The Past and the Future of Flood Management in the Eastern Nile Basin

Presented by :

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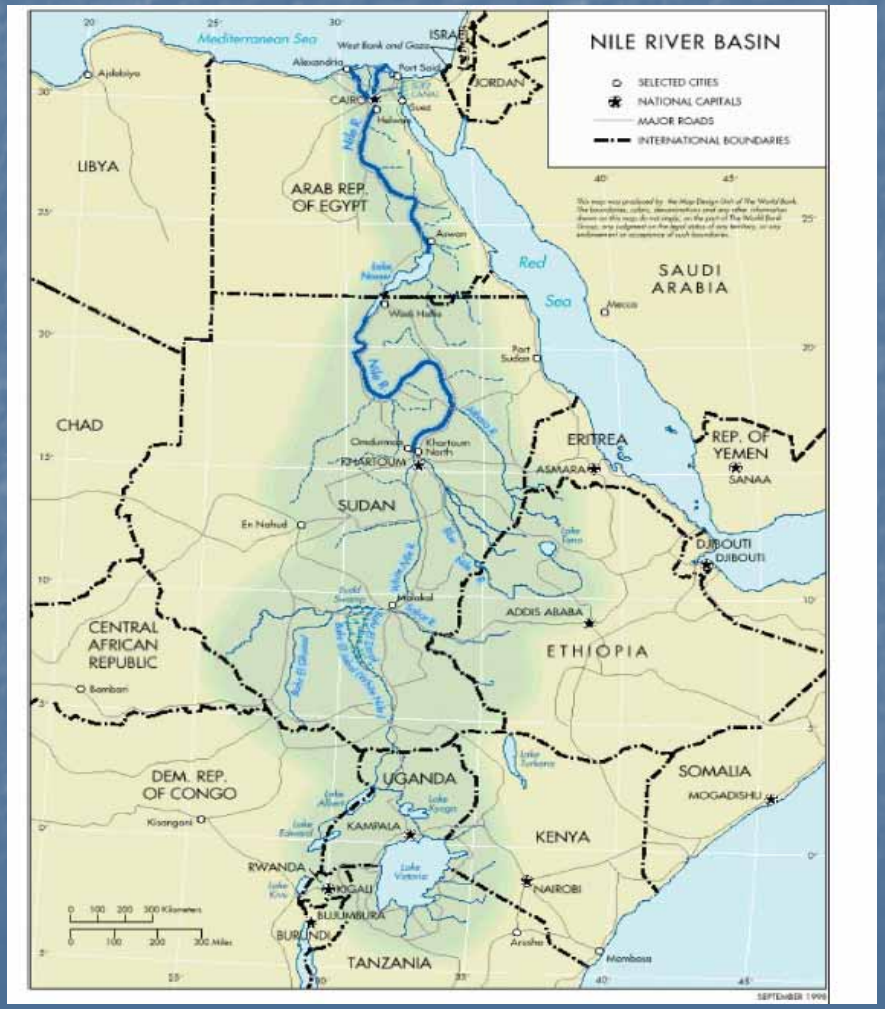
Introduction

Since the dawn of human civilization, water related extreme events as floods and droughts have always been a great concern.

Regional Background

- The countries of the Eastern Nile Region are Egypt, the Sudan and Ethiopia.
- Ethiopia and Sudan experience tropical or sub-tropical climates, with rainfall seasonally biased and most rain falling in the summer months (June to August).
- Parts of the Ethiopian highlands receive average annual rainfall exceeding 2000 mm, while in far northern Sudan and Upper Egypt there is very little rain.



Regional Background

Ethiopia

- **Ethiopia covers a land area of 1.133 million km2, of which just over 358 000 km2 is located in the Eastern Nile river basin.**
- The population of Ethiopia is approximately 70 million and 85% of the national population relies on smallholder subsistence agriculture.
- Sporadic flash flooding has been noted in several areas except Lake Tana, particularly where flat plains adjoin the lake. The lowlands of the Baro-Akobo sub-basin are also partially inundated by floodwaters every year.

Regional Background

Sudan

- Sudan is the largest country in Africa in terms of the area of its territory – approximately 2.5 million km2.
- The population of the Sudan is approximately 38 million, of which approximately 6 million reside in Khartoum
- Hundreds of villages line the banks of the Blue Nile and Main Nile and are adversely affected in years of above average floods.

Regional Background

Egypt

- The land area of Egypt is just under 1 million km2.
- The population of Egypt is currently about 75 million, most of who reside along the narrow strip of the Nile River valley or around the river delta.
- The High Aswan Dam (HAD) was completed on the River Nile in upper Egypt in 1970
- A series of high flood years in 1998 to 2001 proved that flood risk management is still on the agenda for Egypt.

Institutional Context

- Many institutional gaps have been attempted to be filled with the assistance of UN agencies and international NGOs

- Recommendations:

1-Institutional strengthening and capacity building .

2-Ensure data sharing and dissemination between the three countries .

3-Develop institutional linkages among the various public and private sector organizations .

