

Training Workshop „Towards Sustainable Planning of Hydropower in the Mekong Region: Environmental and Socioeconomic Baseline Study Approaches“

10-12 December 2012 in Bangkok, Thailand

Workshop Documentation

The Workshop „Towards Sustainable Planning of Hydropower in the Mekong Region: Environmental and Socioeconomic Baseline Study Approaches“ was held 10-12 December, 2012 in Bangkok, Thailand. It brought together more than 45 participants from the Mekong River Basin and speakers from Africa, Asia, Europe, Latin and North America.



The workshop started with a stocktaking of existing baseline data in the Mekong River Basin. Representatives of different institutions working in the Mekong River Basin presented their experiences with hydropower-related data gathering and analyses and discussed whether and to what extent available information could serve as an input to a comprehensive baseline for the basin.

This introduction was followed by a broad overview presentation by **Leeanne Alonso** focusing on the concept of baseline studies and an overview of different experiences from around the world. Leanne clarified the purpose of baselines – to determine the current environmental and socioeconomic condition of an area – and emphasized that this requires that baselines are taken over a longer period of time in order to provide a constant data flow to understand the development of these conditions. She also emphasized the need to establish baselines before the project start so that a before and after comparison of the conditions is possible. She also noted that if good baselines are missing, it becomes difficult to evaluate the magnitude of impacts of a project, potentially causing the need for costly revisions later during project development and operation.

After the introduction, presentations by internationally renowned speakers and the discussions were centered on a number of baseline-related issues, including fish and fisheries, sediments, aquatic ecosystems, water quality and socioeconomic aspects as well as general requirements for baseline studies.



A first set of presentations thereby focused on basin-wide baselines capturing a number of different sectors. **Stefan Schmutz** (BOKU University Vienna) presented the example of the Danube River Basin where a basin-wide transboundary monitoring system that relies on comprehensive baselines has successfully been established. He showed that effective monitoring requires a common vision, a clear conceptual framework and standardized sampling and assessment methods. In this context, the European Water Framework Directive (EU WFD) has played a particularly crucial role by requiring that no deterioration of any watercourse shall occur and that the water body status has to be improved and restored in order to achieve good ecological and chemical conditions. Similarly, **Peter Pyke** (Department of Water Affairs, Republic of South Africa) emphasized the need for basin-wide baselines

that inform projects. He also highlighted the importance of data sharing and joint data acquisition and analysis, ensuring all participants' trust in the data and thus a joint basis for decision-making on whether, where and how to develop hydropower projects.

Aquatic ecosystems and biodiversity issues were addressed by **Anny Cecilia Chaves Quirós** (Centro de Servicio Gestion Ambiental, Costa Rica) and **Robin Abell** (WWF US). In the case of Costa Rica, a watershed management plan was established that brings together all relevant government institutions, departments, NGOs and academia, thus ensuring not only broad stakeholder involvement but also the capturing of all existing knowledge in the basin. On this basis, data was gathered and fed into a specifically developed environmental flow management model. Results of this data gathering and analysis exercise now inform the operation of the hydropower plant. The Costa Rican case study hence presented a successful example for how baseline data and the comprehensive analysis of various parameters can inform decision-making in the hydropower sector, ensuring more sustainable hydropower development and management. Drawing lessons from the Congo River Basin, Robin Abell emphasized the need for a phased approach that identifies the species to be studied, maps the threats to them and sets quantitative goals about what is to be achieved while, at the same time, ensuring successful implementation through stakeholder participation – all being based on comprehensive baseline data.

Fish-specific baselines and the need for monitoring fish populations and fisheries were addressed by a number of speakers: **Alejandro Garcia** (GIZ Sector Program on Sustainable Hydropower) emphasized the importance of baseline monitoring at an early stage in terms of sustainable project planning especially with regard to fish populations. He pointed out that the Yacyreta Dam on the Parana River is a failed project from an environmental point of view. Most fish species were unable to overcome the obstruction the dam creates to their migration in spite of fish ladders. The monitoring had only started 30 years after construction. Similarly, **Paulo dos Santos Pompeau** (Federal University of Lavras, Brazil) raised the question whether and when fish passages are successful. He did not only provide interesting details on different fish species' life cycles and migration patterns, but also reported from examples in Brazil that generally fish require free flowing rivers, the connection of spawning and feeding grounds and certain hydrological conditions to reproduce, making fish populations vulnerable to hydropower developments even if fish migration facilities are established if their migration patterns are not understood in the planning phase.

