The Mekong River Commission’s Initiative for Sustainable Hydropower

Oslo, Norway 4-6 September 2017

Presented by: Voradeth Phonekeo
Mekong hydropower development context

Rational for Initiative on sustainable hydropower
### Mekong HP Development Context:
High increase in demand and supply of electricity energy => more HP

### MOU Lao-Thai
- By 2025: 9,000 MW

### MOU Lao – VN
- By 2030: 5,000 MW

### MOU Lao – Cambodia
- By 2025: 1,500 MW

### Why Laos? - The Battery of ASEAN
Aims to export more power to neighboring counties like Myanmar, Thailand, Vietnam and other ASEAN members like Singapore, Malaysia.

<table>
<thead>
<tr>
<th>Potential Capacity</th>
<th>MOU Lao-Thai</th>
<th>MOU Lao – VN</th>
<th>MOU Lao – Cambodia</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW</td>
<td>29,000 MW</td>
<td>44,000 MW</td>
<td>24,000 MW</td>
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<tr>
<td>Projects in Operation</td>
<td>26,000 MW</td>
<td>3,500 MW</td>
<td>26,000 MW</td>
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<td>Projects under Final Preparation</td>
<td>26,000 MW</td>
<td>3,500 MW</td>
<td>26,000 MW</td>
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### GMS Plan for Regional Grid Interconnection

- **Existing 500kV Line**
- **Expected 500kV Line**
Legal Framework

Relation to the Mekong Agreement 1995 and the Prior Notification, Consultation and Agreement
1995 Mekong Agreement
(42 Articles)

Article 1. Areas of Cooperation
Article 2. Projects, Programs and Planning
Article 3. Protection of the Environment and Ecological Balance
Article 4. Sovereign Equality and Territorial Integrity
Article 5. Reasonable and Equitable Utilization
Article 7. Prevention and Cessation of Harmful Effects
Article 8. State Responsibility for Damages
Article 9. Freedom of Navigation
Article 10. Emergency Situations
2009-2010

1. The Strategic Environment Assessment (SEA) for the proposed 11 MS Dams
2. The Preliminary Design Guidance (PDG)

2011-2015

A series of studies to assist Sustainable Hydropower Planning and Management in the Mekong Basin have been implemented by the MRC Initiative on Sustainable Hydropower.

2016-2020

While recognizing regional energy needs, national economic development priorities, and the preservation of key environmental assets for economic, social and environmental purposes, etc. a basin-wide strategy is needed to address the difficult trade-offs and to design more optimal and sustainable hydropower development pathways.
Knowledge and guidance from new studies, tools guidelines help to:

• Acquire essential knowledge to address uncertainty and minimise risk of the identified development opportunities;

• Consider different options for sharing the potential benefits and risks of development opportunities;

• Improve the sustainability of hydropower development and design in the review of proposed mainstream dams during the PNPCA processes;

• Better integrate basin development planning considerations into national systems;

• Address the opportunities and consequences of the ongoing developments including development in the Lancang-Upper Mekong Basin;

• Plan expansion/intensification of irrigated agriculture for food security and poverty alleviation.
Hydropower Planning within Ecologically Sensitive Sub-basins (ISH01)

- The management of tributaries becomes particularly relevant for joint and basin-wide cooperation.
- These tributaries are ‘significant’ to the mainstream regarding specific impacts that can be assessed.
- This study helps to plan hydropower across multiple catchments in order to minimize impact on Ecologically Sensitive Areas and consider, at a basin scale, areas that should not be developed to preserve ecosystem integrity.

Development of guidelines on the multipurpose evaluation of hydropower projects (ISH02)

1. To provide Guidelines for **valuation** of the assessed **socio-economic** and **environmental costs** and **benefits** of hydropower, including the **evaluation of the multi-purpose use** of the schemes; and

2. To provide **methods** for these **valuations** to be internalized in the **economic or other analysis** and integrated with the strategic power planning approaches of the member countries.

