Cambodia • Lao PDR • Thailand • Viet Nam
For sustainable development

The Mekong River Commission's Initiative for Sustainable Hydropower

Oslo, Norway 4-6 September 2017

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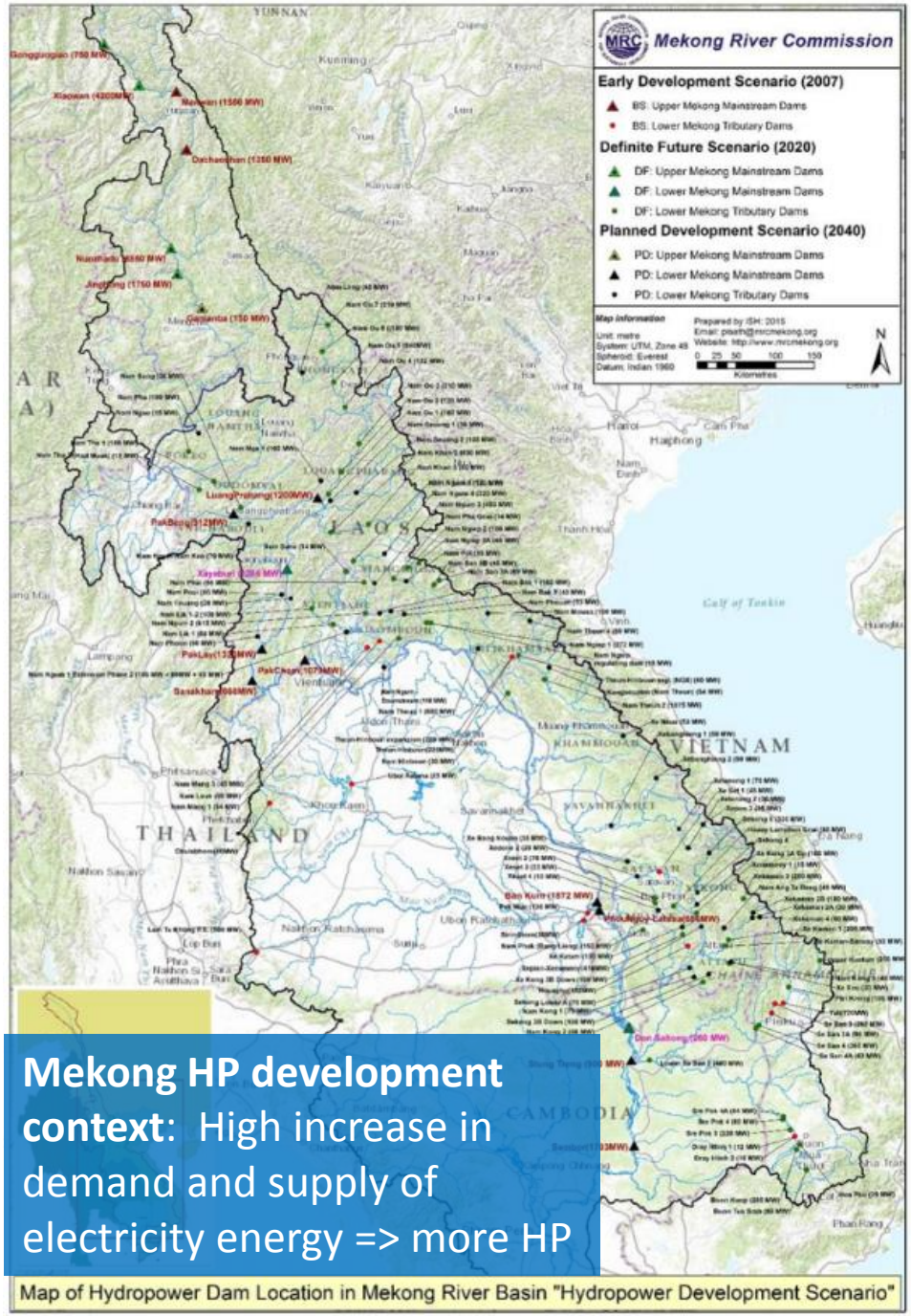
Mekong hydropower development context

Rational for Initiative on sustainable hydropower



Map of Hydropower Dam Location in Mekong River Basin "Hydropower Development Scenario"

Mekong HP development context: High increase in demand and supply of electricity energy => more HP

MOU Lao-Thai	**By 2025 : 9,000MW**
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.