The establishment of baselines for sediments and the monitoring of sediments in large river basins were discussed by **Jean-Paul Bravard** (Université Lyon III/Sorbonne Paris). He introduced the concept of basin wide sediment budgeting to identify the areas of production and the sinks and noted that in most rivers in the world, in spite of increasing erosion, the sediment contribution to downstream channels and deltas has decreased and the bed load almost disappeared due to sand & gravel mining, and dams. He therefore emphasized the need for understanding sediment transport and their crucial role to sustain ecosystems and economic development when planning hydropower projects.



Inputs on water quality were provided by **Christopher Gippel** (Griffith University, Australian Rivers Institute) who presented experiences from China. He emphasized that the government was actively engaged in improving the water quality of affected rivers and chose priority areas based on baseline information of biological indicators that were measured against human disturbances – an approach that could lend itself well for hydropower-specific work as well.

In addition to the environmental aspects of baselines, presentations by **John Ward** (CSIRO) and **Bandana Pradhan** (Department of Community Medicine and Public Health, Tribhuvan University, Nepal) addressed the socioeconomic aspects of hydropower development and experiences in establishing baselines for socioeconomic developments and monitoring change over time. The challenge is exacerbated by the need to rely on qualitative and subjective data, rather than easily quantifiable variables that are more commonly accepted in hydropower development. Nonetheless, experiences from Nepal as well as from East and Southeast Asia highlighted the importance of engaging in socioeconomic data gathering and analysis in order to better understand the potential impacts of hydropower projects on riparian people and avoid or mitigate them from the very beginning.

Presentations by renowned experts were accompanied by interactive and fruitful discussions among participants. Key issues raised and the lessons drawn on by participants are summarized in the following key questions:

1 Who is involved in Baselines?

When planning and designing baseline studies, the question remains as to whom to involve. Participants agreed that the inclusion of a broad set of stakeholders was crucial for gathering comprehensive data whilst avoiding duplication in data gathering and analysis efforts.

In this context, the inclusion of non-governmental actors was emphasized. In particular, the example of the Danube River Basin demonstrated that universities and



research networks can provide important expertise that can help to strengthen the information basis in large river basins. In addition to the inclusion of a broad set of stakeholders, participants also emphasized the need for multidisciplinary teams that work together in gathering, analyzing and disseminating baseline data and developing monitoring systems, ensuring an integrated approach to the river basin.

2 What is studied in Baselines?

Drawing on the introductory presentation that had identified the various parameters baseline studies should generally address (e.g. flow regimes, water quality, sediments, aquatic and terrestrial biodiversity, fisheries, socioeconomic aspects or human health), participants also discussed remaining gaps to include in baseline studies specific to the Mekong River Basin. They included the importance of understanding sediments and their contribution to the river system, aquatic and terrestrial ecosystems as well as fish and their migration behavior. The importance of the Mekong tributaries was identified as a significant gap. Tributaries were generally considered as insufficiently covered by existing research projects that could provide data for a comprehensive Mekong baseline. Information generated in the Upper Mekong Basin is still insufficiently shared and made available to stakeholders in the Lower Mekong Basin – in spite of its importance for understanding the Lower Mekong Basin's ecosystem and thus for making sound decisions on its sustainable development. Another recurring statement was the lack of socioeconomic aspects in baselines and the difficulty of connecting them with environmental data on the one hand and assessing the direct impacts of development projects on those aspects on the other hand.

3 How is it studied?

In addition to the different parameters baselines should cover and thus the different issues data needs to be gathered on, participants also addressed the question of how to best analyze such data and information. Case examples provided some insight into how data collection should be conducted through internationally recognized methods in a flexible framework that adapts to scientific developments and their applicability to the Mekong River Basin.



