11th REGIONAL STAKEHOLDER FORUM

REPORT OF THE 11TH MRC REGIONAL STAKEHOLDER FORUM

Responsible Operation and Management of Cascade Hydropower & Regional Consultation on the Sanakham Hydropower Project's Prior Consultation Process

February 2022

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REPORT OVERVIEW

This report documents the proceedings of the **11th Regional Stakeholder Forum**, which the Mekong River Commission convened on 29–30 November 2021 to discuss responsible hydropower operations and management, in general, as well as the latest information about the proposed Sanakham project, specifically. Feedback was then solicited from the public.

The Forum was held via video-conferencing, with simultaneous, on-site gatherings of stakeholders in each of the four MRC Member Countries: in Vientiane, Lao PDR; Siem Reap, Cambodia; Bangkok, Thailand; and Hanoi, Viet Nam. The second day was also livestreamed across the MRC social-media channels: Facebook, Twitter, LinkedIn and YouTube.

FORUM OVERVIEW

The 11th Mekong River Commission Regional Stakeholder Forum (RSF) lasted two days. The first day – consisting of keynote speeches, panel discussions and question-and-answer sessions – was devoted to a deep exploration of Sustainable Hydropower. Particularly, how owners of such companies should operate and manage their system of cascade dams, which generates that hydropower.

The RSF brought together a diverse group of stakeholders from the frontlines of Mekong River hydropower: developers, owners and operators; national ministries and intergovernmental agencies; civil society organizations (CSOs), non-governmental organizations (NGOs), and riverine community representatives. It was open to the general public, as well.

In panel discussions, the developers, owners and operators shared hands-on experiences in operating and managing cascade hydropower. They proposed recommendations, from their perspective, for what responsible operation and management should look like.

With its commitment to broad cooperation, the MRC then opened the floor to public comment.

The next day, the MRC kicked off the second half of the RSF by reinforcing its promise to transparency and information-sharing: it provided the most current information about the Sanakham hydropower project, which the Laotian Government has proposed to build on Lao PDR's stretch of the Mekong River.

Once again, the Forum followed those sessions with time for public thoughts and opinions.

While Day 1 wasn't broadcast, all the Day 2 sessions were livestreamed across each of the MRC social-media platforms: (Facebook, Twitter, LinkedIn and YouTube).

For the official agenda of the 11th Regional Stakeholder Forum, click here.

DAY 1: RESPONSIBLE OPERATION & MANAGEMENT OF CASCADE HYDROPOWER

FORUM BACKGROUND

Rapid, large-scale development of hydropower projects in the Upper and Lower Mekong Basin can bring both economic benefits and negative impacts, across the region. Hence, the need for hydropower operators, governments and the public at-large to engage in dialogue, share lessons-learned and apply best-practices – especially in sound management, coordination and communication.

The *Basin Development Strategy for the Lower Mekong River Basin 2021–2030* (BDS) and the MRC *Strategic Plan 2021–2025* (SP) both provided strategic direction on how to best manage the major economic, environmental and social dimensions of hydropower development.

The BDS 2021–2030 notes that as the entire Mekong River Basin becomes more developed and regulated by dams – combined with greater susceptibility to increasingly extreme weather events, caused by climate change – there is a growing need to improve both information-sharing and transboundary coordination of operations. This will help address some of the waterway's most pressing issues, such as management of river flow, sediment, emergencies and design, as well as the hydropower cascades.

The RSF's discussion of responsible operation and management of cascade hydropower brought together relevant government agencies, developers, operators and riverine-community representatives (from the Mekong and other regions) to share their hands-on experience with hydropower, regarding good industry practice, opportunities and challenges.

Lessons learned from national, regional and international settings were also shared, to further strengthen the coordinated operations and management of cascade hydropower – all of it aimed at achieving sustainable development of hydropower throughout the Mekong region.

FORUM AGENDA

The agenda for Day 1 is available here.

FORUM OBJECTIVES

- Discuss various processes of information-sharing and coordinated operations, to optimize dam operations and project sustainability within the transboundary context of the Mekong River Basin.
- Discuss the roles that developers, operators, government agencies and regional agencies – including civil society organizations (CSOs) and non-governmental organizations (NGOs) – could or should play in information-sharing and coordinated operations of hydropower projects.

- Propose different mechanisms for efficient and responsible operations and management of cascade hydropower in the Mekong River Basin.

FORUM PARTICIPANTS

- Government officials from the MRC Member Countries – including representatives of their National Mekong Committees – as well as from relevant implementing agencies and their departments of hydropower-project development and energy-portfolio planning and management.
- Management and operation staff of hydropower developers and operators (and/or their consultants), who invest in hydropower dams, both on the Mekong mainstream and its tributaries, who: discussed their hands-on experiences, opportunities for cooperation arrangements, and how to establish mechanisms for coordinated operations and management of cascade hydropower in the Basin.
- Professional hydropower-related associations, both international and national.
- Interested MRC Development Partners, as well as CSOs/NGOs.
- MRC Dialogue Partners – particularly, China – to share their experiences in operating and managing their upstream cascade-hydropower projects.

FORUM PROCEEDINGS

The following content chronicles the entire RSF event. It's not a verbatim transcript, but instead illuminates the highlights that followed the welcome offered to all participants and attendees by An Pich Hatda, CEO of the MRC Secretariat. The Forum was also noteworthy because it marked the final grand event of Hatda's three-year term. In January 2022, Dr Anoulak Kittikhoun assumed the leadership post, as the MRC's third riparian CEO.

Session One

The Forum dialogue opened with a Keynote address from a top official of the International Finance Corporation: Kate Lazarus, Senior ESG Advisory Lead of its Asia Pacific section. The IFC, a sister organization of the World Bank, promotes economic growth in less-developed countries.

The topic of Lazarus' 20-minute presentation was *International Good Practice on Operation and Management of Cascade Hydropower*. She offered her recommendations for developers, governments and intergovernmental agencies, on how to best run these operations.

For example, a developer of hydropower dams should consider adopting a systematic approach to manage environmental and social risks through the Environmental and Social Management System. For better joint management of cascades, they should integrate power optimization into cumulative impact assessments. Monitoring and reporting should take into account e-flows, biodiversity, stakeholder involvement, timing, emergency preparedness, material management, worker grievances, and HR issues.

As for any country proposing a hydropower project – basically, the national owner – Lazarus recommended that it include Mainstream Environmental and Social (E&S), as well as a gender component, for contractors and the Energy Performance Certificate (EPC). Include the mitigation, management, monitoring and reporting plans, with how responsibility is allocated, into all construction/EPC contracts, concessions, financing bids and documents.

She also stressed how risks can be compliant and reputational. Different systems worldwide deal with environmental and social issues, including ISO standards. Management programs should consider the management of contractors and E&S performance – and require the inclusion of communication, monitoring and reporting in a bidder's contract.

Adaptive management of risks and key impacts can be divided into impacts anticipated and impacts unforeseen. For example, preparation in case of emergency stoppage. Simply complying with existing standards is not enough, said Lazarus. Therefore, management and monitoring requirements must be adjusted, as when maintaining environmental flows.

In Chile, for example, the 155 MW run of the river hydropower plant was stopped after a prolonged drought and conflicts with farmers that attracted widespread media attention.

An overview of assessment tools and approaches was provided. The Cumulative Impact Assessment (CIA) is an internationally recognized approach to identify risks. However, timing is crucial. The Trishuli Assessment Tool is a standardized methodology for sampling freshwater ecologic status.

Lastly, Lazarus highlighted the role of gender and gender-based risks. While women should be welcomed in non-traditional roles, like engineers, gender-based violence must be addressed wherever it occurs, whether during construction or anywhere else.

Session Two

The second session opened with contextual background of cascade hydropower in the Mekong Basin, provided by Palakorn Chanbanyong, the Sustainable Hydropower Specialist for the MRC Secretariat.

As of 2021, the number of hydropower projects operating in the Lower Mekong Basin (LMB) is 88, which have roughly 12,600 megawatts (MW) of total installed capacity. Under construction are 15 more dams, with a total capacity of 1,600 MW. By 2040, hydropower will generate an estimated 30,000-plus MW in the LMB.

