



Updates on ISH Additional Studies to Improve Hydropower Planning in Lower Mekong Basin

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Initiative on Sustainable Hydropower (ISH)

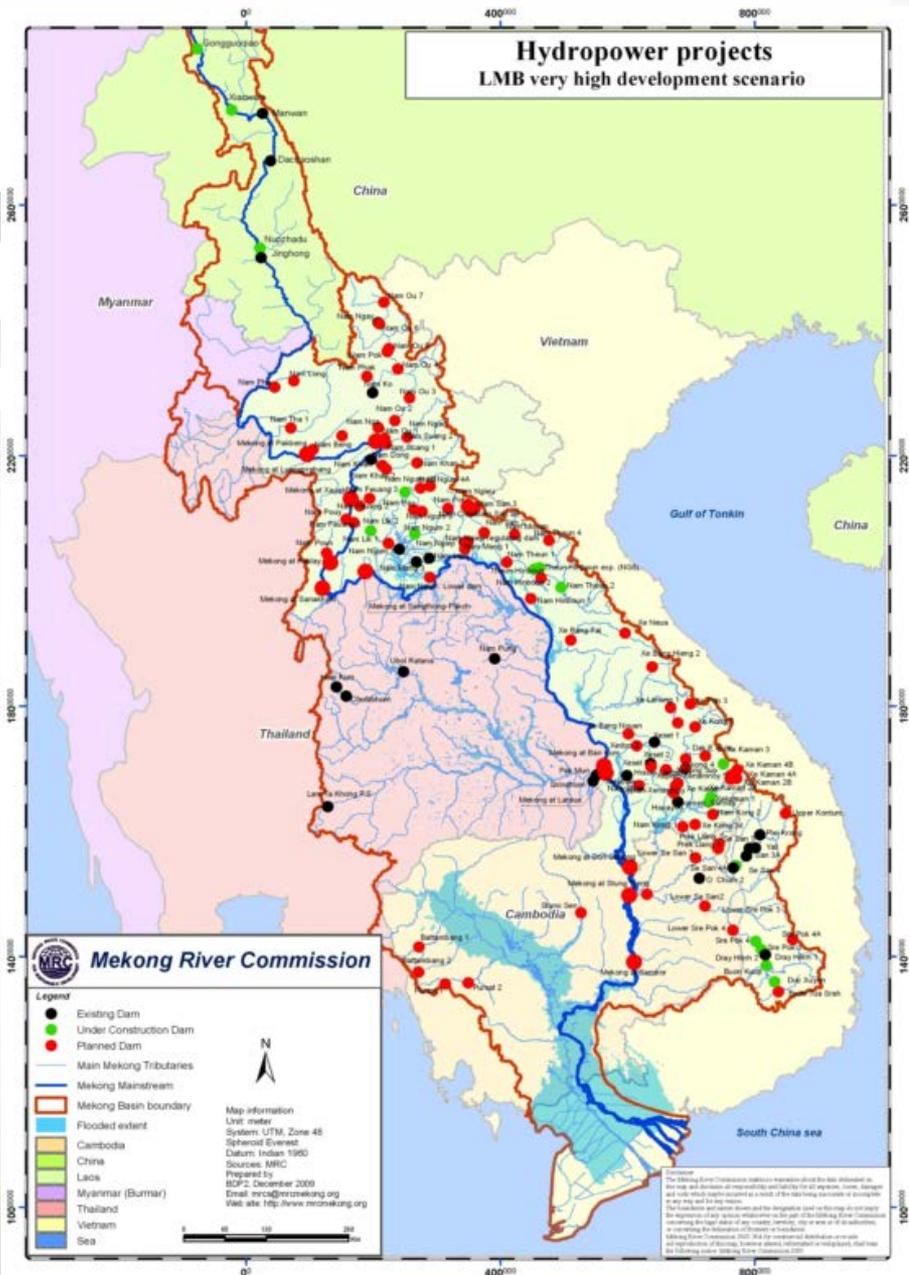
Mekong River Commission

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Hydropower projects LMB very high development scenario



Accelerating pace of hydropower development in the Mekong

Effective cooperation among Mekong countries to sustainably manage the growing number of existing hydropower assets in the Mekong basin

To assess cumulative and transboundary impacts and prepare mitigation measures

Formulation of wider strategies for sustainable development of the regional power sector.