4-Policy research assistance to facilitate future floodplain management planning and infrastructure development.

Social Context

- Lack of current and reliable socio-economic and environmental data .
- Major impacts of flooding :
  - Health problems.
  - Water supply and sanitation.
  - Poor drainage and bank erosion .
  - Agricultural and livestock losses.

Social Context cont.

- Recommendations
  - Early warning systems
  - Reliable communication systems
  - Training and education
  - Health care
  - Public education on water treatment .
  - Institutional strengthening at community level .
  - Small scale structural intervention (roads, raised earth platforms, drains, levees, gabions, etc.).
  - Development of more effective water harvesting/irrigation systems

Availability of Flood Risk Related Data

- **Ethiopia**
  - Sites are virtually restricted to locations where there is road access .
  - No real-time or near real-time reporting.
  - A smaller network of stations equipped and operated to provide real-time data is needed .

Availability of Flood Risk Related Data cont.

- **Sudan**
  - Digital topographic data has recently been acquired along 500 km of the Main Nile in relation to the Merowe Dam project.
  - Khartoum State will be covered within the next two years
  - Identification of flood risk areas is an important deficiency .
  - Digital topographic mapping should be produced for the entire length of the Blue Nile, the White Nile downstream of Jebel Aulia Dam, and the Main Nile to at least 100 km downstream of Dongola.

Availability of Flood Risk Related Data cont.

- **Egypt**
  - Recent digital topographic data has been obtained.
  - The current mapping program has included the acquisition of all digital topographic data and necessary river cross-sections .

Urgent Needs:

- **Preparation of flood risk mapping**
- **Compilation of more accurate flood intelligence.**

Flood Warning, Emergency Response and Post-Flood Relief and Recovery

Ethiopia, Sudan

- Communities respond to floods as they occur .
- Some practices such as moving livestock off the lowest floodplain areas at the start of the flood season .
- No dedicated flood emergency management agency and no formal flood emergency planning .

- **Recommendations :**
  - **flood risk mapping or a Flood Intelligence System**
  - **flood forecasting system.**
  - **Establishment of national arrangements to define roles and responsibilities and encourage civil society to collaborate in the planning process**

Flood Mitigation Planning

Ethiopia

- The government has not undertaken any structural works to modify flood hazard within the areas of the Eastern Nile basin .

- Future dams being investigated for irrigation developments would modify but not eliminate the immediate down-stream flood risk.

Flood Mitigation Planning cont.

Sudan

- Some riparian villages have developed systems of low levees (terraces) .
- Flooding on the Main Nile at Dongola will be affected by implementation of Merowe Dam currently under construction.

Flood Mitigation Planning cont.

- **Recommendations:**
  - Develop and improve watershed management in Ethiopia and the Sudan.
  - River bank erosion in Sudan and Egypt
  - Management of land use and land use practices on floodplain land

Flood Preparedness and Early Warning (FPEW) Project

- A fast-track project identified for priority action under the Eastern Nile Subsidiary Action Program (ENSAP) as part of the Nile Basin Initiative (NBI).

- **Major objective:**
  - **Reduce human suffering and damages from, and capture the benefits of, flooding in the Eastern Nile.**
- **Expected Outcomes:**
  - **Assessment of the flood risk in the Eastern Nile region to support flood management planning and ENSAP investment planning.**
  - **Improved floodplain management for major urban centers vulnerable to flood damage, and for flood-prone rural communities.**

Flood Preparedness and Early Warning (FPEW) Project cont.

- **Expected Outcomes cont. :**
  - Operational flood forecasting systems in Eastern Nile countries with appropriate compatibility and mechanisms for exchange of information and data. .
  - Improved emergency response by governments at all levels, and enhanced community preparedness .
  - Enhanced regional collaboration and cooperation during flood events.

Project Components:

1. **Flood Mitigation Planning Measures to manage the risk of floods while enhancing beneficial effects.**

2. **Flood Forecasting and Warning Development of flood forecasting systems for the Eastern Nile countries .**

3. **Emergency Response and Preparedness Strengthening national capacities and developing trans-boundary aspects of emergency response and preparedness.**

4. **Regional Component Enhance regional cooperation and collaboration through exchange of expertise and information/data, sharing of experience, professional development and institutional capacity building, and technology transfer regionally and inter-nationally .**

5. The estimated total cost of all Project elements is $42.2 M.

Proposed Measures for FPEW Project implementation

- Programs to install secure sealable food storage in houses or communal locations, with construction materials resistant to prolonged inundation of foundations.
- Refuges for women and children elevated above flood levels; and cattle refuges.
- Construction of flood-proof courses at the base of dwellings where houses are damaged by prolonged inundation;
- New construction techniques that support housing above ground and above flood levels.
- A pilot study to try appropriate technology approaches to bank stabilization for rural areas.
- Technical assistance to the relevant government agencies
- A program of field sampling and scientific research using hydraulic and sediment transport modeling for a pilot reach of the Nile in Egypt where bank erosion, scour and/or channel morphology instability are an element of flood risk to existing development.


ThankYou