Stakeholder consultation and participation would be ensured by the creation of the National Stakeholder Forums to be coordinated by the government appointed National Watershed Coordinators. Develop a stakeholder involvement plan would be developed under activity 1a.5.

Capacity building analysis and development and implementation of training programmes and awareness campaigns to be undertaken under activity 1b.5 would also include design of an awareness program for indigenous groups in the Lake Basin.

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Implementation of Component 2a: Sustainable Livelihood improvements would follow jointly agreed management principles and in particular the integrated and participatory planning principles. Environmental and Social Management Framework would be developed in order to safeguard social and environmental aspects of local development.



10 Monitoring and Evaluation

10.1 Monitoring & Evaluation requirements

Monitoring and Evaluation is part and parcel of the LNNMF and will be undertaken as briefly explained under Project Component 3 and further detailed below.

Monitoring and Evaluation under the Project are complementary but distinct functions, and consist of the following parts.

Monitoring through a management information system (MIS) comprising:

- Annual work plan and budgets (AWPBs), where the establishment of performance benchmarks relies on AWPB targets.
- Six-monthly physical progress reporting, against output targets, by the Lake Nasser/Nubia Coordination Unit (LNNCU), National Implementation Units (NIUs) and other parties, as the case may be, such as NGOs, unions and National Research Organisations.
- Annual financial reporting against expenditure forecasts to the financiers, and regular quarterly financial statements by the LNNCU, LIUs and other parties.
- Recurrent supervision missions fielded by the Coordinating Agency.

Evaluation of the LNNMF Project's impact comprising:

- Lake baseline data and village profiles.
- Annual implementation national and bi-lateral review workshops with active participation of beneficiaries and community representatives in selection, monitoring and evaluation of indicators.
- Annual participatory impact assessments targeting communities and households that have benefited from the Project.
- Mid-term Review.
- Project (Phase 1 of 4 years) Completion Report.

10.2 Organization of Monitoring & Evaluation

M&E responsibility would be based within the LNNCU with the function of coordination, systems and procedures and training, and collation and analysis of physical progress and impact data. The Project M&E unit would consist of a Environmental M&E Officer and a Social M&E Officer within the LNNCU with the prerequisite facilities.

The principal M&E activities would be based at national level, as one of the prime responsibilities of the LIU Managers. They would be responsible for data collection at locality/Governorate and community level with the participation of the Environmental and social M&E Officers. The data collected by all M&E parties would be transferred to the LNNCU.

Financial monitoring and reporting at all management levels would be the responsibility of the Financial Officers.

10.3 M&E budget and work plan

The budget allocation for M&E would be incorporated within the Project's budget.

A specific budget allocation would be made under the Technical Assistance, Training and Studies cost subcomponent for annual beneficiary review workshops and contracted annual participatory impact assessments. As well, a specific budget allocation would be made under the Technical Assistance, Training and Studies cost category to assess the environmental impact of the Project.

As M&E functions have been streamlined within the management function at all levels, the M&E work program would be integrated within the AWPB.

A schedule for M&E activities and reporting is provided in Annex 3: Workplan.

10.4 Monitoring and reporting

The **Management Information System (MIS)** would be design to generate quantitative verifiable information on the Project's performance. The data produced through the MIS would be aimed at

improving decision making and facilitating the work by providing the means of focusing on implementation problems and ensuring effective communication and co-ordination between the implementing agencies and participating parties.

Periodic physical and financial progress reporting would be tied to the AWPB targets. They would involve:

- Comparing actual achievements against those planned, including expenditure; explaining variations between the two.
- Proposed remedial actions where necessary.

The six-monthly physical progress would be recorded in terms of quantitative outputs, activities and inputs. The consolidated progress report would identify the constraints to implementation and corrective actions that have been taken.

Performance indicators of the beneficiaries would be tabulated on a yearly basis and compared with the annual targets set in the Project document and in the AWPB.

The progress reports would also describe the number of beneficiaries, including the type of activities the beneficiaries have participated in, the extent of benefits extended and the estimated impact.

10.5 Evaluation

The evaluation activities would provide analysis of the impact of the Project on the beneficiaries' livelihoods and environmental footprints and effects of the interventions on the economic activities and infrastructures. The information would be disaggregated by gender, socio-cultural group and socio-economic grouping. As well as quantitative data taken from the Project MIS and formal evaluations, qualitative information would also be obtained that would address, through beneficiary participation, the expressed needs of the target groups and issues and problems requiring follow-up.