MRC Strategic Plan 2016 - 2020

- Food and livelihood security
- Energy security
- Outcome 2: Environment management and sustainable water resources development optimised for **basin-wide benefits** by national sector planning agencies



1. Navigation
2. Fish Passage on Mainstream Dams
3. Sediment Transport and River Morphology
4. Water Quality and Aquatic Ecology
5. Safety of Dams

Based on principles, international best practice

- Avoidance over mitigation
- Water as an economic good
- Adaptive management
- Good practice and safe operations

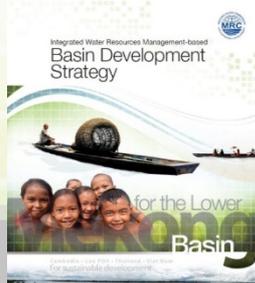
Two broader aims are:

- i. To ensure that developers have timely guidance in order to adopt a consistent approach to the design of individual dams, as well as the proposed mitigation and management measures. This is important, particularly where developments have significant trans-boundary impacts for people or the environment downstream.
- ii. To ensure that the approach of offering performance targets allows developers the flexibility to identify and propose the best solutions

The Basin Development Strategy



- The Strategy: Building on a Strong Foundation
- The Strategy on Opportunities and Associated Risks
- The Strategy on Basin Development
 - **Improve** the sustainability of hydropower development
 - Decisions concerning the management and development of hydropower in the Lower Mekong are placed in a **river basin planning and management** perspective by applying **IWRM principles**; and that
 - The MRC and key stakeholders **actively cooperate** to bring sustainable hydropower considerations into the planning systems and regulatory frameworks of Member Countries, and into **project-level hydropower planning, preparation, design, implementation and operation practices**

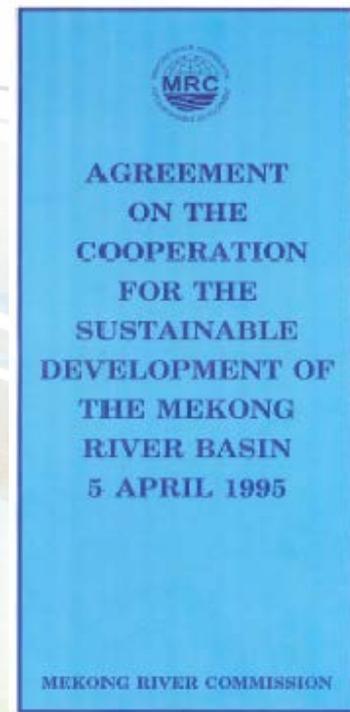


The Strategy:

Building on a Strong Foundation



- **Article 2** : “To promote, support, cooperate and coordinate in the development of the full potential of sustainable benefits to all riparian States and the prevention of wasteful use of Mekong River Basin waters, with emphasis and preference on joint and/or basin-wide development projects and basin programmes through the formulation of a basin development plan, that would be used to identify, categorise and prioritise the projects and programmes to seek assistance for and to implement at the basin level.”



The Strategy on Opportunities and Associated Risks

Considerable potential for further hydropower development in the tributaries:

- requiring harmonised social and environmental standards to ensure sustainability;

Potential for some mainstream hydropower development:

- provided that uncertainties and risks are fully addressed and transboundary assessment and approval processes followed;

Potential for other priority water-related developments:

- Fisheries, navigation, flood and drought management, tourism, and environment and ecosystem management), as well as
- Those beyond the water sector (e.g. other power generation options).

The Strategy on Basin Development



Opportunities and risks of current developments (up to 2015) must be addressed, including:

- coordination between LMB countries and cooperation with China achieved,
- to ensure increased dry season river flows;
- agreement on the maintenance of flows on the LMB mainstream implemented; and
- risks of committed projects managed

