Facts about the Nile Basin

What's on? January - March 2013

Quiz

Basin Area 3,176 X 10³ Km²
Location -4 ⁰ S to 31 ⁰ N and 24 ⁰ E to 40 ⁰ E
Main Tributaries Victoria Nile/Albert Nile, Bahr El Jabel, White Nile, Baro Pibor-Sobat, Blue Nile, Atbara, Bahr El Ghazal
River Length 6,695 Km (one of the world's longest River)
Estimated Navigable Length 4,149 Km
Countries
Burundi D R Congo Rwanda Egypt South Sudan Ethiopia The Sudan Kenya Tanzania Uganda Eritrea
Major Lakes within the Basin Lake Victoria, Lake Tana, Lake Kyoga, Lake Albert
Population (Total in all the Nile Countries)* 437 Million
% Population within the Nile Basin* 54% (238 Million)
Temperature Night Minimum -100 c and daily Maximum in June 47 ⁰ c
Precipitation Max Annual 2,098 mm/yr in Ethiopia
Min Annual 0 mm/yr in Egypt
Mean Annual /f_low (Discharge) (m³/yr) at Aswan 84 X 10⁹ m³/yr
Discharge/Unit area 28 X 10³ m³/Km²
Main Consumptive Water use Agriculture

Date Activity Venue
Jan NCoRe Project Effectiveness All Centers
Jan NELTAC/NELCOM Meeting Kigali
11 – 12th Feb Regional Meeting for National NBI Desk Officers Entebbe
22nd Feb Nile Day celebrations (Regional and National) Bahr Dar, Ethiopia (for regional celebrations)
April 38th Nile-TAC Meeting Entebbe

Member states
What is the major determinant of population distribution in the Nile Basin?

Send your answer to: editor@nilebasin.org

Answer to the previous quiz question

The single most important intra basin agricultural trade commodity by volume among the Nile Basin riparian states is maize.

Burundi DR Congo Rwanda Egypt South Sudan Ethiopia The Sudan Kenya Tanzania Uganda Eritrea

Disclaimer: The views expressed in this newsletter do not necessarily represent those of NBI, its Member States or Partners

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NBI Member States

The single most important intra basin agricultural trade commodity by volume among the Nile is maize.

Facts about the Nile Basin

- Basin riparian states
- Major Lakes within the Basin: Lake Victoria, Lake Tana, Lake Kyoga, Lake Albert
- River Length: 6,695 Km (one of the world's longest River)
- Discharge/Unit area: 28 X 10^3 m³/Km²
- Mean Annual Low Discharge (m³/yr) at Aswan: 84 X 10^9 m³/yr
- Temperature Night Minimum: -100°C and Daily Maximum: 47°C in June
- Precipitation Max Annual: 2,098 mm/yr in Ethiopia
- Estimated Navigable Length: 4,149 Km
- Basin Area: 3,176 X 10³ Km²

What is the major determinant of population distribution in the Nile Basin?

Population (Total in all the Nile Countries)*: 437 Million

% Population within the Nile Basin*: 54% (238 Million)

Countries:
- Angola
- Egypt
- Ethiopia
- Kenya
- Libya
- Malawi
- Rwanda
- South Sudan
- Sudan
- Tanzania
- Uganda
- Eritrea

*Source: UN Population Division World Population Prospects 2012

Jan NCoRe Project Effectiveness: All Centers

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* Eritrea participates as an observer
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A HydroMet System, whose full name is hydro-meteorological monitoring system, comprises the infrastructure – both software and hardware – and associated institutional setup for monitoring meteorological and hydrological parameters of a geographical area, such as a river basin.

The system typically comprises ground observation networks, such as those measuring river/lake levels, rainfall, temperature, atmospheric pressure, wind speed, solar radiation or other parameters, data transmission systems – to relay data from terrestrial observation stations to data centres – data management systems (databases and associated data management tools), system of procedures for data quality control and processing.

It is common in literature to distinguish between hydrological monitoring, also called hydrometric monitoring, systems as those concerned with monitoring the hydrology of a watershed and meteorological monitoring systems as those dealing with monitoring of weather and climatic variables. HydroMet Systems provide data needed for agricultural planning and monitoring; regulating hydraulic structures such as storage dams for hydropower generation; early warning for disaster preparedness such as floods and drought, navigation, water resources management and planning; air quality monitoring, aviation operations, navigation and many other human activities.