The SHDS 2021 stresses the need to take steps that safeguard basin development, to make it more optimal and sustainable. One key SHDS priority is cascade operation and management. Engagement with developers is ensured through implementation of the Procedures for Notification, Prior Consultation and Agreement (PNPCA) process and Joint Action Plan (JAP).

Next, various national representatives described their country's perspective on this topic.

One Chinese representative explained China's four principles for coordinating and balancing development with ecological conservation: ecological flow management, water temperature recovery, fish protection, and habitat conservation. He also described China's experience with the Lancang River – which is the Chinese name for its stretch of the Mekong.

Specifically, the Chinese experience in hydropower operation management; the current situation of hydropower operation and management; and the national efforts toward sustainable development of hydropower in the Lancang River Basin and other Basins in China.

In China, he said, planning and construction of hydropower plants takes into account sustainable hydropower development, including environmental-impact assessment. Then, how to implement and monitor environmental-protection measures, including: 1) Prioritizing ecology and coordinating hydropower development with ecological considerations; 2) Gradual adoption of green, low-impact hydropower technology; and 3) Continuously improving the ecological monitoring of the river basin, to ensure effective functioning of these ecological and environmental-protection measures.

Another Chinese official added that in China, comprehensive monitoring of 422 hydropower projects is done through real-time data. From the Lancang, the platform provides data on hydropower plants, such as inflow, energy generation, monthly and annual analytics, and forecasting. The platform also provides information that helps to coordinate hydropower-plant operations in the Lancang cascade.

Next, a Lao PDR representative explained how the government is striving to facilitate the planning of a national, integrated power system, in order to fulfill both GMS and ASEAN goals. The Laotian National Power Development Plan stresses the importance of an energy mix.

Moreover, hydropower operation dispatch is managed by different owners of the Hydropower Projects (HPP). The country is now establishing a National Coordination and Monitoring Center for hydropower reservoir operations, in hopes of better information-sharing and coordinating operations.

In Viet Nam, meanwhile, HPPs constitute about 30% of the national energy mix. Currently, the country hasn't initiated any further HPP development, to avoid deterioration of the environment and ecosystems. Nevertheless, Viet Nam maintains cascade-hydropower operating rules in 11 river basins.

Audience members then asked how the SHDS – which was just approved, prior to the 11th RSF – was developed. Its priority areas include cascade operations and information-sharing.

What's new and different about this SHDS is that this strategy includes a mechanism to coordinate between the MRC and a developer – for the latter to share with the former – who then disseminates the information to the public. Before its creation, no mechanism existed.

Session Three

Next came a presentation from Sophearin Chea, the Regional Water Policy Consultant for the MRC Secretariat, entitled *Challenges, Opportunities and Lessons Learned in Responsible Operation and Management of Hydropower Projects*.

Chea explained the need for international cooperation and dialogue in cascade-dam management, citing three forms of cooperation: 1) Coordination opportunity – information-sharing; 2) Collaboration opportunity – adapting operations for regional benefit; and 3) Joint-action opportunity – planning, design, development and operation for regional benefit. Having so many different owners poses a challenge to coordinate and manage cascade dams.

Chea reiterated that as of 2021, 88 hydropower projects operate in the LMB with capacity to generate around 12,600 MW. Another 15 dams, totaling 1,600 MW, are under construction. So far, China has constructed 11 large hydropower dams along the mainstream with another 11 (generating more than 100 MW each) either under construction or being planned.

Chea noted how hydropower brings benefit and impact. Development opportunities: energy security, trade, contribution to flood and drought management, a low-carbon economy. Development challenges: environment flow change, degradation, loss of aquatic habitat/fisheries, harm to the ecosystem, sediment drop, riverbank erosion.

MRC Procedures play a crucial role to engage developers in responsible hydropower development. These include the Procedures for Notification, Prior Consultation and Agreement (PNPCA); Procedures for Data and Information Exchange (PDIES); Procedures for Water Quality (PWQ); Procedures for the Maintenance of Flow on the Mainstream (PMFM); and Procedures for Water Use Monitoring (PWUM). MRC Preliminary Design Guidance steers the design and development of proposed mainstream dam projects.

Then came two basin-wide perspectives: First from Lao PDR, then from Viet Nam.

From Lao PDR, the developer of the Nam Ou hydropower project noted that their Nam Ou Cascade Control Center is the country's first such center to be operated and controlled via remote-control. The Control Center facilitates both internal communications (control power, operation monitoring, dispatch, flood control of reservoirs, weather, water forecasting) and external communications, Flood Control Department, Meteorological Department, Communication Operator.

In case of flood, the emergency-response procedures include a contact list of pre-assigned team members. Even before the rainy season, a flood-control working team is established to inspect infrastructure and procedures. Then, carry out a flood-management emergency drill.

Over the past four years, the developer has established communication protocols with the Laotian Ministry of Energy & Mines (MEM), the Ministry of Natural Resources and Environment (MoNRE), with authorities in Phongsali and Luang Prabang provinces, and with other regional and local authorities. The primary purpose is to share information with a

government communication group – daily. Moreover, since local villagers may not be as well connected to the authorities, they're also notified by phone or letter.

The developer then responded to a question from the audience, he suggested that hydropower operators are open to sharing their data, daily, with the government.

A representative of Viet Nam then described their situation at Viet Nam Electricity, also known as EVN. In 2005, an MoU was signed: "Strengthening and Enhancement of Cooperation and Coordination relating to Water Resources Development and Management in the Viet Nam-Cambodia border areas in the Mekong River Basin."

While this MoU was signed 16 years ago, in the years since, the basins and their natural conditions have significantly changed. He highlighted the following recommendations: 1) Revise the MoU to better reflect transboundary cooperation between Vietnam and Cambodia; 2) Establish a Technical Working Group to jointly study transboundary management of water resources, then deliver a report with persuasive evidence and specific recommendations; and 3) Seek opportunities for power trading in the LMB; and 4) Enhance inter-connection grids between Viet Nam and Lao PDR. Possibly with Cambodia, too.

The next perspective was the voice of government authorities.

A representative from the Electricity Generating Authority of Thailand explained that the EGAT Water Operation Center is available online for all 10 of its dams. At the moment, though, only in Thai; English-language content will soon be available. Nevertheless, the information provided runs the gamut: real-time dam operation in Thailand; EGAT's water tele-metering system; scenarios for short- and long-term operations; historical daily and annual dam operation; and any current or future plan to release water.

EGAT works under Thailand's Committee for Dam Operation. Dams in Thailand are not only for energy purposes but for water-release, according to the Power Purchase Agreements (PPAs). Responding to a question from the audience, the speaker noted where all that information can be found, published in Thai, on their website: www.water.egat.co.th.

Next, a representative from Lao MEM explained that the country's proposed Coordination and Monitoring Center (CMC) will be entrusted to coordinate and monitor projects that generate 15 MW or more. The Center will focus on a range of water-resources management issues, such as floods, power optimization, navigation, irrigation, sediment continuity, fish migration, and so on.

The CMC mandate, however, won't include data quality and accuracy, instead: data transfer; management of hydropower projects; budget to monitor water uses; and dam-safety reviews of every HPP. The CMC mandate and functions will be reviewed from time to time.

After a break for lunch, the conversation shifted to the international perspective.

Steven Barton, Chief of the Columbia Basin Water Management Division – a branch of the US Army Corps of Engineers – described cooperation between Canada and the US, on their

shared river. A joint operations committee meets six times per year, to openly discuss pending issues.

Annually, the Columbia River Treaty reports to the respective governments, with their annual analysis of whether the monitoring system is adequate and effective. Each country has equal access to the data, of course. Meanwhile, the Treaty contains provisions for conflict resolution and how to settle differences.

Joao Costa, the Head of Sustainability for the International Hydropower Association, explained how IHA global standards apply to a cascading HPP. Especially, how to operate it sustainably. He cited an illuminating example: from along the Zambezi River, in southeast Africa. Among those lessons-learned, said Costa: Communication is crucial, like speaking the same language. So is using the same methodology to grasp problems, like sediment transport.

From China, Gu Hongbin, Deputy Director General of the China Renewable Energy Engineering Institute (CREEI), described how his country embraces IHA work and adopts its guidelines. Not only in the Lancang cascade, but with other projects in China. The official guidelines for such projects even contain a reference to IHA indicators.