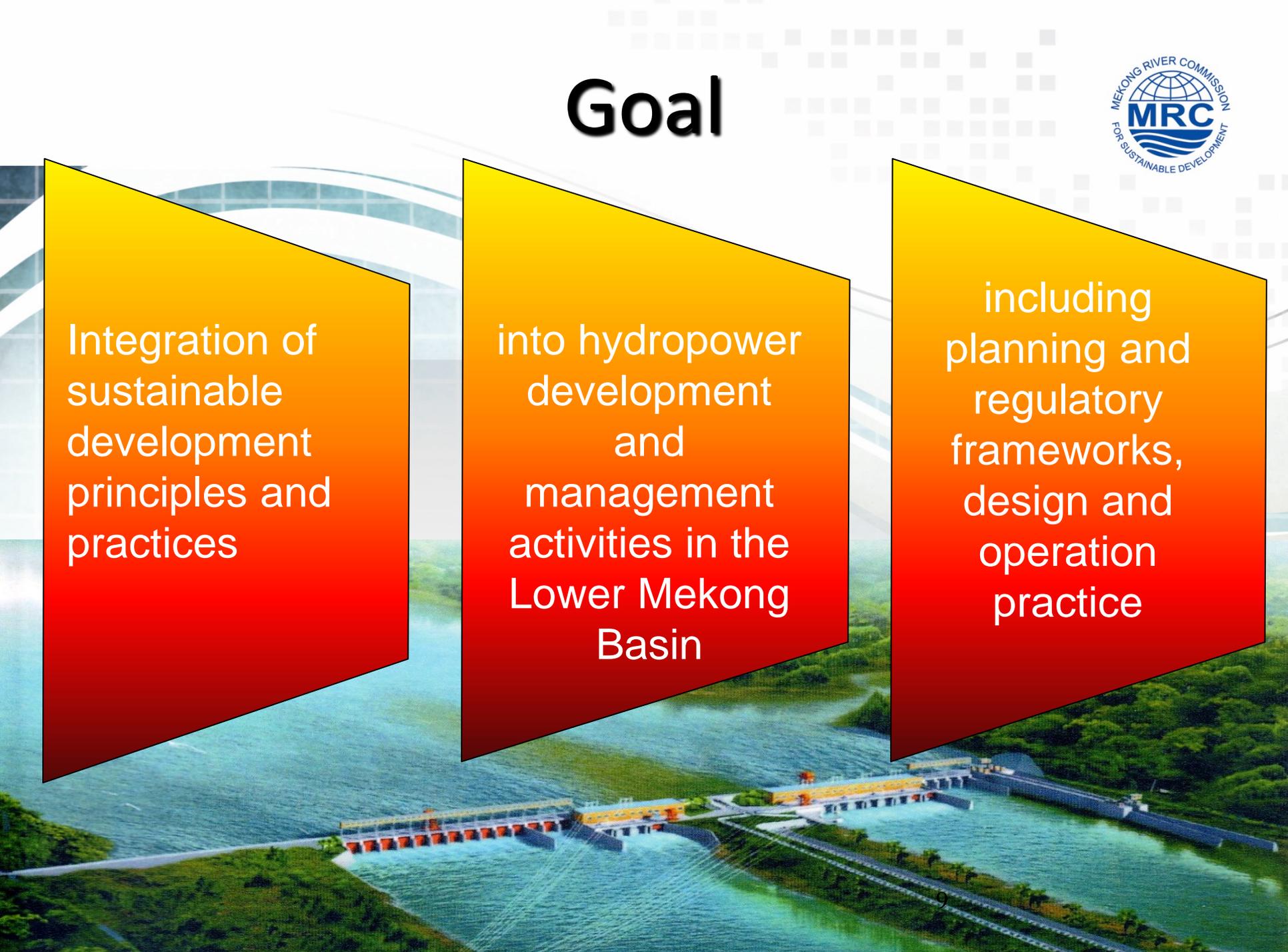
Goal



Integration of sustainable development principles and practices

into hydropower development and management activities in the Lower Mekong Basin

including planning and regulatory frameworks, design and operation practice



Improve the sustainability of hydropower development



Move towards sustainable development of hydropower on tributaries.

- Identifying sub-basins with high ecological value to be protected and those where hydropower can be developed with limited social and environmental impacts;
- Evaluating hydropower projects from a multi-purpose perspective to increase overall economic benefits and decrease adverse effects on other water uses;
- Mitigating negative impacts of hydropower: re-regulation reservoirs downstream of peaking projects;
- Developing management plans for environmental hotspots impacted by changed flow regimes; and
- Identifying and Evaluating benefit-sharing options .

The Initiative for Sustainable Hydropower development (ISH)



- Identify **Opportunities** and **Risks** associated with basin development opportunities
- Early implementation of **a range of studies** of **strategic importance** to fill **knowledge gaps** and to **develop risk mitigation** measures.
- **Capacity building** and active participation of the Member Countries during each study
- Assist the Member Countries to **understand** and **implement** the studies.

