

Lessons learnt

Transboundary mechanisms for sustainable hydropower development and management



Transboundary cooperation in hydropower development and management can significantly increase the project benefits by allowing for the more efficient location and operation of infrastructure, or by sharing related costs and exchanging know-how between riparian countries. Hydropower projects, however, regularly come along with adverse environmental and social effects that not only surface in close vicinity but also further up- and downstream of the dam. Cooperation between riparian countries as well as with national stakeholders and local communities is thus also necessary to effectively mitigate social and environmental impacts. Transboundary hydropower cooperation can therefore reduce the conflict potential on all levels and also generate win-win situations, which would not have been possible unilaterally.

How can sustainable transboundary hydropower cooperation be set up in regulatory and organisational terms? What impact mitigation measures and cost-benefit sharing arrangements exist, and what are the challenges in implementing these? To answer these questions, a set of case studies was analysed to draw the following lessons learnt:

Basin-wide institutions can provide an essential framework for coordinated hydropower development and management

Where hydropower schemes with potential transboundary impacts exist or are planned in a basin, coordinated development and management is necessary to achieve the optimal hydropower output of all included projects while effectively mitigating social and environmental impacts.

- Basin-wide institutions, such as river basin organisations, can provide an essential framework for collaboration. They can facilitate cooperation on joint hydropower projects by establishing a trustful riparian relationship and maintaining transparency.

Designating or creating a specified agency for dam operations management can facilitate day-to-day cooperation

The day-to-day management of joint hydropower projects requires frequent consultation between riparian countries to respond flexibly to upcoming management challenges, such as e.g. floods and droughts. Regardless of whether the dams are located on national territory or on a river forming the border between riparian countries, the case studies show that where dams are co-owned, co-financed or built with compensation and benefit sharing mechanisms, a specified agency was created to manage dam operation. Regular consultation can also provide room for solving project-specific disputes.

- Companies co-owned by riparian countries as well as bi-national quasi-governmental institutions have both shown to be effective in managing and operating co-owned hydropower infrastructure. Where dams are not co-owned, as e.g. in the Columbia basin, close coordination of national agencies in operational committees represents a further option.
- Where basin-level organisations exist, agencies mandated with dam operations management regularly are established as subordinate bodies to these.

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Cost-benefit sharing mechanisms need to be fair and flexible

Cost-benefit sharing schemes are a valuable tool that aims to provide maximum project benefits while compensating each party involved or affected according to the costs they have to bear.

- In order to achieve this goal, the case studies reveal that effective schemes should not only encompass one-off payments, but also flexibly designed cost and benefit sharing arrangements that allow contracting parties to react to political and economic changes that affect the use of the respective dams by the riparian countries.
- At the same time the essential cost-benefit sharing principles that were mutually agreed upon when the treaties were negotiated need to be kept in place in order to provide for sufficient planning reliability and disaster prevention.

Social and environmental mitigation measures as well as their financing need to be considered from the planning stage

In the past, the mitigation of social and environmental impacts was either not incorporated into transboundary hydropower projects or it was carried out hastily based on insufficient knowledge of the environmental and social effects of the dam. In all of the examined cases, corrective measures had to be introduced afterwards, often as a result of social pressure or international disputes. To provide effective mitigation and prevent related conflicts,

- social and/or environmental impact mitigation measures, such as rural development programs or rehabilitation projects, need to be incorporated into the project from an early stage and be based on sound knowledge and participation of affected communities; and
- the costs of social and/or environmental measures need to be considered in the project's cost calculations. Trusts or funds financed through project revenues can ensure a sustainable financing concept for mitigation measures.

Cooperation on the regional as well as local level is necessary to effectively design and implement social and environmental mitigation measures.

Social and environmental impacts of hydropower projects are interrelated and often complex. Mitigation measures thus need to be based on a thorough understanding of the interrelationships across the basin as well as of the specific situation upstream and downstream of the dam.

- Cooperation and the exchange of data and information locally as well as across borders are crucial to designing the most appropriate mitigation measures for each dam, to coordinating mitigation measures across basins, and to monitoring their effectiveness.
- Joint monitoring and implementation of mitigation measures should be institutionalised, for example as part of specific programmes or sub-agencies. Agencies mandated with the operation of hydropower schemes, as well as local communities, can also play important roles in implementing and monitoring mitigation measures.



Imprint:

This Fact Sheet is based on the report "Assessing RBO-Level Mechanisms for Sustainable Hydropower Development and Management" prepared by adelphi for the MRC-GIZ Cooperation Programme.

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