According to Gu, China aims to strike a balance between the development of hydropower projects and environmental concerns, as well as the balance between upstream and downstream interests, then stakeholder participation. It considers the full life-cycle of projects and continuously updates its scientific data and evidence. During flood seasons, he noted, the priority is on flood control, not power generation.

Steven Barton then responded to an audience question about transboundary issues on the Columbia. Management of cascading dams, he said, requires participative, inclusive management that values the opinions of all key stakeholders – including the voices of indigenous, riverine communities and anyone else in the general public who's interested.

Open communication and information-sharing, he added, are the foundation to build trust in any transboundary partnership, especially related to water resources. He cited best-practices that span a wide range: collaborative management; data- and information-sharing; infrastructure maintenance; community outreach. On the other hand, they face challenges like aging infrastructure, climate change and other emerging environmental issues.

Gu Hongbin then presented plans for the Lancang cascade to establish a centrally-controlled operation: the Lancang River Hydropower Centralized Control Center. This is comprised of 10 centrally-controlled power plants; a centralized, operation-safety, information-management system for the dams; and a fully functional, automatic, hydrological-forecasting system.

Their system of Environmental Protection and Management includes the release of native fish species; water-quality monitoring; fish-passage facilities; stratified water intake; an alternative habitat; and ensuring that any resettlement of local communities is in line with historical and traditional housing environments.

An audience query was put to a developer of the Don Sahong Hydropower Plant, about the DSPC's hiring practices. The developer answered that one key challenge for the environmental management and monitoring of Don Sahong is the lack of qualified staff. To address HR issues, the DSPC sponsors students and hires local staff, whenever possible. The developer also explained the opportunities to develop local capacity early in the project, continuously evaluate training programs, and improve its technical-educational programs.

Monitoring fish-passages requires good planning, employment of local people, solving logistical issues, and adaptive managers. The DSPC, he added, supports educational activities and business opportunities for local communities, like fish releases or farming for tilapia fish. It also provides vital COVID support to regional and local authorities – with a quarantine camp, vaccinations, medical supplies, etc.

Session Four

The fourth session centered on the *Regional Effort to Promote Responsible Operation and Management of Hydropower Projects*. It kicked off with another presentation by the MRC Secretariat's Sustainable Hydropower Specialist, Palakorn Chanbanyong, about MRC efforts to promote responsible operation and management of hydropower cascades, with so many developers and owners who may need to be persuaded to share data and other information.

A key component is the MRC's own information-sharing, which is well-established in the Mekong River Basin, includes platforms like the MRC data portal, the Lancang-Mekong Cooperation (LMC), and coordination via consultation (through the PNPCA). In fact, Chanbanyong emphasized that this diversity of interests and positions rank among the great challenges that the MRC faces in infrastructure development and operation.

Not only is the MRC looking for closer cooperation with the LMC in the area of data-exchange. Two pilot-projects are also outlined in the MRC Strategic Plan 2021–2025: 1) The first, to make integrated, operational, water-infrastructure data available on the MRC data portal; 2) The second, to establish an operational coordination and emergency response during the 2022 flood season, for the 3S River Basin – where the Sesan and Sre Pok rivers flow from Vietnam to Cambodia, then merge with the Mekong at Stung Treng in Cambodia.

Up next was a fellow staff member of the MRC Secretariat: So Nam, the Chief Environmental Management Officer, to speak about the Joint Environmental Monitoring project (JEM). Working with developers is a long, challenging process, said Nam, and based on a harmonized protocol that's developed and tested on the ground. It was then adopted by the Don Sahong developer, which he said is a considerable achievement. Moreover, the project also produced a video, fact-sheet and fresh guidelines.

The JEM goal is to systematically collect, generate and share reliable, scientific data and information through a standardized monitoring programme, basin-wide. Its particular focus is on site-specific issues with cross-national implications. JEM supports Member Countries to monitor the Mekong mainstream hydropower projects and report the most pressing transboundary environmental impacts – starting with construction, through operation today. Such input should shape more effective mitigation and management measures, if needed.

Two pilot-projects include the Xayaburi and Don Sahong hydropower plants. JEM launched in 2016; the MRC developed a concept note in 2017; then secured GIZ support in 2018. Implementation began in 2019, with testing of protocol in carefully defined locations.

In 2022, that protocol will be incorporated into the Core River Monitoring Network (CRMN), a network of monitoring stations across the LMB. Key findings focus on hydrology and hydraulics: the river-flow controlled or impacted by hydropower developments in China, along the Mekong-Lancang mainstream and tributaries.

Meanwhile, in Thailand's Chiang Khan district, the MRC found that large, rapid and frequent fluctuations in water levels commonly occur, during low and moderate flows – but not persisting for a long period of time:

- Key findings on sediment: upstream sediment loads were reduced compared to historic quantities (pre-2008). This was due to trapping in Chinese impoundments. Since 2018, sediment concentrations and loads at Chiang Khan and Nong Khai have decreased substantially.

- Key finding on water quality: generally good, within the water-quality thresholds for the *Protection of Aquatic Life and Human Health*.

- Key findings in ecological health: the Environmental Health Index (EH Index) upstream of the Xayaburi impoundment was in good condition, similar to the routine, long-established Ecological Health Monitoring (EHM) results recored at the Luang Prabang station.

Lastly, So Nam cited the key findings in fisheries: upstream of the Xayaburi dam, a sharp decline in both fish diversity and gillnet "Catches Per Unit Effort" (CPUE). In addition, a sharp decline in average monthly catch per fisher, within the impoundment area.

Open Discussion/General Observation

Following this series of presentations, discussion was opened to the audience. At this time, several representatives of Civil Society Organizations weighed in.

From Oxfam Cambodia, an advocate cited the example of the Colorado River, regarding input from indigenous people and consideration of gender. How can we translate data, so that the flow of information can benefit communities downstream? Information-sharing about operational regimes of hydropower projects is equally important. Who will share the information discussed today: MRC, NMCs, line agencies? This highlights the need for an Early Warning System (EWS), to protect communities downstream – in case of emergency.

Next, a member from the Southeast Asia Program of International Rivers asked the MRC about reports it recently published, which pointed out increased pressures on the Mekong. That highlighted the importance of data- and information-sharing with different actors, especially in the private sector.

Three years ago, the World Bank supported one pilot project in the 3S sub-basin, within the Integrated Water Resources Management (IWRM) process. So, the question is how will the MRC capitalize on previous results? How will data from the JEM influence projects to minimize transboundary impacts? How do we ensure that the study's analysis, conclusions and recommendations will consider the view of communities? Or how this affects water-quality?

The MRC Secretariat responded by clarifying: the upcoming Joint Study between the MRC Secretariat and LMC Water Center is a landmark initiative by all six Mekong countries, to examine the changing hydrological conditions in the entire Mekong River Basin. The need for a joint study is underscored by the Basin's increasing vulnerability to floods and droughts, which are attributed to both climate change and water-infrastructure development.

The Joint Study aims to propose different adaptation measures, including better information-sharing and coordination of water infrastructure. All this material ought to then enable the six Mekong countries to effectively address flood and drought risks, as well as any water fluctuations. The Study has two phases: the first will take place in 2022 and provide recommendations for actions. The second phase will be implemented in 2023–24.

The discussion was then wrapped up by the moderator, Susanne Schmeier, Associate Professor of Water Law and Diplomacy at the prestigious IHE Delft Institute for Water Education. Schmeier identified one key message in response to the complex challenge how to set up an effective mechanism for information-sharing, then applying that knowledge. It's a challenge on three levels, she said:

1) Setting up that mechanism, to share all the relevant data and information. Establishing a clear, inclusive system isn't easy, but we should certainly strive to build one.
2) Apply that shared material, as an opportunity to achieve the MRC vision for the Basin.
3) Ensure that knowledge is also disseminated, embraced and applied by the riverine communities, by the relevant countries, even by the entire basin.

However, Schmeier also reminded the audience: The Mekong isn't the only river basin facing these challenges. Unfortunately, they are familiar to other river basins around the world.