ISH work Plan for 2011-2015



Outcome 1: Awareness, Dialogue, and Communication

- Output 1.1: **Dialogue Facilitated.**
- Output 1.2: **Raise Awareness of HPP opportunities and risks.**
- Output 1.3: **Improved Communication**
- Output 1.4: **Inputs to PNPCA**
- Output 1.5: **Cooperation with China**

Outcome 2: Capacity Building and Knowledge Support

- Output 2.1: **Technical assistance to HPP developers** (design, safeguards and compliance monitoring)
- Output 2.2: **HPP database.**
- Output 2.3: **Data from HPP Developers**
- Output 2.4: **Environment and socio- economic Baselines for HP Planning**
- Output 2.5: **Capacity Building**
- Output 2.6: **Ecologically sensitive sub-basins +HPP**

Outcome 3: Regional Planning Support

- Output 3.1: **Macroeconomics and Power Development Plans**
- Output 3.2: **Fill knowledge gaps for Mainstream HP planning**
- Output 3.3: **SEAs and CIAs for HP as input to BDP**
- Output 3.4: **HPP potential and alternative options**
- Output 3.5: **Multipurpose evaluation of HPP**
- Output 3.6: **Navigation passage for HP dam**
- Output 3.7: **Mitigation Measures for Fish Migration for HP dam**

Outcome 4: Sustainability Assessment and Financing

- Output 4.1: **Financing Sustainable HPP**
- Output 4.2: **Benefit-Sharing Mechanisms for HP**
- Output 4.3: **Rapid Hydropower Sustainability Assessment Tool (RSAT)**
- Output 4.4: **Management of HPP Watersheds**
- Output 4.5: **Risk Mitigation of HPP and Review/update Preliminary Design Guidance**

4 Outcomes

23 Outputs

Additional studies of strategic importance



- Ecologically sensitive sub-basins identified for limited development of hydropower on tributaries
- Guidelines on multi-purpose evaluation of hydropower projects
- Negative impact mitigation measures for tributary dams
- Study report on evaluated options of mainstream power development in context of national and regional power strategies
- Guidelines on risk mitigation options for possible mainstream dams
- Mainstream and tributary hydropower potential and alternative power options assessed and reported,
- Essential knowledge acquired to minimize uncertainty of possible mainstream dams
- Guidance on Sustainable Management of Reservoir Watersheds
- Improve Environmental and Socio-Economic Baseline Information for Hydropower Planning

ISH11 Improvement Proposals and Proposed Priorities



Hydropower Project Information

- H1: Hydropower Project Database

Socio-Economics

- SE1: Macro-economic and Energy Indicators for Hydropower Information
- SE2: SIMVA Enhancements for Hydropower Information
- SE3: Mekong River Cultural and Religious Sites

Fisheries

- F1: Fisheries Indicators for Hydropower Information
- F2: Fisheries Fish Sampling Standard Methods
- F3: Habitat Assessment Standard Methods
- F4: Biological Analysis Standard Methods
- F5: Fish Migration Behaviour and Patterns

Aquatic Ecology

- AE1: Aquatic Ecology Indicators for Hydropower Information
- AE2: Phytoplankton Monitoring for Hydropower Information
- AE3: Strengthening the Bio-Monitoring Database for Hydropower Information

Sediments, Water Quality & Hydrology

- SWH1: Integrating Sediments, Water Quality and Hydrology for Hydropower Indicators
- SWH2: Water Quality Monitoring Enhancements for Hydropower Information
- SWH3: Sediment Monitoring Enhancements for Hydropower Information
- SWH4: Geomorphic Methods for Hydropower Information

Information Use

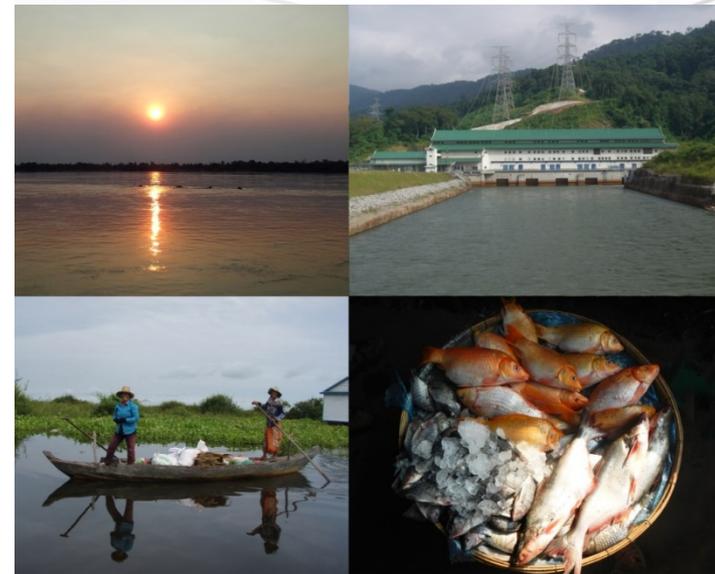
- IU1: Improving Accessibility of Datasets for Hydropower Information
- IU2: Facilitating Application of Hydropower-Relevant Indicators
- IU3: Web-based Presentation to Communicate Hydropower-Relevant Information
- IU4: Technical Guidelines on Monitoring in Support of the Preliminary Design Guidance

