

Improving transboundary water management to protect communities

Development of a transboundary water management system for the Sesan-Srepok river basins



Transparent and science-based decision making for better transboundary cooperation



Flood forecasting and warning, including a reservoir operations model, for safer communities



Versatile river basin management system for optimised long-term water usage

Challenge

The Sesan-Srepok (2S) river basins are large transboundary tributaries of the Mekong River shared by Vietnam and Cambodia. In addition to the implementation of the regulations on water use as stipulated in the 1995 Mekong Agreement, the cooperation and coordination between Vietnam and Cambodia in the management of river basins have also become an imperative necessity to better manage water resources and ensure sustainable development.

The upper 2S rivers in Vietnam are highly managed river systems for hydropower production. Those developments have significantly modified the natural hydrological regime of both river systems. There were approved operation rules applied for hydropower reservoirs in these 2S rivers aimed at controlling the released flows at the border between Vietnam and Cambodia as stable as possible. However, an advanced tool for improved decision support system was still lacking.

VNMC requires an easy to use, shared and centralised DSS to manage floods in real-time, as well as water resources planning for basin management purposes, while abiding by the legal requirements.

Solution

Driven by MIKE Powered by DHI, a decision support system was developed to support MONRE and VNMC in water resources management of the 2S basins, helping with water resources planning, flood forecasting and reservoir operations. VNMC contracted two consulting firms for the development of the DSS and DHI was hired to help VNMC with the supervision of the implementation of these contracts.

Using **MIKE HYDRO River**, we simulated more than 1000 km of rivers and included numerous reservoirs and their complex operations. This river model runs in real-time and provides accurate flood forecasts twice a day. A **MIKE HYDRO Basin** model supports the river basin planning and management based on IWRM principles, providing insight months in advance for the 50,000 km² catchment. **MIKE OPERATIONS** was chosen as the central part of this complex system. It manages models in real-time while connecting to a variety of data sources and using a knowledge base developed for this project. A key aspect of this system is its versatility, as it can be easily extended at a later stage to meet future needs.

Water experts are working with the system through a user-friendly web-based interface that was designed to integrate naturally with VNMC workflows and processes. This provides the right level of insight regarding the river flow, flood risk and hydropower dam operation. This information is crucial for both countries to have a common understanding of the river flow (in normal and emergency cases) and to plan water releases from hydropower dams in Sesan and Srepok rivers crossing the border well ahead of time.



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