DAY 2: REGIONAL CONSULTATION ON THE SANAKHAM HYDROPOWER PROJECT'S PRIOR CONSULTATION PROCESS

FORUM BACKGROUND

On 9 September 2019, the MRC Secretariat received an official notification from the Lao National Mekong Committee: It submitted the Sanakham Hydropower Project (SNHPP) for Prior Consultation under the MRC Procedures for Notification, Prior Consultation and Agreement (PNPCA). This documentation for the SNHPP was submitted just a month or so after the submission of the Luang Prabang Hydropower Project. At the Preparatory Session for the 26th Meeting of the MRC Council, on 25 November 2019, the MRC Joint Committee decided to start the Prior Consultation (PC) process for the Sanakham project after the PC process was completed for the Luang Prabang project. Once the Luang Prabang PC process was actually completed, on 30 June 2020, the Joint Committee did indeed commence the PC process for the Sanakham project one month later, on 30 July 2020.

The PNPCA PC process provides stakeholders with available data and information on proposed projects. The process is designed for notified countries to express any concerns and offer recommendations; it is also for the proposing country to accept certain measures in order to avoid, minimize and mitigate potential adverse transboundary impacts – and find a better way to share the benefits of hydropower.

A **Technical Review Report** (TRR) – produced by the MRC Secretariat – includes findings from the national information-sharing/stakeholder-consultation meetings and is presented to the Joint Committee for consideration. After that, notified countries submit their **Official Reply Forms** to the MRC Secretariat to record their comments. The final stage is for the Joint Committee to meet and discuss the project's Prior Consultation with the aim to reach agreement on how to achieve optimal use, then issue a decision with agreed-upon conditions for the project. A **Statement** by the Joint Committee and **Joint Action Plan**, such as the one for the Pak Beng, Pak Lay and Luang Prabang projects, are the post-Prior Consultation mechanism to ensure ongoing dialogue among Member Countries and stakeholders. They also provide additional measures for the notifying country to consider, and for the MRC to follow up with recommendations and monitoring.

The MRC considers the organization of stakeholder consultations as an important, integral part of the PC process. The Member Countries (Cambodia, Lao PDR, Thailand and Viet Nam) agreed that the process must ensure a mechanism to raise awareness and involve people who will be directly and indirectly affected. Moreover, the local and national government agencies; the private sector; developers; regional donor and academic communities; media; and the wider public, represented by civil society and non-governmental organizations.

At the regional level, the MRC Secretariat has held two regional consultations on the PNPCA Prior Consultation. These are to: 1) share information on the proposed hydropower project;

2) obtain feedback and comments while formulating the proposed project's TRR; and 3) provide a platform for multiple stakeholders to exchange opinions and recommendations to minimize transboundary impacts of the reasonable, equitable use of water and related resources in the Mekong River Basin. The first regional consultation was held on 24 November 2022; its report can be found here.

FORUM AGENDA

Agenda for Day 2 is available here.

FORUM OBJECTIVES

- Provide updates of project implementation for Pak Beng, Pak Lay, and Luang Prabang, and progress in implementing the Joint Action Plan of each project.
- Provide updates on national information-sharing and consultation on the Sanakham hydropower project, which have been conducted in Member Countries.
- Collect additional concerns, comments and recommendations for the final draft of the Technical Review Report.

FORUM PARTICIPANTS

- MRC Member Countries, including representatives of their National Mekong Committee Secretariats, the water planning and management sector, energy-related agencies, and relevant implementing agencies.
- Academia (research institutes, universities and think-tanks).
- International NGOs, local NGOs and CSOs.
- Local authorities and riverine communities.
- Private sector and companies.
- Development Partners.
- Dialogue Partners.
- Other interested groups.

FORUM PROCEEDINGS

Day Two of the 11th MRC Regional Stakeholders Forum had a more specific focus than Day One. During the first day, discussion explored the broad issues of responsible operation and management of cascade hydropower: from the Lancang in China, to the Mekong in Southeast Asia. It brought together relevant government agencies, developers, operators and riverine-community representatives – as well as meaningful voices from the international community.

On Day Two, though, the theme focused solely on the Sanakham Hydropower Project. The following section chronicles the most interesting perspectives shared that day, as well as the consultation outcomes.

Session One

Dr An Pich Hatda, the MRC Secretariat CEO, again welcomed all attendees, both online and in person. In his remarks, he noted that the Prior Consultation process of the Sanakham hydropower project was supposed to conclude within a six-month timeframe, according to the PNPCA. However, due to the COVID pandemic – and the unprecedented circumstances and challenges it caused – that wasn't possible. Hatda also emphasized that the essence of consultation is knowledge-sharing – and the Forum is a platform for it, too. This, he said, gives cumulative perspectives of sustainable hydropower development, particularly on measures that aim to avoid, minimize and mitigate potential impacts on the livelihoods of communities dependent on the shared river system.

Following Hatda's remarks, the Lao PDR's Vice Minister of the Ministry of Natural Resources and Environment, H.E. Mr Sinava Souphanouvong, also welcomed all participants. He stated that Lao PDR relies mainly on the Mekong River for power generation, as the country has enormous potential for hydropower to become a driving force of economic growth. The Lao government has ambitions to become an energy-rich country – something like "The Battery of Southeast Asia" – by exporting and supplying electricity to neighboring countries across the region. He stressed that as one of the core MRC Member Countries, Lao PDR aims to develop projects that are both environmentally friendly and economically responsible.

Next came an overview of the Sanakham project by Dr Thim Ly, the Chief River Basin Planner of the MRC Secretariat. Following a short video about this HPP, Ly briefed the audience on how implementation is progressing with the Sanakham PC process. He reminded the audience that the PC is neither a right to veto the proposed use, nor is it a unilateral right for any riparian to use the waterway without taking into account the rights of other riparians. He highlighted key meetings and activities conducted since Lao PDR submitted the Sanakham project for the PC process on 9 September 2019, such as: hosting the Joint Committee Working Group meetings; national information-sharing and consultation; and formulating the draft Technical Review Report. He also listed activities to be carried out toward the end of the process, with a Special Session of the Joint Committee planned in January 2022, at which they would discuss concluding the PC process.

Next, Mr Sophearin Chea, a Regional Water Policy Consultant for the MRC Secretariat, presented a recap of the first regional information-sharing on the proposed Sanakham HPP, which was held on 24 November 2020. He highlighted key comments raised by stakeholders during that session – and how the MRC Secretariat addressed them in the technical review, with guidance from the MRC Joint Committee Working Group.

A representative of the Lao Ministry of Energy and Mines then provided a brief report to update the progress of project implementation of Pak Beng, Pak Lay and Luang Prabang, and the progress in implementing each project's Joint Action Plan. Following the completion of the PC processes of each project, the Lao Government and developer needed to further work on data collection, monitoring and redesign. Negotiations were still ongoing regarding the Concession Agreement and Power Purchase Agreement. The Government would share the update feasibility and project redesigns, when they'd be ready.

Before coffee break, the Forum was opened to discussion and comments. Main comments were about the need for more effective implementation of the agreed Joint Action Plan; both Lao PDR and the developer must show clear commitment, while the MRC Secretariat as facilitator should play an active role in monitoring and reporting progress. It was noted that implementing the Joint Action Plan consists of four phases: initial, project design, construction, and operation. Its first phase was completed with agreement of the tracking matrix, plus organizing a number of meetings between the MRC Secretariat and Lao agencies to discuss the JAP implementation arrangement.

After coffee break, representatives of each MRC Member Country briefed the Forum about the organization and outcome of national information-sharing and consultation in their respective countries. Cambodia already organized two national consultations, on 27 October 2020 and 4 November 2021, and planned for a third one in December 2021. Viet Nam organized two national consultations, on 10 November 2020 and 9 December 2020, while Thailand stated it couldn't yet organize such information-sharing due to the lack of information on transboundary impacts from submitted documents, which could inform local communities.

Session Two

Three PowerPoint Presentations were provided by the MRC Secretariat's technical team, about: 1) hydrology, hydraulics, sediments and river morphology – presented by Dr Sarann Ly, Water and Climate Monitoring Specialist; 2) environment, fisheries and socio-economics – presented by Ms Nguyen Thi Ngoc Minh, Socio-Economic Specialist; and 3) dam safety and navigation – presented by Mr Palakorn Chanbanyong, Sustainable Hydropower Specialist.

All PPTs from Session One and Two, as well as documents for Day 2, can be found here.

Session Three

Stakeholders were provided opportunities to seek clarification, offer views, share comments or make recommendations about the PC process, as well as the proposed Sanakham project.

