

Technology Fact Sheet for Adaptation

B.2. Technology: Seasonal Forecasting and Early Warning System (Automatic Water Level)ⁱ

Sector: Water Resources

Subsector: Permanent Water Resources

B.2.1 Introduction

Remote Sensing technology for the receipt and processing of satellite images are used to estimate daily rainfall quantities over the catchments of the Blue Nile and Atbara rivers in Ethiopia and Sudan. A communication system transmits water levels in the Blue Nile, Atbara River and Main Nile in Sudan to the Flood Warning Center in Khartoum. A computerized Flood Forecast System, consisting of a set of mathematical models with an appropriate user interface allows smooth and rapid data processing and forecasting.

B.2.2 Technology Characteristics

The Automatic Water Level is a data logger and submersible pressure transducer combination designed for remote monitoring and recording of water level or pressure data. The water level logger can record over 81,000 readings and has four unique recording options, fast (10 samples per second), programmable interval (1 second to multiple years), logarithmic, and exception. Multiple depth ranges are available from 3 to 500 feet of water level change. A 25 ft vented cable is standard on all water level loggers.

B.2.3 Country Specific Applicability and Potential

Timely information during flood season is vitally requested and will prevent loss of life and houses. Installation of automatic loggers and management of them require expert and institutional organization. This technology needs to be implemented in 14 key locations in Sudan

- Training and skills development of state staff and local communities for operation and maintenance of the automatic loggers is very important for sustainability.

B.2.4 Status of Technology in Country

Automatic water logger was applied in Sudan in the mid-1990s, yet, this technology has not been operational owing to technical reasons.

Development of flood forecasting systems for Sudan is an important measure that should build upon existing forecasting systems and capacity. Key elements of flood forecasting and warning systems include: (1) data acquisition networks and data transmission (2) data processing and archiving (3) operational forecast modeling systems (4) flood warning and (5) dissemination and communications. With respect to flood warnings, effective delivery of relevant information in a form readily understood by and useful to intended users, from government agencies to floodplain dwellers, is essential.

B.2.5 Opportunities and Barriers

- It is sensitive and easy to be broken; therefore special care should be taken to its location.
- High costs compared to normal gauges.

B.2.6 Benefits to Economic/Social and Environmental Development

Economic Benefits:

- Prevents the losses of the communities' resources due to floods

Social Benefits:

- Prevents life loss in some areas prone to flooding

Environmental:

- Allows forecasting extreme weather events

B.2.7 Climate Change Mitigation Benefits

Strengthens resilience of the local communities to climate change

B.2.8 Financial Requirements and Costs

Cost to Implement Adaptation Technology: Automatic Water Level (Pressure Type - SEBA) 4,000 USD. To implement this technology in 14 locations 56,000 USD is required.

ⁱ This fact sheet has been extracted from TNA Report – Technology Needs Assessment for Climate Change Adaptation - Sudan. You can access the complete report from the TNA project website <http://tech-action.org/>