Participatory monitoring and evaluation is an important element of the Project and would be a valuable mechanism to gauge impacts. It would provide timely progress and impact reporting from the beneficiaries to Project management, thus enhancing bottom-up communication.

- It would be facilitated through mandatory annual work planning and budgeting requirements, annual beneficiary review workshops, and annual participatory impact assessments.

The principal means of measuring Project results and impact on the beneficiaries would be through annual participatory impact assessments workshop. These would be contracted out and would adopt techniques involving the full participation of the beneficiaries. The effects and impact indicators would be derived from the Baseline Survey and Community Profiles. The analyzed information would be maintained in a database incorporated in the MIS (Result and Impact Management System _RIMS). It would be used as the bench mark for modifications in the approach to implementation in the AWPB, and provide the background information for impact assessment for the Mid-term Review and Project -Phase 1- Completion Report.

Preliminary impact indicators have been identified are provided in Annex 4: Monitoring indicators and Reporting. These indicators would be adjusted, as needed, as the Project progresses, from the results of the recurrent annual evaluation and beneficiary impact assessment exercises.

10.6 Mid-Term Review

The purpose of the MTR is to evaluate the achievement of the objectives and the constraints during the first 2 years of Project implementation. It would provide specific recommendations for such reorientation of activities and any reallocation of resources that may be required to achieve the objectives and remove the constraints, guidelines on future strategy and details of the implementation plan for the remainder of the Project. The MTR should address the following:

- The Project objectives as embodied in the Project Document and whether these are still valid, and proposed changes in the specific objectives of components that might require modification.
- Project physical performance and the extent to which progress made to date has contributed to the achievement of the Project objectives.
- Project financial performance, including progress with procurement and disbursement, cost sharing arrangements; whether the Project can be expected to be completed during the

remaining Project period and within the original cost estimates, and need for funds reallocation.

- Proposed changes in the Project and priority activities to be financed during the remaining period of the Project period

The MTR should be based on an evaluation of the performance of the implementing agencies and technical assistance; assessment of all Project documents, work plans and reports; and, field visits, meetings and discussions with beneficiaries, line ministries and LNNCU, LIUs staff and Service Provider staff. Special attention should be paid to whether targets have been or would be achieved and that there would be sustainable benefits in the long-term.

The two Governments, the financier/s and the project manager should participate in the Mid-Term review.

The scope of the MTR should cover:

- Assessment of the effectiveness of the Project in realizing its immediate objectives and the extent to which it has contributed towards the long-term development objectives; the clarity in the definition of the immediate objectives, outputs and the target groups including the balance between the immediate objectives, time and resources as well as among activities and between activities and inputs.
- Assessment of the efficiency in the implementation and coordination and management of the Project, including support given by the Central Government, States and Governorate/Localities Administration, and Coordinating Agency.
- Identification of major factors which have facilitated or impeded the progress of the Project in achieving the intended output, results and impact.
- Examination of the success of the stakeholder involvement.
- Assessment of the impact of interventions on the environment and the socio-economic situation.
- Adequacy and performance of the participatory monitoring system and re-examine monitoring indicators and methodologies to be used in assessing Project impact.

The findings and recommendations of the MTR shall be communicated promptly to the implementing agencies, and discussed jointly between Governments. LNNCU and LIUs should implement the recommendations.

10.7 Phase 1 Project Completion Report

A Project Completion Report (PCR) for Phase 1 would be prepared by the LMU and shall address the overall implementation of the Project and include:

A brief history of the Project from its identification to completion.

Assessments of the:

- Thoroughness and adequacy of Project design in the Project Documents and any modifications made.
- Performance of the focal point institutions.
- Achievements of the Project against the targets set in the Project Document and AWPBs, i.e. physical, financial and social services performance.
- The costs and benefits of the Project.
- Participation of the target group and sustainability of the benefits and operations of community organizations established by the Project.
- Environmental impact and effectiveness of environmental controls measures, and their interaction to social impact.

Recommendations:

- Lessons learned.
- Any follow up actions required for sustainability.
- Further steps to be taken to ensure the sustainable operation of the Project.