26,000 MW	3,500 MW	29	44	24
Potential capacity	Has been commissioned	projects in operation	hydro power plants are under construction;	hydro power projects under final preparation;

GMS plan for Regional Grid Interconnection

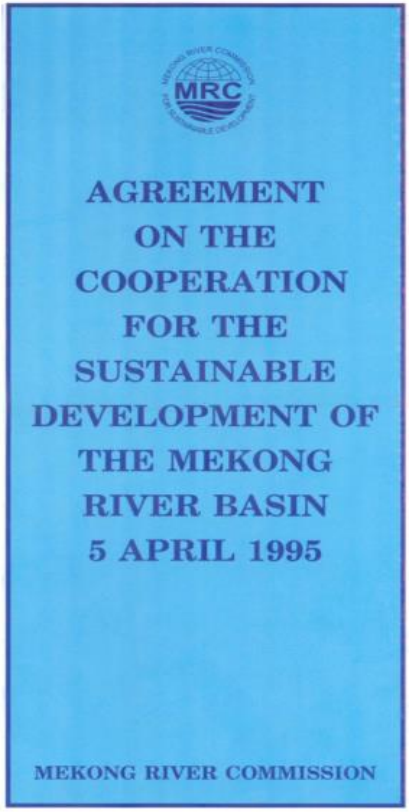
Legal Framework

Relation to the Mekong Agreement 1995 and the Prior Notification, Consultation and Agreement

1995 Mekong Agreement

(42 Articles)

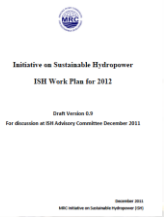
Article 1. Areas of Cooperation
Article 2. Projects, Programs and Planning
Article 3. Protection of the Environment and Ecological Balance
Article 4. Sovereign Equality and Territorial Integrity
Article 5. Reasonable and Equitable Utilization
Article 7. Prevention and Cessation of Harmful Effects
Article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



MRC Strategic Plan 2011-2015, 2016-2020 and Sustainable Hydropower planning and management

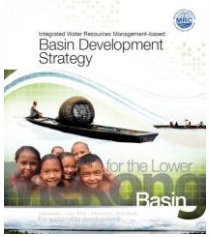
- **2009-2010**

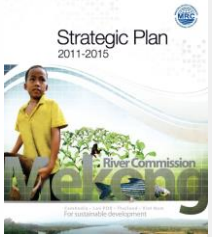
1. **T**he Strategic Environment Assessment **(SEA)** for the proposed 11 MS Dams
2. The Preliminary Design Guidance **(PDG)**



- **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.





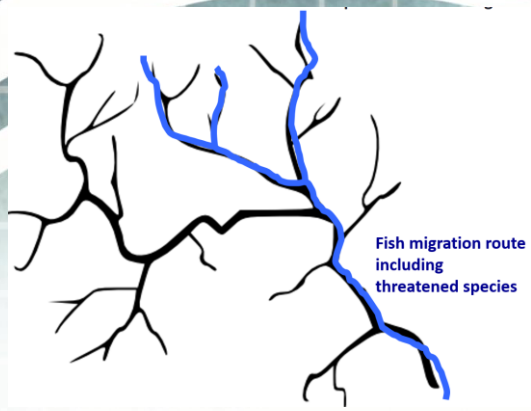
- **2016-2020**

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 :

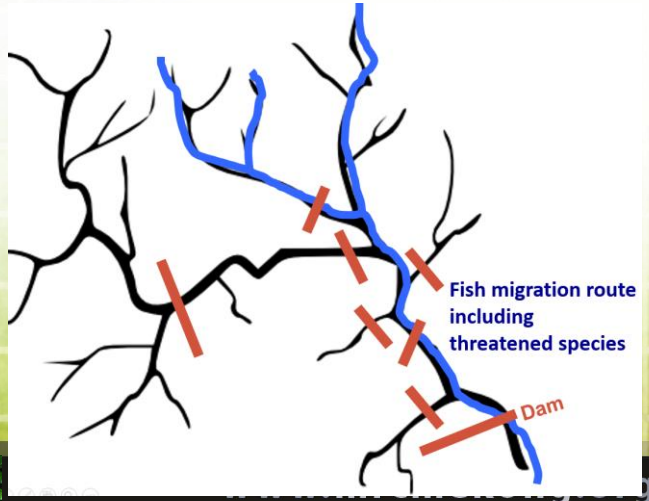
- Acquire essential knowledge to address uncertainty and minimise risk of the identified development opportunities;
- Consider different options for sharing the potential benefits and risks of development opportunities
- Improve the sustainability of hydropower development and design in the review of 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..

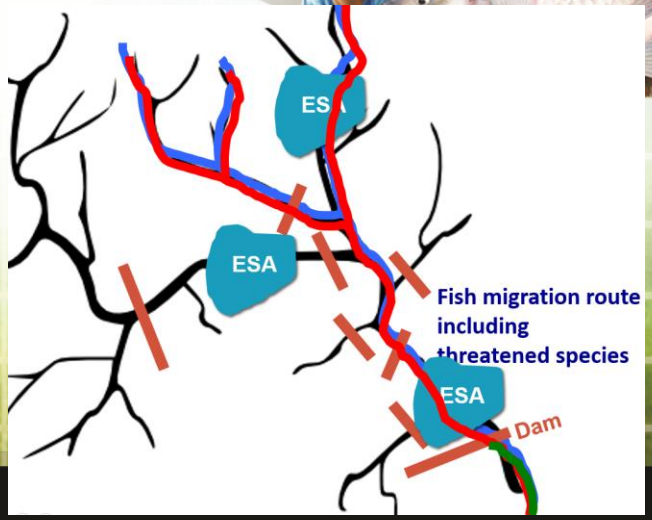
Hydropower Planning within Ecologically Sensitive Sub-basins (ISH01)



- 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 help 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**.

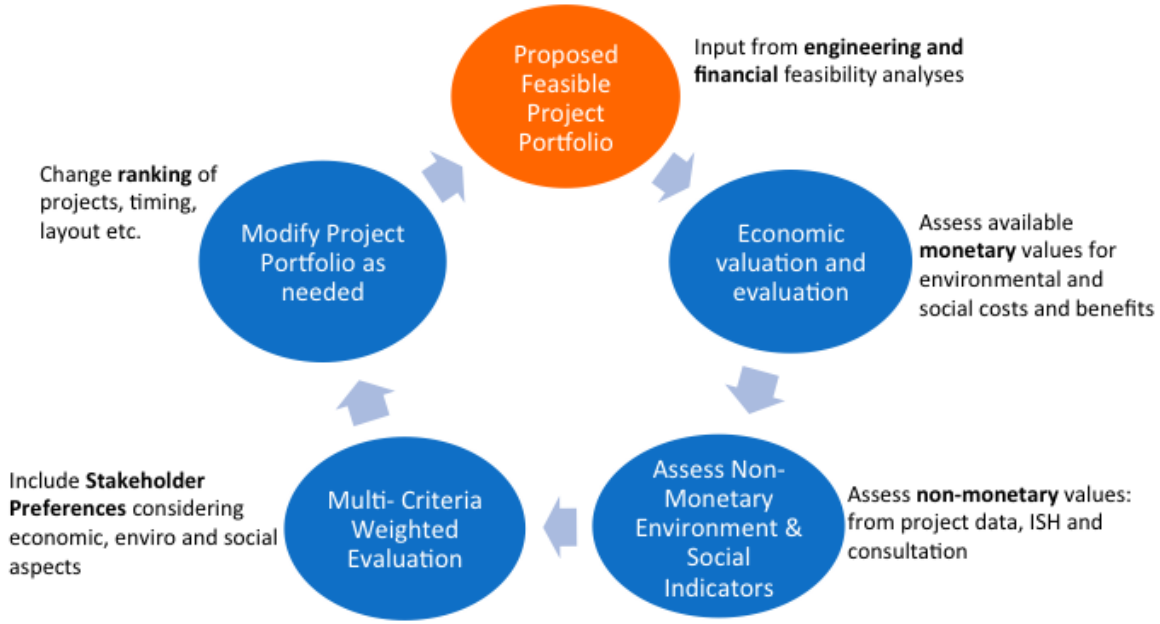
http://www.mrcmekong.org/aboutmrc/programmes/initiative-on-sustainable-hydropower/the-identification-of-ecologicallysensitive-sub-basins-for-sustainable-development-of-hydropower-on-tributaries-ish01/





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.

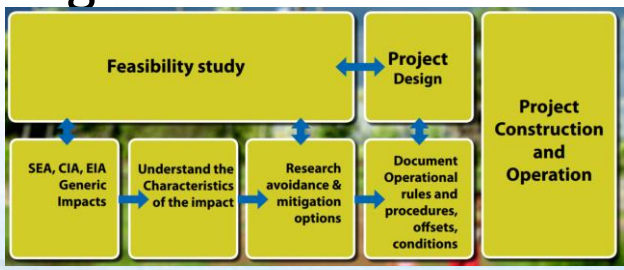


http://www.mrcmekong.org/about-mrc/programmes/initiative-on-sustainablehydropower/development-of-guidelines-on-the-multi-purpose-evaluation-of-hydropowerproject-ish02/

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.

http://www.mrcmekong.org/about-mrc/programmes/initiative-onsustainable-hydropower/guidelines-for-hydropower-environmental-impact-mitigation-andrisk-management-in-the-lower-mekong-mainstream-and-tributaries-ish0306/.

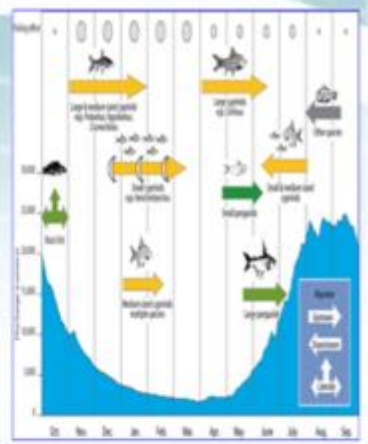


MRC Sustainability Assessment Tool for HP in Basin wide context (RSAT)

- Most common and key issues requiring particular attention during planning and management in order to achieve sustainable hydropower development in a basin wide context

No.	Topic
Topic 1	Institutional capacity
Topic 2	Options assessment, siting and design
Topic 3	Economic contribution of hydropower
Topic 4	Equitable sharing of hydropower costs and benefits
Topic 5	Social issues and stakeholder consultation
Topic 6	Environmental management and ecosystem integrity
Topic 7	Flows and reservoir management
Topic 8	Erosion, sediment transport and geomorphological impacts
Topic 9	Management of fisheries resources
Topic 10	Dam and community safety

Preliminary Design Guidance (2009)



