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Council Study

Hydropower Thematic Assessment Interim Report
Draft Report



6th RTWG Meeting
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DIRECT SOCIO-ECONOMIC IMPACTS



For each hydropower plant, the MRC database includes some information for the following impacts :

- re-regulation storage (yes/no)
- number of persons resettled
- environmental impact scorecard (hourly/seasonal flow regime, ecosystem, micro climate)
- social impact scorecard (resettlement, tourism and recreation, flood control, navigation, job creation, water supply)

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1. Themes emerging from literature review.
2. Proposed layout of the Hydropower Thematic Report
3. Key inputs to the assessment

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Key Inputs to the HP Thematic Report
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1. Literature Review and important regional studies – including relevant national studies
2. Modelling and BioRA assessment - reports
3. Economics and Social Assessment – reports
4. ISH0306 – Assessment and Risk management

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Layout of the Hydropower Thematic Report

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1. Executive Summary
2. Background
 - Context of hydropower power development in the Mekong
 - Literature review
 - Important current studies
3. Method of Assessment
4. Inputs from the CS study teams
 - Environmental Modeling and BioRA
 - Economic and social
5. Assessment (by Scenario and Sub Scenarios):
 - Economics – macro and local socio-economics
 - Environmental
 - Other influential factors in the basin
6. Avoidance, minimization, mitigation and compensation options
7. Conclusions



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5. Assessment (by Scenario and Sub Scenarios):



- Detailed analysis when available for each of the development scenarios
- Socio-economic impacts for specified selected major infrastructures; Scenario Impact Assessments
- Flow, sediment, water quality, flood risk
- Environmental (wetlands, aquatic biodiversity/health, river channel conditions and habitats,
- ecologically significant areas, river bank erosion, fisheries)
- Etc.

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EXAMPLES FOR COORDINATION WITH OTHERS TO ASSESS THE DIRECT IMPACTS



For the Hydropower Thematic Assessment Report:

- Assessments will be provided by using comparison between the 3 sub scenarios
- Assessments will be discussed in coordination with the ISH 0306 Study team
- Assessments will be discussed in coordination with the other thematic teams for example in relation to “Flood protection and floodplain infrastructure” and “Navigation” the following aspects etc.

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DIRECT LOCAL IMPACTS



Loss of energy production during reservoir drawdown as a precaution to reduce expected flood

Loss of energy production due to water demands for navigation locks and navigation in reservoirs and river stretches

Energy losses due to uncoordinated sediment flushing, fish passages, navigation, water quality etc.

Loss of energy production during sediment flushing

Reservoir filling period after sediment flushing

Flows and Water requirement for fish passages and impact on loss of energy production

Water abstractions for navigation and loss of energy

Evaluation of the effects of the above aspects will be based on interpretation of results from the model runs, when they are available.



SOME PRELIMINARY EXAMPLES:

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SCENARIO IMPACT ASSESSMENT - FLOW, SEDIMENT, WATER QUALITY, FLOOD RISK

To provide the different impacts under different Scenarios

The three scenarios considered in this report are likely to have relatively similar implications for flow regimes, sediment transport and water quality, however:

HPS1 - More sediments will be retained in the reservoirs than compared with HPS2 and 3 where coordinated sediment flushing i. This may impact on downstream water quality in terms of less suspended solids and diminished sediment loads. Reduction in sediment loads, and also changes in sediment size distribution will be assessed as well.

HPS2 - represents coordinated reservoir operation and common operation rules for sediment flushing and flood management. This will provide a better opportunity to manage floods to some degrees, and in that way trying to limit flood damages in terms of loss of crops and assets. Joint flushing operations will also reduce changes in downstream water quality in terms of sediment loads and suspended sediments. However, peaking operations, which may lead to relatively rapid reservoir drawdowns and increased slumping and erosion along the reservoir shores and the drawdown zones.

HPS3 - includes tributary dams, and regarding the possibilities to manage and implement coordinated flushing operations to let sediments pass downstream, this scenario has the biggest potential to mitigate and to some degree limit the negative effects of downstream altered sediment flows and water quality status.

For flood management and flood dampening, the tributary reservoirs generally will have a larger storage capacity than the five mainstream dams, the contribution of the tributary dams could be significant and thus represents a considerable added mitigation potential.

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SCENARIO IMPACT ASSESSMENT - ENVIRONMENTAL IMPACTS



HPS1 - a situation where no coordination of flow releases for fish passage **thus lack of favorable conditions for upstream and downstream migration passages**. This scenario represents the most restricted possibilities for mitigation for impacts to fish populations and aquatic biodiversity particularly during construction of mainstream dams.

HPS2 - represents a situation where dams and reservoirs are operated in **good coordination favorable for fish pass and careful synchronized flows and sediment flushing**. In relation to HSP1 this represents, to some degree, increased possibilities for mitigation of negative impacts on aquatic biodiversity and fish populations.

HPS3 - represents a situation where the MS and the tributary dams are operated in **good coordination which will be favorable for sediment flushing, fish passage and flood management**,

HPS3 has the **best potential for mitigation of negative impact** on aquatic biodiversity, downstream wetlands and floodplain habitats.

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SCENARIO IMPACT ASSESSMENT - SOCIAL IMPACTS



HPS1 - this scenario will probably be the **most negative in terms of fisheries and fish populations in the mainstream Mekong**. Communities along the mainstream are still to a considerable degree depending on and benefitting from the river fisheries as a source of food and proteins as well as deriving an income it. Consequently, the impacts in terms of less biodiversity and possibly fish stocks translates into a considerable social impact.

HPS2 - With existence of fish passages in all the five mainstream dams and **joint operation** of them, the chances for **maintaining some of today's fish species diversity**, and thus their populations, increases. The **incomes and dietary supplement** for the local communities the Mekong fisheries represent today may therefore **suffer less negative impacts** as compared to the HSP1 scenario. Tourism may manage to retain more of the traffic on the Mekong with marketing passing through navigation locks added attraction of the journey

HPS3 - represents the **most advanced and highest level of cooperation and coordination** between the owners and operators of the mainstream and tributary dams in the Lower Mekong Basin. As with HPS2 it entails **joint operation of reservoirs for navigation, fish passage and sediment flushing** but has also potential to enable a larger degree of **flood management and flood protection for naturally occurring flood events**. Thus, the scenario represents a positive social impact as it may reduce crop damages and loss of assets normally caused by natural floods.

The RTWG is requested to:



- Take note of the progress
- Provide additional guidance (if any)

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Thank You



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