Guidelines for hydropower environmental impact mitigation and risk management in the Lower Mekong mainstream and tributaries (ISH0306)

- **Describe the potential impacts** of these developments as assessed by existing studies;
- **Research regional and global experience on mitigation options** appropriate for these Mekong hydropower developments;
- **Undertake analysis and research into the effectiveness** of these mitigation options;
- **Provide guidelines** and a substantial knowledge base on mitigation approaches and solutions based on researches and case studies suitable for dissemination;
- **Make recommendations on improvements** and new approaches to impact mitigation; Recommendations for further researches to cover significant knowledge gaps; and
- **Build capacity** in all areas of assessment avoidance, minimization and mitigation options within industry and line agencies.

<table>
<thead>
<tr>
<th>No.</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Topic 1</td>
<td>Institutional capacity</td>
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<tr>
<td>Topic 2</td>
<td>Options assessment, siting and design</td>
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<tr>
<td>Topic 3</td>
<td>Economic contribution of hydropower</td>
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<td>Topic 4</td>
<td>Equitable sharing of hydropower costs and benefits</td>
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<tr>
<td>Topic 5</td>
<td>Social issues and stakeholder consultation</td>
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<td>Topic 6</td>
<td>Environmental management and ecosystem integrity</td>
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<td>Topic 7</td>
<td>Flows and reservoir management</td>
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<td>Topic 8</td>
<td>Erosion, sediment transport and geomorphological impacts</td>
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<td>Topic 9</td>
<td>Management of fisheries resources</td>
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<td>Topic 10</td>
<td>Dam and community safety</td>
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**MRC Sustainability Assessment Tool for HP in Basin wide context (RSAT)**

- **Most common and key issues requiring particular attention during planning and management in order to achieve sustainable hydropower development in a basin wide context**
Preliminary Design Guidance (2009)

1. Navigation
2. Fish passage
3. Sediment management and river morphology
4. Water quality and aquatic ecosystems
5. Safety of dams

The main thrust of the guidance in this section is to implement designs, operation and maintenance regimes, and institutional arrangements consistent with national requirements and international good practice for the safety of dams.

1. Xayaburi HPP
2. Don Sahong HHP
3. Pak Beng HPP
Outcomes of the initiative
Contribution of MRC ISH Outputs to the Hydropower Planning Cycle

1. Electricity demand market assessment resource assessment
2. Data base of power options, Other Sector inputs
3. Screening Analysis Economic Analysis SEA, CIA
4. Valuation and Evaluation ISH01 Ecologically Sensitive Sub-Basins
5. ISH0306 Risks and Mitigation
6. ISH0306 Risks and Mitigation
7. ISH0306 Risks and Mitigation

Project Selection and Approval Process

Construction & Operations (EMP, SMP, RMP)

Promotion Implementation

Valuation & Evaluation

Ecologically Sensitive Sub-Basins

Multi purpose Valuation

Power Development Plan

Refinement of Hydropower Project Portfolio (ESIA, cascades, multipurpose use)
Addressing MRC Member Countries’ Concerns

During the PNPCA and design review process for Xayaburi HP project:

• Concerns of potential impacts on Mekong Delta area, water flow, fish migration, sediment flow, and navigation have been considered by GOL;

• Additional works to address all concerns have been addressed by GOL

• Accepted additional works, has resulted in more than USD200 million absorbed by XPCL.

Major Lessons Learnt

For other Large Basins with international boundaries implications:

Planning
Cooperation
Operation
Developers and Planners Experience w/ PDG

To use lessons learned and recommendations for PDG update:

- **PDG content should be updated with simple, practical, accurate** with specific terms where necessary for better risks management and clear guidance.

- **Formalised communication exchange** between MRC and Developers **before** the start of a PNPCA process **to assure** correct understanding and high quality MRC Technical Review Report.

- **Consistent design and operation** for all dams in the Mekong cascades.

- PDG should also include **a follow up monitoring/inspection** during construction and operation phases.

- **Coordination mechanisms** among concerned parties should be established to assure safe operation of a proposed dam.

- **Coordination of design should be built in the PPA**

- Power Purchasing Agreement (PPA) should be **amendable** to include additional provisions resulting from the PNPCA process.
Thank you