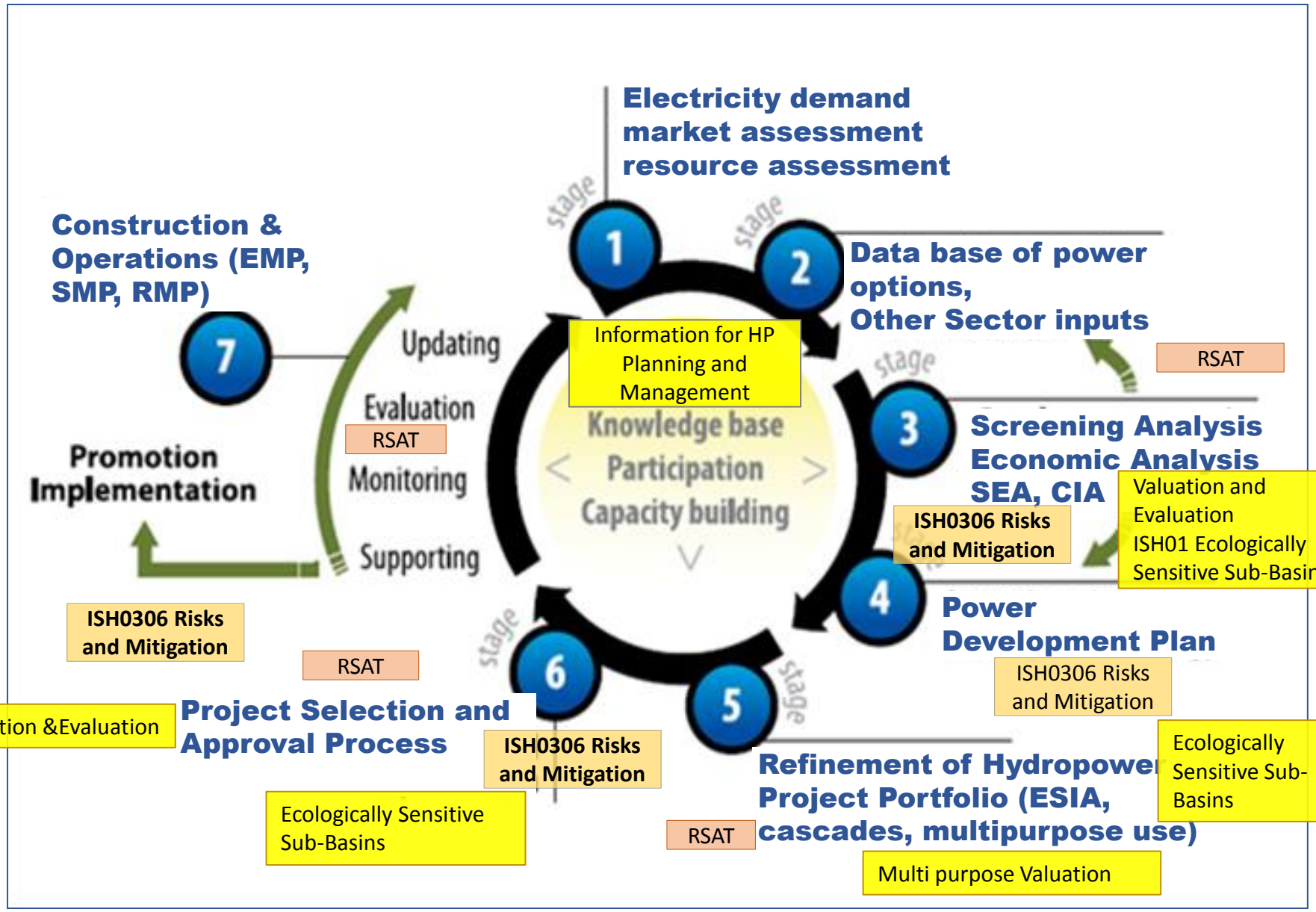
1. Navigation
2. Fish passage
3. Sediment management and river morphology
4. Water quality and aquatic ecosystems
5. Safety of dams

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



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.

Interpreted from the Technical Workshop on Xayaburi HPP *"Requisites for Concession Agreement: Requirements of MRC-1995 Agreement"* Donchan Palace Hotel, Ministry of Energy and Mines, Vientiane, 15 July 2015

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