



Technical Assistance: Strengthening flood preparedness and early warning systems using innovative models

Location: Nile River Basin (including Setit/Atbara, Dinder, and Rahad sub-basins)

Solution: Enhancement of the existing Flood Early Warning System (FEWS) through the integration of updated hydrological models & satellite-based transmission technology

UNEP CTCN grant: USD 249,951



Schematic of early warning flooding systems for the Nile River © UNEP-CTCN

Communities along the Nile River are increasingly vulnerable to the impact of climate change, particularly severe flooding. This project enhances the existing Flood Early Warning System (FEWS) by integrating updated hydrologic and hydraulic models and improves real-time data transmission. The initiative aims to strengthen flood preparedness and response, providing timely and accurate flood warnings to reduce the risk and impact of flooding on vulnerable communities.



Objectives

- The primary objective is to improve Sudan's capacity to manage floods by enhancing the existing FEWS.
- This involves updating the system's hydrological models to reflect current land use changes, expanding coverage to additional sub-basins, and integrating real-time water level telemetry using satellite technology.



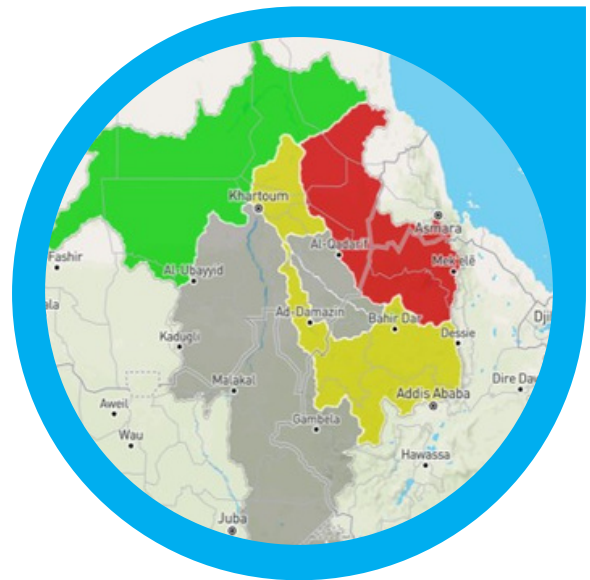
Social Impact

- The project supported a total of 31,400,017 beneficiaries, including 17 direct beneficiaries and 31,400,000 indirect beneficiaries.
- Among the direct beneficiaries, 53% were women, while 50% of the indirect beneficiaries were women. Additionally, 19.5% of the indirect beneficiaries were youth.
- The implementation of the Flood Early Warning System (FEWS) has significantly reduced risks to lives and property, particularly benefiting women and youth in flood-prone areas.



Adaptation Impact

- **Enhanced Flood Resilience and Disaster Preparedness:** The project enhances Sudan's ability to anticipate and respond to flooding by providing accurate and timely forecasts. This supports better planning and emergency response, reducing the impact of floods on vulnerable communities and infrastructure.
- **Improved Water Resource Management:** By improving the accuracy of hydrological forecasts and by integrating real-time data, the project supports sustainable water resource management, and helps to mitigate the impact of floods.
- **Increased Community Resilience:** The project empowers local communities by involving them in flood preparedness activities and providing them with the knowledge and tools needed to protect themselves from climate-related disasters.



Other Co-Benefits

- Improved water resource management.
- Reduced economic losses from floods.
- Strengthened community engagement in disaster preparedness.



Innovation & Technology

- **Satellite-Based Transmission Technology:** Implementation of satellite technology for real-time data transmission, enhancing the accuracy and timeliness of flood warnings.
- **Updated Hydrological Models:** Enhancement of existing hydrological and hydraulic models to reflect current land use changes and improve flood forecasting accuracy.
- **Enhanced Flood Early Warning System (FEWS):** Integration of the latest forecasting technologies and data into FEWS, improving its operational capacity and effectiveness in flood risk management.



Replication Potential

- The project can be replicated or used as a model for countries vulnerable to floods, where certain warning systems already exist and are in need of improvements. The results can inform interested stakeholders on available technologies which improve the accuracy and reliability of flood warning systems.

Key Figures

- USD 249,951 project budget
- 31,400,017 people benefitted in total
- 10 people comprise the project's working group
- 17 participants underwent a training for FEWS end users, provided by project experts
- The project contributed to the following SDGs:

