



Multi-criteria decision making tool for hydropower projects

Initiative for Sustainable Hydropower (ISH)

ISH02

Development of guidelines on the multi-purpose evaluation of hydropower projects



Direct costs and benefits:

Power, irrigation water, fisheries, recreation, municipal and industrial (M&I) water, flood control. Resettlement and environmental mitigation costs.



External costs and benefits:

Economic losses to local livelihoods and property, downstream livelihood impacts, carbon emission reductions, and cumulative impacts.



Indirect costs and benefits:

The development impacts of the projects including regional and macroeconomic impacts. Cumulative impacts.



While the direct power benefits of hydropower schemes are well understood, the wider social, economic and environmental implications need to be better integrated into hydropower planning. The immediate goal is to inform planning efforts amongst Member Countries.

There is a need to account for the full economic value of water broadly speaking – that is the **economic value of the economic, social and environmental goods and services** – and bring these values into the planning process. The two substantive objectives of this project are:

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 internalised in the economic or other analysis and integrated with the strategic power planning approaches of the member countries.

Planning processes and decision support The principle behind the Guidelines is that including, quantifying and valuing, as many of the costs and benefits in an agreed upon and standardized way will promote sustainability, adding value to the hydropower decision-making process in the Lower Mekong Basin (LMB).

The Guidelines propose the following planning process:

1. Identify a feasible portfolio of projects using input from engineering and financial cost-benefit analyses
2. Perform economic cost-benefit analysis with relevant monetary values including environmental and social costs and benefits, where available
3. Apply environment and social indicators: assess indicators with non-monetary values from project data and consultation
4. Carry out weighted evaluation: Consider stakeholder preferences regarding economic, environmental, and social aspects
5. Based on the above, modify and/or prioritize the projects and/or project portfolio as needed, Developing evaluation frameworks and valuation methods. The primary challenge will be to work with the relevant planning agencies to develop standardized guidelines for the application of these methods in the context of hydropower and multipurpose project planning in the Mekong.

Economic valuation process:

The general process involves a series of logical steps, as follows:

1. **Identify Impacts** – qualitative description of the cause and effect of the project in terms of social, economic and environmental impacts
2. **Quantify Impacts** – where feasible, document the cause and effect in quantities, i.e. number of displaced persons
3. **Value Impacts** – where feasible and appropriate, document the economic costs and benefits i.e. the downstream costs of flow regime change due to water storage.

Assessment of social, environmental and macroeconomic Impacts

The end point of this assessment would be a set of simplified and appropriate planning-level indicators for the impacts that are additional to those valued in purely economic terms.

The three levels of the evaluation:

Cost-Benefit Analysis (CBA)	Financial Analysis – Direct costs and benefits considered from proponent and government perspective Economic Analysis - Direct and external costs are considered from the perspective of national economic development
Multi-Criteria Analysis (MCA)	Develops indicators for environmental and social impacts that cannot be valued in monetary terms. Integrates financial, economic, environmental, and social assessments.economic, environmental, and social assessments.
Decision-Making Support	The MCA includes a stakeholder-weighted preference process for the indicators.

Guidelines to inform planning efforts amongst Member Countries

The Guidelines “tool” as developed under the Project is proposed to be an interactive spreadsheet tool and manual that facilitates the evaluation process for hydropower and multipurpose dams in the context of the LMB.

Consultative and participatory manner

For the final outputs to be useful, they must be understood and seen as relevant by the key stakeholders in the region, and in particular by the agencies responsible for different aspects of strategic planning in the hydropower sector.

Applying the guidelines

Further national consultations on the inception report will clarify the structure for the multi-criteria decision making tool. Priorities for capacity building, testing and how the Guidelines can be applied in the Member Countries will be completed in 2015.



For more information, please visit:

www.mrcmekong.org/about-mrc/programmes/initiative-on-sustainable-hydropower/