Main comments covered concerns about the use of outdated data and transboundary impacts on downstream communities, in particular due to the proximity of the project to the Thai border. Moreover, the cumulative impacts of all dams and infrastructure development; combined with climate change, ecology and biodiversity degradation of the river; water fluctuation; impacts to the Tonle Sap Lake; sediment loss causing bank erosion; reduction of nutrients for agriculture and fisheries; fish loss causing negative effects on livelihood; increase of flood and drought; salinity intrusion; dam safety; and possible hydropeaking operation.

Recommendations were made around the need for an independent panel of review experts; incorporating the JEM experience into the review; flood warning and emergency systems; financial compensation to affected communities; detailed mitigation plans to be consulted; equitable benefit-sharing among riparian communities and countries; plus, more updated data, information and collection.

Attached as an Annexe to this Forum Report is a detailed table of key comments and suggestions from stakeholders, which were recorded in the meeting hubs and from the MRC's social-media channels. In addition, responses or clarification from the MRC Secretariat and other relevant stakeholders, like from representatives of Lao PDR.

Session Four

After conducting the Forum survey, Dr Anoulak Kittikhoun, the MRC Secretariat's Chief Strategy and Partnership Officer, highlighted the Forum's key points in the following way:

- Lao PDR was appreciated for their cooperation and commitment to submitting their project based on the 1995 Mekong Agreement and the PNPCA. Hydropower development is a key factor in Lao economic development and this project is expected to contribute to regional power development.
- Stakeholders again raised concerns and offered suggestions to focus on more detailed assessment of the transboundary and cumulative impacts, such as change of flow, sediment, fisheries and impact to the Tonle Sap. They were raised during last year's first regional information-sharing session, as well as in national information-sharing and consultation as reported by Member Countries. Among the key recommendations toward development of this proposed project were issues of accountability to the 1995 Mekong Agreement, the need for communication, and emergency planning.
- The MRC had piloted the Joint Environmental Program (JEM), which would generate lessons-learned about the effectiveness of the fish passage and the impact of dam operations. This insight should be applied to the design and operation of future dams.
- The MRC is currently exploring if some budget from the Mekong Fund could be allocated to improve the livelihood of communities adversely impacted by water use or project development, including hydropower projects could be utilized.
- It should be acknowledged that the development process must comply with national laws and standards, while regional procedures and guidelines should be adhered to.
- On information-sharing and coordination of dam operation, there is benefit to having the Sanakham project re-regulate the impacts of the cascade. The developer recognized the concern of transboundary impacts, particularly how it might affect Thai communities and the Thai border. In response, it would carry out further surveys and physical modelling of Sanakham operations, using updated data and applying the recommendations of the Technical Review Report.

The two-day Forum was closed by Dr An Pich Hatda, the MRC Secretariat CEO, who expressed his profound appreciation to all speakers, panelists, presenters and participants for their time and effort to share their experiences; international best-practices on hydropower operations; views, concerns and recommendations on the proposed Sanakham and its Prior Consultation process; and to the entire audience for actively participating throughout both days.

ANNEXE

Key Comments, Suggestions, and Responses at the 2nd Regional Consultation Forum on SNHPP PC process

(Day 2 of the 11th MRC Regional Stakeholder Forum)

30 November 2021

Comments/questions	Feedback/responses during the event	Action taken into the TRR
Cambodia (Siem Reap)		
In the last years, it has experienced a rapid development of hydropower in China and Lao PDR. Fishery losses were observed in Tonle Sap Lake. Deterioration of water quality is causing decline of rice production and fisheries. It is not convinced that fish can use fish passes. Before starting any hydropower project, environmental consideration and impacts should be taken into account. How will developer compensate communities in case dam collapse?		In the TRR, a comprehensive monitoring programme is recommended to be carried out over 2 years to establish a reliable baseline for SNHPP. A robust aquatic ecology and water quality (construction and operational phase) monitoring programme following the MRC Joint Environmental Monitoring programme [JEM] programme must be developed and initiated as soon as possible to determine any potential impacts of SNHPP on water quality and aquatic ecosystem health.
Can you elaborate on how Sanakham can compensate for the impact on the environment of the downstream communities?	*MRCS:* Regarding the compensation, it is difficult to precisely identify impact on community of each project. However, an exploration on possible establishment of the Mekong Fund is being conducted. It is possible that this Mekong Fund could be used to improve the livelihood of impacted communities, which could be seen as part of compensation to the losses of the impacted communities.	In the TRR, it is suggested that more robust impact assessment should be conducted and quantified for fisheries and biodiversity. Once there are these data, impacts on communities can be estimated.
Has fishpass system for Sanakham learnt from the downstream or upstream projects? It is suggested	*Lao PDR*: fish passages constructed in Laos have been using effectively. However, more study on	In the TRR, it is recommended that the developer re-examines the fisheries and fishpass facilities in

Comments/questions	Feedback/responses during the event	Action taken into the TRR
that Lao PDR use finding from JEM to reflect the sustainable of fishery in the Mekong	the effectiveness on fish passages in the HPP should be implemented. Recently, Laos has received some support for fish passages development from Australia.	the light of the PDG2009 and revised draft PDG and the present evaluation.
What are responses from Lao PDR on the fish catch down from 115 to 53kg/fisher/month and the loss of fish species from 70-90 species to 50-60 species downstream of Don Sahong in Cambodia side (2019-2020), according to the recent JEM Report?	Lao PDR is currently waiting for results of JEM. Therefore, it is too early to draw conclusions on efficiency of fish passes.	
The water level in the past provided enabling environment for fish mobilization from upstream to downstream and biodiversity. With the development of the HPP and climate change, the water level has significantly changed and this change has significant impact on agriculture, sediment flow, biodiversity. This change has also impact to land quality and local livelihood. With development of Sanakham, the impact will be higher.		In the TRR, a recommendation is made with regard to cumulative impacts of SNHPP in relation to upper Lao cascade which needs further assessment.
How does Lao government ensure that the environmental impacts in downstream are addressed or mitigated, including impacts on Cambodia's fisheries and Tonle Sap?		
Lao PDR build hydropower dams on the mainstream of the Mekong using the Laos Electrical Standard of 2018, which is the Laos	*MRCS*: As agreed in 1995 Mekong Agreement, all projects need to follow national regulations but when it gets into regional level, they have	

Comments/questions	Feedback/responses during the event	Action taken into the TRR
legal framework, but it does not address the international technical standard. If Laos uses only its standards, how does Lao PDR ensure that these dams will not impact on other countries in the Mekong under the Mekong Spirit.	additional obligations to share data, take into account recommendations, etc. There is, however, dynamic interaction between national and regional implementation levels, supporting each other.	
The assessment did not provide solid analysis on socio-economic transboundary impacts. It is important for downstream countries. In addition, the lesson learned/case study about the negative impacts of dam collapse in 2018 (Xepian, Xe Nam Noy) should be used to inform mitigation measures for the reduction of socio-economic impacts. Also, a contingency plan to address socio-economic issues for the unforeseen risks and compensation mechanism for transboundary impact should be prepared to ensure accountability of project owner and developers.		In the TRR, it is recommended to quantify the predicted impacts, using relevant MRC studies and the methodology demonstrated in the Rapid Assessment and reconsider the significance of impacts on other countries, as well as to undertake joint monitoring and mitigation where practical, and provide clear commitments in terms of budgetary, implementation, monitoring and adaptive management for local impacts.
Thailand (Bangkok)		
There is concern on the implementation of JAP. A list of activities needs to be carried out by Laos and Developer. The MRCS as facilitator has role to monitor and report the progress. There is no any information/report on the progress of JAP presented.	*MRCS*: Implementation of the JAP contains 4 phases, initiation, redesign, construction and operation. Its implementation depends on stage of project development. The MRCS is working with NMCs, especially with Lao PDR to implement the stage one through meeting with Lao agencies to discuss the implementation of the JAP, and to get update on the project development. It is clear as reported by Lao PDR that at this stage only negotiation on concession agreement and PPA is being done. The MRCS has	

Comments/questions	Feedback/responses during the event	Action taken into the TRR
	requested any additional study after the PC process, ongoing monitoring of sediments, flow, etc. should be shared with MRCS and MCs to get further stakeholder feedback. Template for tracking the JAP implementation and how recommendations in the Statement and in the TRR be addressed was developed by the MRCS and shared with Lao PDR and NMCs.	
The proposed hydropower project will have transboundary impact on downstream communities. However, it is difficult to estimate due to outdated data were used in the project documents. There are also discrepancies in background information provided. Concerns and proposals related to impacts of the Sanakham HPP: 1. According to conclusion of the technical review, early warning system against potential disasters (e.g. dam break) is missing. Compensation measures for local communities should be included. 2. Establish Joint Special Area to promote social economic development for affected local communities, including housing, tourism development, etc. 3. Development of the cascade projects should take into account environmental considerations.		In the TRR, it is recommended that the developer should define and elaborate measures to manage the impacts of flow fluctuations downstream of the dam, including having its warning systems. Also, it is recommended that dam break studies be done and must include a consequence study outlining the potential impacts of a dam break. A Dam Safety Management System should be developed early in the final design stage. And a contingency planning must be done together with the relevant Thai authorities. It also recommends to provide clear commitments in terms of budgetary, implementation, monitoring and adaptive management for local impacts.

Comments/questions	Feedback/responses during the event	Action taken into the TRR
From the technical review report, it shows that the transboundary impact will cause impacts in many dimensions. The emergency and alert system is not existing.		In the TRR, it is recommended that the developer should define and elaborate measures to manage the impacts of flow fluctuations downstream of the dam, including having its warning systems.
The cascade operation along the Mekong River should be considered. And how does the MRC plan for joint management among the MC member countries?	*MRCS:* Currently the MRC is working with Member Countries to discuss possible mechanism and work on the joint cascade operation of the HPPs along the Mekong River.	
Based on the presentation by the developer, physical model result should be shared to the stakeholders.	*Developer*: There is 1:100 model prepared by developer but if the model is extended, space in modeling buildings is limited. However, developer is open to suggestions from Member Countries.	
The project location is sensitive area for the Laos and Thailand, it is tourism point. It is recommended to have more monitoring station close to the border of Thailand to get information to inform the downstream communities. This is related to the emergency preparedness plan.		In the TRR, it is recommended that additional up to date and more robust information is required to allow scientifically sound decision-making regarding the extent of the impacts of the SNHPP.
Negative impact on bank erosion, border line demarcation and local communities. How does MRC plan for joint operation? What studies have been done in case of prolonged drought (HPP will compete for water with local communities)?	*MRCS:* Joint cascade operation or management is one of the issues identified in the Sustainable Hydropower Development Strategy (SHDS) and the Basin Development Strategy (BDS) 2021-2030. Data sharing depends on a good will of Member Countries to share data. It was a good example from Lao PDR and other Member Countries to present existing and planned	

Comments/questions	Feedback/responses during the event	Action taken into the TRR
	mechanism with regard to the control and communication center for cascade operation and management in Member Countries. In the future, drought management will be important due to climate change, however, we need to begin with data sharing first.	
Viet Nam (Hanoi)		
On the progress of the JAP and next step presented by Lao PDR, there is no information about the Power Purchase Agreement. However, the next step should include some directions on JAP implementation.	*MRCS*: Implementation of the JAP contains 4 phases, initiation, redesign, construction and operation. Its implementation depends on stage of project development. The MRCS is working with NMCs, especially with Lao PDR to implement the stage one through meeting with Lao agencies to discuss the implementation of the JAP, and to get update on the project development. It is clear as reported by Lao PDR that at this stage only negotiation on concession agreement and PPA is being done. The MRCS has requested any additional study after the PC process, ongoing monitoring of sediments, flow, etc. should be shared with MRCS and MCs to get further stakeholder feedback. Template for tracking the JAP implementation and how recommendations in the Statement and in the TRR be addressed was developed by the MRCS and shared with Lao PDR and NMCs.	

Comments/questions	Feedback/responses during the event	Action taken into the TRR
TRR and rapid assessment have not yet provided sufficient information, particularly on the socio-economic impact.		In the TRR, it states that additional up to date and more robust information is required to allow scientifically sound decision-making regarding the extent of the impacts of the SNHPP. It also recommends that examination of the transboundary (especially downstream reach to Vientiane) and cumulative impacts of SNHPP in relation to upper Lao cascade needs further assessment.
Request developer to clarify some rational and reason why they choose to develop SNHPP in such a way they proposed, so that people can support this project development. There is information on economic and financial analysis of the project. This analysis can affect the decision of the project development.		
Online (WebEx, Facebook, Twitter)		
ปณรัตน์ ผาดี: According to the impacts of Xayaburi Dam on Mekong River in Thailand and Thai people who live along Mekong River, sediment is decreased, water level is fluctuated and decreased continuously, water transparence is increasing, and water flow also decreased. It makes Thai people cannot predict the season as usual. Moreover, the impacts on fish diversity also happens on both species and number. It makes Thai fishermen lost their income in many seasons. Some fish species have missed their spawning season and spawning ground. By the		In the TRR, it is recommended that the developer should define and elaborate measures to manage the impacts of flow fluctuations downstream of the dam, including having its warning systems. Also, it is recommended that dam break studies be done and must include a consequence study outlining the potential impacts of a dam break. A Dam Safety Management System should be developed early in the final design stage. And a contingency planning must be done together with the relevant Thai authorities. It also recommends to provide clear commitments in terms of budgetary,

Comments/questions	Feedback/responses during the event	Action taken into the TRR
way, Xayaburi is quite far from Thailand that it still much effecting to Thailand. We are so worried about Sanakham Dam that is very near to Chiang Khan, Thailand. That will make serious impact to fisheries resources and others, to Thai part and Thai people. In your part, what will you do to prevent these problems and how can you respond to the loss, and would like the Lao government to consider about payback to environmental loss, and taking into account being responsible hydropower development.		implementation, monitoring and adaptive management for local impacts.
Aod/LNRN: Who is accountable from the environmental losses from the project development?	*MRCS*: There should be our collective or joint, but differentiated responsibility. Proposing country should observe all articles of the 1995 Mekong Agreement, especially Article No. 3 and No 5. Negative impacts have to be mitigated, minimized or avoided. This is a rationale for MRC's existence. Previous experiences show that we aim for good projects with as little negative effects as possible.	
With Sanakham loclation, there is a biodiversity hotspot which is a large conservation area called " Kengmai Rapid Fish Conservation Zone for 5 Km length" established in 2014. Therefore, 1. Is there any clear plan on a fish/unique species rescue protocol by third party, not collect for eating, when water drops suddenly during the dam construction?		

Comments/questions	Feedback/responses during the event	Action taken into the TRR
2. What is restoration plan for responsible hydropower? There is a spawning habitat for Jullien's golden carp, endanger species from November to January each year and home for Mekong Stingray, Hemitrygon laosensis.		
Fengyan: 1. To the Thai side, did EGAT or Thai Government negotiate with the local communities at downstream of the dam on purchasing power from the project? 2. Any results from the review of the resettlement of livelihoods situation after the Xayaburi operation are used in the document of the Sanakham project?		
Trong N V Vietnam: How does the large fluctuation of downstream water level and discharge that results from hydropeaking regime affect the design and operation of the fish passage? What are the mitigation measures?		In the Rapid Assessment (addendum to the TRR), this issue (affect of water fluctuation and discharge from hydropeaking to design and operation of the fishpass) has been discussed. The big problem with Sanakham is that no information is provided on the fish passage design. All the documentation indicates is that a natural fish pass solution will be provided, but the few details provided suggest it is inadequate in design: all these issues have been raised in the TRR.
Cyrill Trottmann: 1. Was the ESIA of each project reviewed by an international panel of experts on behalf of	*Lao PDR:* Company from Brazil reviewed the ESIA before issuing EIA certificate to the project. In addition, an international expert is attached to	

Comments/questions	Feedback/responses during the event	Action taken into the TRR
MONRE to ensure the Lao ESIA Standards will be achieved? 2. Will the ESIAs of these projects be published? 3. Will fish monitoring results from up and downstream fish migration be published? 4. Will a transparent cascade management be implemented, with obligations to all project developers to transparently share such information?	the developer to further support ESIA process. The ESIA documents have been shared for the PC process of the MRC. It depends on the MRC disclosure policy guidelines to share those documents to the public.	
Praivan Maew Limpanboon: Since Xayaburi HP and Don Sahong HP on mainstream Mekong River have been operated for many years, has there been any good practice recorded on mitigation and/or compensation measure to reduce negative impacts from these two HPs' operation both upstream and downstream and in particular on the assessed transboundary impact?		
Cyrill Trottmann: The MRC DG 2009 is still the latest officially approved Design Guidance. When does MRC foresee to approve the latest official MRC DG?	*MRCS:* Yes, the MRC PDG2009 is the latest officially approved guidance. The revised draft PDG is still being negotiated by Member Countries under the MRC. However, within the Luang Prabang and Sanakham PC process, the good practices in this revised PDG have been used for recommendations in the Technical Review. The MRCS is currently facilitating for the finalization of this revised PDG.	