-  = highest priority, need for immediate action
-  = second priority, need for emerging action
-  = longer term need

Development of Guidelines for Hydropower Environmental Impact Mitigation and Risk Management in the Lower Mekong Mainstream and Tributaries



- Understand the baseline natural resource processes in the Mekong Basin and the nature of hydro developments proposed;
- Describe the potential impacts of these developments as assessed by existing studies;
- Research regional and global experience on mitigation options relevant to Mekong hydropower developments;
- Undertake analysis and research into the effectiveness of these mitigation options;
- Make recommendations on improvements and approaches to impact mitigation



Example for global experience on mitigation options relevant to Mekong hydropower developments

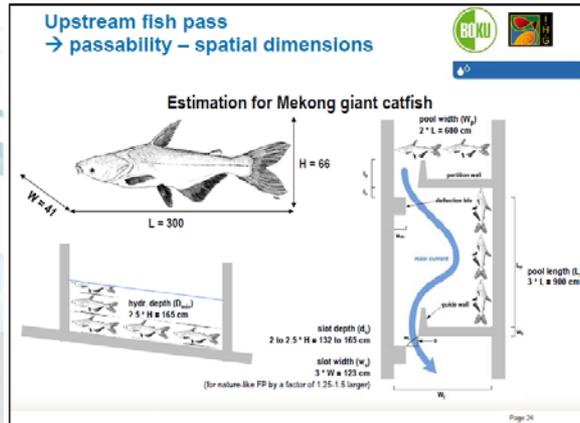


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Preliminary Design Guidance for Proposed Mainstream Dams in the Lower Mekong Basin

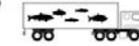
Final Version

31 August, 2009



Fish lift /trap and truck

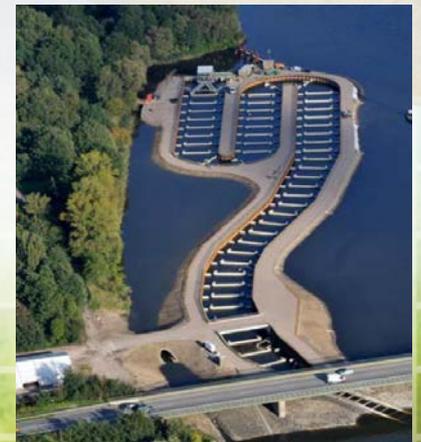
- A fish lift involves attracting and trapping fish below a barrier and then **lifting them up** and
- trap & truck means **catching and transporting them over the barrier** (e.g. in a truck)



- Cycles (0.5 – 4 hours)
 - Entering
 - Fill-up
 - Exit
 - Emptying
- Limited functionality over time
- Highly selective



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Lesson learnt – best practices?



- Sustainable HP is **complex** and **sensitive** topic
- **Building capacity** and common understanding of Sustainable Hydropower practice is essential – common among MRC MC
- **Ongoing dialogue** with all key stakeholders **early** in the development is very important.
- More **Researches** may be needed to better understand

Challenges?

- **Embedding** the ISH practice and tools in national practice (leadership support)
- **Building capacity** in sustainable HP practice.
- **Raising awareness** among key stakeholders- and **meaningful dialogue**.



Thank you for your attention



Key Studies



- 1. Strategic environment assessment (SEA) of proposed LMB mainstream schemes:**
- 2. Preliminary design guidance (PDG) for proposed LMB mainstream hydropower schemes:**
- 3. The Rapid Sustainability Assessment Tool (RSAT)**
- 4. Benefit Sharing (National to Local)**
- 5. A range of additional studies of strategic importance.**