

**JOINT THE MEKONG RIVER COMMISSION HAS SUCCESSFULLY STARTED
THE JOINT ENVIRONMENTAL MONITORING OF HYDROPOWER DAMS,
A PARADIGM CHANGE FOR APPLIED WATER DIPLOMACY.**

**Hydropower in
the Lower
Mekong**

Extensive hydropower dam construction is underway in the Lower Mekong Basin, driven by energy demand and economic development. Overall, more than 150 dams are currently operating in the Mekong. On the Lower Mekong Mainstream, as of 2023, there are two dams in operation, one under construction, one in the process of obtaining [PNPCA](#) (Prior Notification, Prior Con-sultation, and Agreement) approval, and five dams are in the PNPCA pipelines (*Figure 2*).



Figure 1: JEM equipment handover ceremony

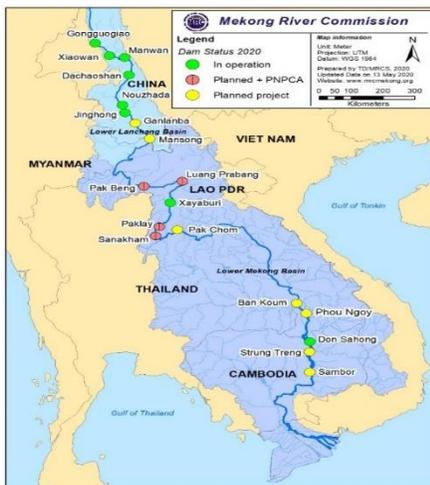


Figure 2: Mekong Mainstream Hydropower Development Project

As Lao PDR aims to become Southeast Asia's battery hub with the hope of transitioning from a lower-income country by the year 2030, Laos decided in 2014 and 2015 to build two dams on the Lower Mekong River mainstream. This decision raised concerns among member countries regarding the social and environmental impacts on the Mekong and its riparian countries. Generally, dams alter the hydrologic regime both upstream and downstream of the dam. They also impede the transportation of sediment from the upstream catchment to the downstream, disrupt fish migration, change water quality within dam impoundments, and extend impacts to aquatic life and local communities that rely on the river. Therefore, Laos' Vice

**Early Ideas
for Joint
Monitoring**

Minister for Energy and Mines (MEM), Mr. Viraphon Viravong, suggested to the [Mekong River Commission](#) (MRC) that they should jointly monitor the impacts of these mainstream dams. The MRC recognized the need for a robust methodology to monitor the environmental changes. In mid-2016, the MRC introduced the [Joint Environmental Monitoring for Mekong Mainstream Hydropower Projects \(JEM\) program](#) to generate and share reliable and scientific data and information through an established basin wide JEM Programme. With support from the German Federal Ministry for Economic Cooperation and Development (BMZ) through GIZ, the MRC Joint Committee (JC) approved the JEM Programme development.

To ensure its effectiveness before rolling out the program throughout the basin, the programme was piloted at the current operational mainstream hydropower dams, Don Sahong and Xayabouri. The pilot was carried out between 2020 and 2021. The **German support (EUR 1.4 million)** included procurement of monitoring equipment and capacity development to MRC member countries.

Joint Monitoring Methods

- **JEM applied the “Before, After, Control, Impact (BACI)” principle:** BEFORE a dam is built, a baseline has to be established, AFTER the dam is built IMPACTS have to be detected which occur during construction and operation, and last CONTROL to identify changes that might have been caused by other developments or changes in climate.
- **The program creates a transboundary data sharing platform:** During the pilot project, Laos, Thailand, and Cambodia jointly monitored the identified stations and shared data with the MRC.

During the dry season, **water fluctuation** levels downstream of Xayaburi exceeded what the MRC guidelines suggest. This implies a negative impact on the ecological health of the river. **Sediment transportation** was reported to be generally reduced in the Lower Mekong Basin compared to historical data. This reduction may also be attributed to sediment trapping by Mekong tributary dams.

Ecological health shifted from a good to a moderate condition in the vicinity of the dam but appeared to recover as one moves downstream. **Water quality remains** safe for human health, with little evidence of downstream changes due to hydropower operations. Fish catch and diversity reported to be declined in overall basin scale.

Initial Monitoring Results

Transformational change through common procedures

The pilot JEM has proven that the methods are fit for purpose and have begun to build a new foundation for water diplomacy in the region.

1. **Implementing** JEM Pilot Projects raised partner awareness on the significance of cooperation between national, regional, and private stakeholders for dam data sharing and robust analysis.
2. **Active involvement** from MRC government leaders, ministries, agencies, and hydropower project developers during the pilot projects warrants extending JEM to other mainstream hydropower projects like Pak Beng, Luang Prabang, Pak Lay, and Sanakham.
3. **All member countries** strongly support the JEM Program's rollout and recognize its importance in transboundary cooperation, and approved integration into the MRC's Core River Monitoring (CRMN).