Comments/questions	Feedback/responses during the event	Action taken into the TRR
Vithet Srinetr, Thailand: Sanakham hydropower development is too close to national boarder of which its impacts are unavoidable and impossibly mitigated in regard to transboundary impacts to Thailand. Impacts on downstream community due to Sanakham project are critical to impossibly compensation scheme. Its transboundary impacts are in sight of local communities in particular for Thai residents. Incremental impacts of Sanakham project will be significant to socio-economic, and ecological impacts in particular to vulnerable groups. It is too close to possibly mitigate and compensate the loss and damage to downstream local communities.	MRCS: it is a valid point about project proximity to the Thai border. MRCS review team has raised this issue clearly in the TRR socio- economic parts.	In the TRR, it is recommended to provide clear commitments in terms of budgetary, implementation, monitoring and adaptive management for local impacts.
Vithet Srinetr, Thailand: Site selection of Sanakham project has not taken sharing transboundary socio-economic benefits into consideration and for all Mekong water users. Only technical consideration; hydrology and hydraulics is only for site selection. Relocation of Sanakham site location must be obliged for Lao Government in discussion with MRC member countries.	*MRCS*: It is also recommended in the TRR for bilateral discussion between the Thai and the Lao governments to assess impacts and discuss detailed mitigations in consultation with the affected communities. mitigations in consultation with the affected communities.	
NDT: 1. The very good thing is MRC conducted the JEM project with lot of hydrology and sediment data collected in 2020. Did MRC use this data for Technical Review?	*MRCS*: The data collected from the JEM in 2020 has been used in the conducting the Rapid Assessment Report, which is a complementary report as part of the TRR.	

Comments/questions	Feedback/responses during the event	Action taken into the TRR
2. Sanakham hydropower dam is the most downstream of the upper cascade dams so the approach to review this dam must be different from other previous PNPCA dams when there will be accumulative changes impacted by upper dams. In term of hydrology and sediment transport management, what is MRC's approach to take into account this issue in technical review?	*MRCS:* For SNHPP TRR, like other previous review, the MRCS use the 2009 PDG as the basic document to check compliance and the revised PDG for providing good practice recommendation. However, for SNHPP with the Rapid Assessment, we also use the exiting information from Xayaburi operation as well as some scenarios with expected operation of upstream mainstream project, like Pak Lay. One of the recommendations in the Rapid Assessment/TRR is that SNHPP could be used as a regulator of flow taking into account it could be a most downstream dam of the upper cascade.	
Sok Khim (Oxfam): It sounds like more negative impact of ecology and social. Could the economic return from the project compensate the loss of biodiversity, ecology and social benefit?		
Piratorn Punyaratabandhu: 1. In the affected area on the Thai side, the project has impact to fishery and income of community. So, this may increase of socio-economic inequality in the affected area. 2. The developer should concern about health impact in the affect area, because changing ecosystems may also cause of new disease in the affected area.		

Comments/questions	Feedback/responses during the event	Action taken into the TRR
3. Suggest a continuous survey and monitoring of the situation. Developer should inform and listen to opinions sufficiently from the people in community or should have public communication process. It may reduce conflict and resistance in the affected area.		
It is unbelievable that there were 57 fish species in the Mekong from the Sanakham study.	*SNHPP Developer*: Mekong River is more or less 4909km. It is not all fishes need to migrate along the whole river. As far as the SNHPP project concerns fishes which live near the project area which migrate through the dam. But, developer will keep studying and monitoring the fishes.	
Praivan Maew Limpanboon: As pointed out in all of the presentations by specialists at the MRCS about insufficient data, out of date data, and methodology applied by SNHPP developer, should a joint SNHPP and concerned line agencies of Lao PDR and Thailand as well as CSOs from both countries be formed to conduct data collection using agreed method, parameter of each data item, timeline, locations, jointly analyzed and come up with workable and acceptable measures to mitigate, avoid, compensate any negative impacts caused by SNHPP. Relocation of this HPP could be considered if it could reduce negative impact.	*SNHPP Developer*: Developer have done the physical model study. The conclusion is not impacted to the area after 1.2km downstream of the dam. So, the water characters will recovery back to natural conditions. That means the dam itself will not impact the fishing and related economy. And also we double check with this conclusion via mathematics model to ensure the conclusion. We keep doing HIA work in future, but the dam itself will not cause the disease. We will do a continuous survey and monitoring with the local.	

Comments/questions	Feedback/responses during the event	Action taken into the TRR
	We fully cooperate with GoL and MRCS and member country to mitigate the impact in accordance with PSG and HAPPEN requirements.	
Dr. Rachanee, Mahasarakham University,Thailand: Where is the answer to the benefit of each country the most? It's a matter of fact. At the moment, we have to look at what will happen in the future/ and the benefits that will happen to Mekong Region Countries. In the long term, equalize benefits and heal those affected by erosion that may occur that depends on the operation that the downstream countries cannot control As drawn by the Chairman of Natural Resources and Environmental Protection Volunteer Network in Loei province on a direction for the creation of a community contract with the water, healing etc. Even though, Lao PDR controls the operation, what we can't control is climate change, the rain, water, and nature that we don't know and can't control. The point is, if this happens, how will Thailand cope with? Corporate social responsibility (CSR) fund should be established. In conclusion, it seems that MRCS have not received clear information from Lao PDR regarding the project. Nine conclusions in the summary of the second technical review report		

Comments/questions	Feedback/responses during the event	Action taken into the TRR
are not thorough or flagged clearly, so it must be carefully studied on the all-round impacts, especially the negative impacts. For example, the severity of the impact of the Mekong ecosystem and changes in the amorphous of the rivers and trenches. The benefits and remedies for those affected are unclear. The data must be analyzed and the impact of the project must be clearly determined on the Thai-Lao border. Analyze from the relevant authorities to make the solution work out in unity. Especially Thailand, which will be severely affected. It is primary to conduct research study to monitor changes in the Mekong ecological system, as well as social impacts to communicate, continuously raise awareness of public networks to what happens ahead and what the benefits will bring to Mekong region countries in the long run.		
Soknak (Oxfam) in Cambodia: Given the sharp decline of the fish catch and species both up and downstream of Xayaburi and Don Sahong Hydropower dams (based on the recently presented JEM report of these projects) and not enough evidence of effective fish passage practice have created serious concerns for fishery resources management in the Mekong region.		

Comments/questions	Feedback/responses during the event	Action taken into the TRR
The Lao government or developers shall carefully consider using these findings to inform their decision to ensure Mekong fishery sustainability.		
Comments from CSOs in Cambodia (sent through an official letter) **Fisheries and Fish Pass** The elevation of fish passage is high and its length is too long. With only one channel, we are deeply concerned that scientifically it may not sufficiently accommodate a diverse fish species, especially those migratory species. Until recently, there has not been sufficient evidence that demonstrates that fish passages would be effective and fit for purpose. While we are of the view that the MRC's Joint Environmental Monitoring of the Xayaburi and Don Sahong dams could provide evidence regarding an effectiveness of the designed fish passage, we have not been enlightened yet due to the unavailability of such information to the public. The assessment does not take into account the cumulative impact of all the existing and planned dams, both those already operational and in the pipeline.		The report of the JEM pilot is being discussed and will be finalized soon. Commentary on the inadequacies of the data in general and being 10 years out of date, thus not accounting for the changes brought about by Xayaburi, have been stressed in the water quality and aquatic ecology and fisheries sections of the TRR. The conclusion of the TRR is that aquatic ecology and fisheries data are inadequate to set baseline conditions or assess the likely impact of SNHPP. The fish passage design in appropriate as only designed for fish up to 50-60 cm. The fishpass needs to be redesigned. As above, a full EFA is required but also the need for a full transboundary assessment is stressed in the TRR.