Nile Basin Regional HydroMet to promote efficient utilisation of water resources
How the Hydromet functions

Here are five important factors that determine how a Hydromet System functions:

First, a working and appropriately designed data collection system needs to be in place. At the heart of any Hydromet System is the infrastructure for collection of decision relevant data - be it using ground observation network or via non-conventional means, such as satellite remote sensing. With advancement of satellite remote sensing, increasingly, more and more variables of the bio-physical environment are monitored remotely.

Precipitation, solar radiation, lake levels, many water quality parameters, among others, are ‘observed’ through Earth Observation satellites. The accuracy and diversity of types of parameters observed through remote sensing is on the rise, which makes it increasingly attractive for river basin monitoring.

Second is timely data transmission. Data can only be of use if it is delivered where it is needed and when it is needed. For example, data on impending flooding can only aide in saving lives if it is received by those who need it in order to act before it is too late. Traditionally, most data collection networks are operated manually by on-site observers, who take measurements at pre-defined times, record measurements in their log books and send the log books to central office at regular intervals. Nowadays, many monitoring stations are fully or semi-automated where measurements are automatically recorded by the instruments and, in many cases, relayed to the central officer with little or no involvement of humans.

Third, data management: Collected data needs to be quality controlled, processed into decision relevant information before it can be put to use. This requires an appropriate database management system, together with a system of tools for data processing and generation of information for specific purposes. Decision relevant information is then disseminated to those who need it using diverse communication channels, such as emails, over the web, or other means depending on the urgency for transmitting the information and the intended users.

Fourth, data sharing protocols: Data and processed information can only serve its purpose if it is made available to those who need it and to those purposes for which it is needed. In a transboundary river system, appropriate data sharing arrangements are key to a successful regional Hydromet System.

Fifth, human and institutional capacity: Human and institutional capacities are needed for continuous operation, maintenance of observation networks and support practical use of the data collected. Therefore, putting in place the necessary human and institutional capacities are at the core of a sustainable and functioning hydro-meteorological monitoring system.

In the case of the Nile Basin Regional Hydromet System, all above factors have been taken into account in the design. Further, The NBI Member States have put in place a process and procedure for sharing of information.
The Nile Basin is a shared river basin that stretches over 11 riparian countries. It covers contrasting hydro-climatic, ecological and socio-economic systems that span from tropical regions (the Nile Equatorial Lakes region) to desert/semi desert downstream parts. Each Nile Basin country has its own national hydro-meteorological monitoring system designed to serve a variety of purposes in the respective countries.

Studies conducted by the Nile Basin Initiative indicate substantial gaps in the current HydroMet monitoring infrastructure. There are hydrologically important areas of the basin that are poorly monitored due to inadequate monitoring network; many monitoring stations are poorly equipped – some not operational for quite substantial periods of their history since establishment; many stations are not equipped with modern instruments that ensure more precise data collection and continuous and timely transmission of data.

According to the survey conducted by NBI in 2014, there were approximately 949 meteorological and 427 hydrological stations in the Nile Basin. Over 70 percent of the meteorological stations measure either daily rainfall totals or rainfall and temperature. Most hydrological stations measure river or lake water levels. Monitoring of water quality, sediment transport in rivers, and groundwater are at their early stages in most countries. Data transmission from the stations to central data repository in most countries is manual.

Further, being designed to serve purposes within the country where they are installed, many stations needed substantial upgrading to serve transboundary
water resources management. For example, flood preparedness for communities in low lying areas where most of the flood disaster causing high flow is generated from an upstream country require real-time data collection and transmission to enable timely forecast of flood early warning and, thereby, save lives. This requires a monitoring system that is optimised to serve flood disaster preparedness across country boundaries. There are many examples that demonstrate the need for a regionally optimised HydroMet monitoring system in the Nile Basin.

In a nutshell, there are two complementary arguments for the Nile Basin Regional HydroMet monitoring system. First, improved HydroMet monitoring infrastructure yields more precise and timely decision relevant data. Second, a regionally optimised HydroMet system greatly helps in joint management of the shared Nile Basin water resources, improved cooperative disaster management, more optimal water utilisation among many other benefits to the riparian countries.

The Nile Basin riparian countries recognised the need for improved joint Hydro-meteorological monitoring system early in their cooperation endeavour.

The first attempt to meet this need was the HydroMet Project that lasted from 1967 – 1972 and which focused on hydro-meteorological survey of the Nile Equatorial Lakes. This project was supported financially by UNDP. Out of the then 9 riparian countries, seven of them took part in the project. The project led to improvement of hydro-meteorological monitoring of the Equatorial Lakes region.