Outcomes of the discussion showed that not all methods applied internationally are perfectly suitable for the Mekong River Basin. For basin-wide baselines, for instance, a before and after comparison on the basis of pre-defined baselines and a comprehensive monitoring of the development of the basin thereafter might not be reasonable. Based on the experiences from the Danube River Basin, participants discussed the setting of an ideal standard that can serve as a reference scale but will most likely never be

achieved due to changes that have already occurred in the respective basin. Similar challenges in method application have also become particularly obvious for fish-specific studies, with different fish species requiring different analytical approaches. The same challenge was identified for socioeconomic baselines. Based on the presentation by **John Ward** (CSIRO), participants discussed the different methods for assessing the socioeconomic situation in a specific area as well as the difficulties in understanding, for instance, the adaptiveness of villagers to a new situation.

In addition to the methods themselves, the discussions around the question how assessments should be done also addressed the important issue of comparability and inter-calibration of methods and thus means for ensuring the common acceptance of results across a river basin. Participants discussed the example of the Orange River Basin where the Orange-Senqu River Commission (ORASECOM) has played a crucial role in ensuring that the methods based on which the basin's Transboundary Diagnostic Assessment was developed are accepted and understood by all riparian actors concerned.

4 How is the knowledge used?

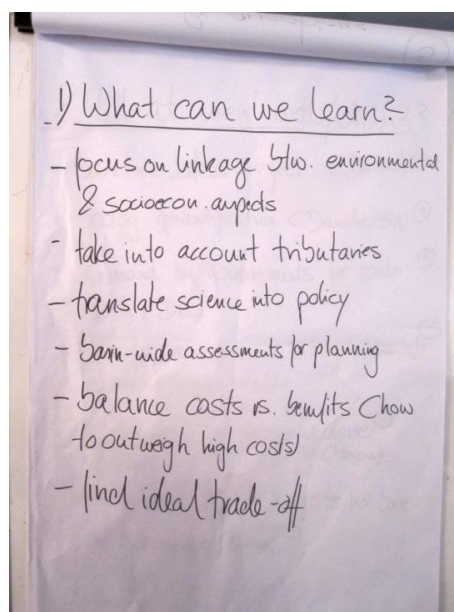
Ideally, baseline information is used for planning and developing hydropower projects, including the mitigation of negative impacts on the environment and the basin's population. The essential question discussed was how to translate scientific knowledge into policy and further into decisions about the development and management of hydropower projects. The participants agreed that in order to strengthen the science-policy link, scientific knowledge has to be transferred into public knowledge through the disclosure of and access to data as well as transparency in the collection and analysis processes.

The participants also discussed various specific uses of baseline information in different river basins. They discussed, for instance, the example from Brazil where baseline data was used to identify basins in which hydropower development was allowed to go ahead and basins which will be permanently protected from hydropower development due their environmental significance. Similar influences of baseline data on decision-making was also discussed for the case of Costa Rica where the operation of the Reventazón River hydropower project has been adjusted to environmental requirements on the basis of comprehensive analyses.

5 How do we move forward?

How then to move ahead in the Mekong River Basin to ensure that the valuable knowledge gathered during the workshop can help foster more sustainable hydropower development in the basin?

Participants emphasized, firstly, the need for a common vision on the future development of the Mekong River Basin. The MRC vision of an economically prosperous, socially just and environmentally sound Mekong River Basin can thereby provide a valuable starting point and should inform the debate over hydropower development. However, further discussion was deemed necessary to establish a common vision that all participants can identify with and that promoted the integrated and sustainable development of the Mekong River Basin.



In this context, participants also called for a common understanding to be established concerning the different parameters that can be included in baselines and the methods that can be used for measuring these parameters. They discussed the potential of guidelines to be developed for the Mekong River Basin in order to provide all stakeholders with a joint understanding of why, how and



with whom to monitor the different hydropower-relevant aspects in the basin in an integrated manner.

In order to ensure data and information exchange, avoid duplication and adhere to transparency requirements, participants also highlighted various means for increasing the efficiency and effectiveness of data collection and analysis. Among other efforts, participants suggested a better coordination between MRC-related baseline and monitoring efforts, national activities and

projects implemented by other stakeholders. This would need to be accompanied by continued dialogue among the different stakeholders and the application of both communication means and data sharing processes that are suitable for all stakeholders involved.

Based on these key questions and discussions participants had around them, a common understanding among participants was developed concerning existing environmental and socioeconomic data in the Mekong River Basin that could lend itself to baselines. Moreover, participants also developed a common understanding of approaches and methods that could be applied to generate additional knowledge on the basin – thus ensuring that hydropower development moves ahead in a sustainable manner that benefits the entire basin and its people.