Comments/questions	Feedback/responses during the event	Action taken into the TRR
The assessment recorded 43 fish species would be impacted; however, the study did not clarify the type of fish to form an opinion that would provide an understanding as to how many of them would be in greater risk. We would appreciate this clarification, especially on the impacts on migratory species, and provide appropriate recommendations on the re-design of fish pass that could potentially be appropriate in mitigating impacts and as a result improving adaptive management.		In the Annex F of the TRR, a list of species and associated risk assessment has been provided.
Hydrology and sediment transport The assessment showed dams hold back large amount of sediment load and less sediment supply at downstream of the river leading to be high risk of saltwater intrusion, especially in Mekong Delta and affect crop productivity. However, it does not provide a clear report on how much suspended sediment would be accumulated at downstream, especially transboundary sediment accumulation (Cambodia and Vietnam). Thus, the river sections downstream from the dams degrade and this is accompanied by a lowering of the minimum annual water levels.		The TRR and the geomorphology Annex discussed the need for a better description of the downstream environment and an in-depth analysis of how the project will potentially impact the downstream river channel. The TRR and the Rapid Assessment Report as an addendum to the TRR highlight the need for additional geomorphic characterization of the river downstream of the SNHPP site and assessment of the potential for increased erosion due to water level changes.

Comments/questions	Feedback/responses during the event	Action taken into the TRR
The estimation of high sediment rate of 69 Mt/yr compared to calculated number of 29 Mt/yr in 2015-2016 did not provide clear explanation of transboundary impact, for example in Cambodia and Vietnam. The assessment did not provide information on dissolved loads while these are critical to crop productivity in terms of nutrients provisioning. Modelling based on data from 2010 or before 2010 or 2015-2016 is not accurate. This is because geomorphological processes have changed in the context of climate change and other drivers. The modelling results did not factor into account the impact of sediment transport. Thus, the impacts of transboundary sediments transport and deposition have not yet been indicated precisely and effective sediment management strategies has not yet been developed. Based on the "no-dam scenario" assessment, it indicated that sediment loads of about 21 Mt/yr transport from upstream to downstream. However, after the dam is constructed, this is reduced to just about 5 Mt/yr of sediment loads,		The sediment modelling results from this project are included in the TRR and show that the overall volume of sediment is greatly decreased and the grain size distribution is altered, with gravel and sand almost completely trapped, and only silt and clay transported through the impoundment. The TRR has requested the need for a full EFA as part of the PC process. This should include hydrological and sediment as key factors and evaluate the potential impact on the downstream biota, at least as far as Vientiane and preferably the whole basin. Being run-of-river does not mean that the downstream reach is not impacted and this has been highlighted in the supplementary rapid assessment of the impact of daily fluctuations in water level.

Comments/questions	Feedback/responses during the event	Action taken into the TRR
especially silt and clay with few fine sands which will be transported to downstream. As a result, we are highly concerned that this will strongly affect sediment supply to the delta areas in Cambodia and Vietnam, leading depletion of ecosystem provisioning and the health of the river, in support of downstream habitats and people livelihoods. With the unclear indication of transboundary impacts for potential erosion and ecosystem processes downstream, we are concerned that these would be come into play as the dam comes online. We found no report on dissolved loads while the dissolved loads are very important to crop productivity in terms of as nutrients provisioning. One of the many problems with dams is that of the erosion of land. Dams hold back the sediment load normally found in a river flow, depriving the downstream of this. In order to make up for the sediments, the downstream water erodes its channels and banks. This lowering of the riverbed threatens vegetation and river wildlife.		
Climate change related concern		

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We found insufficient discussion on potential impacts and consequences of climate change, and changes in water level, especially the reverse flow into Tonle Sap. We request that impacts of climate change and tributary hydropower on the flow regime be taken into account and indicate clear strategies on how to manage future fluvial process. The potential effects of climate change on peak flows were not considered. Thus, we request that peak flow impact assessment be conducted to provide clear understanding. We have observed that the project used short-term hydrometeorological data from NOAA 1995- 2010. We are of the view that this is not appropriate and thus long-term series record data (i.e. rainfall data) should be considered and used in order to analyze hydrometeorological process more appropriately.		The Rapid Assessment Report as addendum to the TRR highlights that the impacts on water levels have virtually disappeared by Paksane. In the TRR, it is recommended that update data on hydrology be used including the operation of the dams in the upstream part of the river in China and of Xayaburi
Aquatic ecology Specific impacts resulting from impoundments include the reduction of aquatic and terrestrial		The TRR has recommended that the Developer assesses and reviews the impact of water level

Comments/questions	Feedback/responses during the event	Action taken into the TRR
productivity within the flooded areas instability of river channels and habitats and landscape alteration. What are the environmental impacts of dams? Many of the drowned river's plants and animals fail to adapt to river conditions. Fish species, introduced into the reservoir accidentally or for recreational fishing, may further alter the biological make-up of water life; and weeds and algae may thrive in the nutrient-rich water.		fluctuations on ecosystem functioning, aquatic biota downstream of SNHPP to Vientiane. The TRR shows that short term rapid fluctuations in water level are likely downstream of the SNHPP, as is now evident at Xayaburi. This will have considerable impact on the downstream environment and ecology and should have been evaluated. The TRR recognizes that the EIA does not provide robust evidence of the impact on aquatic habitats.
Socio-economic impacts The socio-economic impacts were primarily based on desk review, survey and interview. We found that the findings were not yet convincing when the methodology was not clearly provided. The tools and analysis are too descriptive although the methodology and findings are not comprehensive enough. Survey has a weak research design to analyze the negative impacts of hydropower. All of the data and analysis from the survey and interview should be attached in the Annex, for the purpose of verification.		The submitted document (SIA) includes settlements for 100km downstream of the Sanakham project among the populations directly affected by the project, including the right bank villages and towns such Chiang Khan. However, the level of detail in terms of baseline data, impact predictions and mitigation is much lower than for populations displaced by the project in Lao PDR. There is also relatively little information on the potential social disruption in the Thai border area due to construction impacts, increased traffic, workforce-community interaction. The TRR requests more information on these issues as well as on the methodology of impact ratings in the

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		SIA. Impact ratings should be linked to the 'degree of dependence' of riparian populations on the Mekong river and its resources.
The EIA report is long; however, the explanation on socio-economic impacts of local people are not comprehensively analyzed and explained. We found that most of data and information are extremely old and could not reflect the current situation. The EIA report needs the latest or most updated data and information because decision is required to be made based on the current status, not past accounts. We believe it will be more valid for the developer and the Lao Government to re-conduct the study that uses up to date data.		The TRR requests updated baseline information that is consistent with SIMVA methodology, and analysis of impacts that is clearly linked to bio-physical changes in the Mekong, caused by impacts of Sanakham and other projects. The TRR highlights the need for a comprehensive and up-to-date assessment of cumulative and trans-boundary impacts.
Transboundary impacts on lower river communities need to be addressed. The assessment did not provide a solid analysis of negative impacts of socio-economic transboundary impacts. Lesson learned and negative impacts of dam collapse in 2018 can be used as the case for the reduction of socio-economic impacts through mitigation measures provided in EIA report.		The TRR highlights the need for monitoring of all predicted impacts to verify whether mitigation measures are working, which residual impacts remain, and how to manage these impacts over time. The Dam Break Study undertaken by the Developer considers cofferdam overtopping and one case of partial dam breach due to terrorist attack. There is no adequate analysis of property and people at risk

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For a downstream country like Cambodia, it is important that such a deeper analysis is conducted to provide a full picture of how potentially the country's socio-economics and environmental landscape would be impacted – negatively and positively. It is suggested to have a contingency plan to address socio-economic issue in case of dam break and including a compensation mechanism for transboundary impact.		downstream following these events. It is recommended that a much wider range of flood and failure events should be analyzed, and proper inundation studies undertaken to identify property and population centers at risk. A suitable warning system must then be designed and implemented, including the contingency plan prepared.

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