Nile Basin Initiative
Nile Trans boundary Environmental Action Project

REGIONAL SUMMARY OF KEY MESSAGES

FROM THE NATIONAL REPORTS ON STATUS OF WATER QUALITY DATA MANAGEMENT

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Regional Water Quality Data Management Status

1. Introduction

National Consultancies were launched in all the nine NB countries with the objective of establishing how data was collected, stored and managed, and make recommendations.
Various key government ministries, para-statals, research institutions and private sector organizations have contributed significantly towards water resource management, water quality monitoring and water quality data management in the NBI countries. As well, a number of regional institutions continue to collaborate with local institutions and organizations in trans-boundary water resources conservation and development initiatives that are of major benefit to the region. Programs and projects undertaken by these institutions and organizations have yielded a substantial amount of water quality data and information that is stored in various formats and disseminated primarily in seminars and workshops.

2. Institutional Frameworks

The institutional frameworks for water quality management in the individual Nile Basin countries are similar in most of their aspects. The problems and shortcomings of these institutions are also similar. The baseline country reports on water quality data management establish the existence of multiple organizations dealing with water issues in the countries each operating separately for its own purposes. These institutions include the ministries of water, national water corporations and departments, private companies, university labs and para-statals. The reports reveal a complete lack of coordination and cooperation between these actors in information sharing.

2.1 Findings

The national water quality information management systems established by the Government of Kenya continue to be inefficiently operated and consequently underutilized. The institutions that maintain WQ-MIS are the Ministry of Water & Irrigation and Water Resources Authority. The Kenya baseline report reveals that strategies for packaging, coordinating and sharing research findings regarding key environmental issues and water quality data in particular among institutions is lacking. Each institution stores data and information in various formats and it is not easily accessible to others. Water quality data is produced by a number of institutions in the public and private sector concerned with water management. The Ministry Of Water Resources & Irrigation is the central institution for water quality management. Likewise, in Egypt, Burundi, Ethiopia and the rest of the countries, there are a number of actors but no formal coordination arrangements exist amongst them.

In Burundi for instance the Geographic Institute of Burundi is an agency of the Ministry Of Environment in charge of the collection and management of hydrological and meteorological data nation-wide. It has in place a climate network and a hydrology network of more than fifty stations each. Unfortunately but the staff and equipment of these structures need upgrading.

In Ethiopia there are a number of institutions involved in water quality data collection and analysis. In the Ministry of Water Resources it is the Department of Hydrology that deals with water resources data management. Until four years ago, the method of data

recording followed by this department was manual. Now a computerized database system has been initiated and has reduced the burden of manual paper work and minimized errors and time for analysis. GIS and Remote Sensing team, established in 1995, is another key player in water quality data management in Ethiopia. The team is active collecting and compiling spatial-based data and information on river basins studied by different consulting firms. The team, however, does not have a database system. They use Microsoft Access and Excel spreadsheets. In 2002 a nation-wide water quality data compilation campaign was conducted. The survey requested water quality data information from regional agencies. Hence primary and Meta data are synthesized and collected, verified, archived and analyzed in the developed database. Prior to that date, there was no central data compilation practice by the Ministry of Water Resources.

Likewise, in Rwanda, water quality data collection and storage involves a number of laboratories of ministries and institutions such as the Ministry of Health, the Ministry of Environment and universities. The collection of data by laboratories follows strict standards and criteria but electronic data storage is limited.

All in all, institutional framework for water quality data management in the NBI countries is fragmented and rudimentary with the exception of a few countries like Egypt, Kenya and Uganda.

3. Water Resources Data Management & Storage

Most government ministries and departments previously collected and stored data mostly for purposes of monitoring of the national water resources. These were however spot checks with no systematic follow-up activities. As well, often the data was stored raw and any further data analysis to elicit trends was limited and in many cases uncoordinated. The baseline studies show that the range of water quality data type collected nationally varies considerably. It is influenced by the institution's specific needs for the data, the research and also upon the type of the water resource under consideration.

The institutions managing water quality data in the countries are not well equipped and lack qualified human resources as well as infrastructure for computerized data management. There is, therefore, an urgent need to build infrastructure and human capacity in computer database management including GIS and data modeling. Key human resources issues include shortage of high level expertise in MIS and GIS, Modeling and lack of standard job description and skills. Other serious shortcomings in water quality data generation include lack of standards for collection or non-respect sampling procedure, lack of timely analysis of sample and this leads to inaccurate results. In Rwanda, the collection and management of water quality data is carried out by a number of institutions and laboratories across the country. There is no one central coordinating agency or mechanism to ensure oversight or information exchange. In the DRC, the baseline survey has revealed serious weaknesses in water quality data management. The DRC government does not consider water quality management systems a priority. The structures for water quality management lack qualified staff and modern equipment, lack budget allocation for water quality management and lack standards for water quality information exchange

4. WQ Data and information Sharing

Water quality data sharing is weak and practically not yet formalized in most of the NBI countries. Some countries, like Uganda and Egypt have in place advanced networks of water quality management nation-wide. In Uganda for example, there is a water quality network of 105 stations. These stations can be grouped into 5 different categories, namely; stations for monitoring water quality trends in rivers and lakes, stations for trends in ground waters, stations impacts of industrial effluents on water quality, stations in support water quality management operations and stations for monitoring water treatment plant activities. Dissemination of data and information to water resources management interest groups, NGOS and to other stakeholders as well as national and regional governments is important for the sustainable management of national and trans-boundary water resources.

As noted earlier, a substantial amount of water quality data has been collected and stored by several lead institutions in the countries. Some of the institutions and stakeholders have information centers that do not adequately cater for water quality data management and sharing by other institutions. They also lack critical data management tools, qualified personnel and infrastructure for appropriate information sharing. Institutions in Kenya that collect generate and store water quality data have arrangements that provide for private and confidential ownership of such data and information. Moreover, data is considered as belonging to the project and more specifically to the scientist who has generated such data. As a result, there is no strategy for effective flow of water quality data and information amongst the institutions in the country.

5. Recommendations

The recommendations in the national reports call for action in the following areas:

- Establishment of water quality database in individual countries which will include data from sampling stations, field testing and laboratory data, statistical and monographic data
- Establishment of flexible and adaptable management information and information sharing systems and information dissemination through the electronic media
- A central coordinating group (working group) or secretariat be set up to coordinate networking and training as well as provide support activities
- Up-date of legal arrangements and norms and enforcement instruments for water quality data management and water quality information sharing
- Provision of equipment and staff training for water quality data management
- Representative water quality data must identified to fill the gap in the water quality status nation-wide
- Establishment of lab associations to serve as platforms for discussion and information exchange
- Computer networking for electronic communication is needed in many institutions
- Ensuring long-term preservation and accessibility to data bases as an incentive to promote trend analysis and predictive modeling

- Data collection standards, to be formulated, for data integrity.
- Lab accreditation from international bodies to be encouraged.

ANNEXEX1 Country Matrix on Data Management Status