Under their joint institution, the NBI, the riparian countries initiated the process for putting in place a Regional HydroMet system that builds on previous works and responds to current needs of the riparian countries in their joint management and development of the Nile Basin.

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The Nile Basin Regional HydroMet System is comprised of approximately 80 hydrological and 323 meteorological monitoring stations equipped with state of the art observation and data transmission instruments. Further, the system also includes upgraded water quality laboratories in the NBI Member States; infrastructure for use of Earth Observation information and limited groundwater monitoring stations.

The regional HydroMet system will be built on existing national monitoring networks with additional stations installed where none exist.

The regional HydroMet System is designed to provide more reliable data and information for water resources management. The design was aimed at providing transboundary benefits in a number of areas, including: flood disaster preparedness; coordinated management of water storage dams; navigation; improved adaptation to climate change.

The NBI Member States will benefit from state of the art monitoring infrastructure, including support to increasing use of Earth Observation for the management of water and related natural resources.

With increasing availability of credible and continuously observed data, the countries will be able to improve the water resources planning and management, as well as utilise their water resources more efficiently – both at regional and national levels; be better prepared against natural hazards, such as floods and droughts; monitor changes in the Nile Basin climate and, hence, improve their climate change adaptation plans, among others.

The implementation of the HydroMet System will be accompanied by trainings of national technicians to ensure Member States have the necessary skilled staff to install, operate and maintain modern hydro-meteorological monitoring systems.

Member States will also benefit from joint monitoring information products.

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Implementation of the HydroMet System in the Nile Basin

From the onset, the work on the Nile Basin Regional HydroMet system has been a joint activity of all riparian states. Joint task force was formed way back in 2010 to formulate the Nile River Basin Monitoring Strategy, which was approved by the Council of Ministers in 2011. The Strategy was the first step in articulating common objective strategy for realising a Nile Basin regional, at the time, river basin monitoring system.

Once the strategy was approved, through the support from the Nile Basin Trust Fund administered by the World Bank, the detailed design of the monitoring system, named as the ‘Nile Basin Regional HydroMet’ system, was developed. The NBI task force oversaw the needs assessment and detailed design together with NBI centres. The final design of the system was endorsed by the Nile-TAC in 2015 and subsequently by the Nile-COM.

In approving the final design and, hence, endorsing the implementation, the NBI Member States agreed to a statement of purpose for the Nile Basin Regional HydroMet System (see Box 1).

The member countries further reiterated to use and maintain the system to ensure its long-term operation.

The NBI has received funding from the 10th European Development Fund under the EU – German ‘Transboundary Water Management in the Nile River Basin’ programme that will be used to implement the first phase of the HydroMet System.

Implementation of the system will be collaboration between the Secretariat and its investment arms, NBI Member States national hydrological services offices supported by consultants and contractors. The NBI task force will oversee the overall implementation of the system while technical task teams in each NBI Member State will deal with the on-the-ground implementation.

Implementation of the first phase is planned to take approximately 3 years, i.e. from July 2018 to June 2021.

BOX 1: THE COMMON STATEMENT OF PURPOSE FOR THE NILE BASIN REGIONAL HYDROMET SYSTEM

We, Member States of the Nile Basin Initiative, are united and dedicated to establish and share an ever growing understanding of the water resources of the Nile Basin and to engage that understanding in wise stewardship and sustainable socioeconomic development.
The likely challenges in implementing the HydroMet

The security of systems installed in remote areas of the Nile Basin is not assured; there is a possibility of vandalism. Also, sustainability of the system beyond the project life will depend on the countries’ commitment to support the system.

What countries need to do during implementation

There are no conditions attached to the implementation of the system. However, any transboundary river basin monitoring system can realise its full benefit only if data/information is shared and if the equipment is well maintained.
The single most important intra basin agricultural trade commodity by volume among the Nile Basin riparian states is maize.

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**These examples show possible ways to use the logo when no relevant guidelines for the situation are provided in the German Government’s style Guide.**

**Example: banner, roll-up**

**Version 3: Usage in unilateral projects abroad**

**Example: Fiji; Official language: English**

**Version 2: Usage in multilateral projects abroad (and in exceptional cases)**

**Example: Fiji; Official language: English**

**Version 1: Usage in bilateral projects abroad**

**Example: Fiji; Official language: English**

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