Case Study

Columbia River Project – Coordinated management of national dams with compensation payments for downstream benefits and upstream costs

Columbia River Basin

Basin area
668,400 km²

Riparian countries
- Canada (up-/downstream)
- USA (up-/downstream)

Main treaty
Columbia River Treaty (1964)

Members to agreement
Canada, USA

Case study dams
- Mica (CA), 1973, 1,805MW
- Keenlyeside (CA), 1969, 185MW
- Duncan (CA), 1968
- Libby (US), 1973, 600MW

Main goals of the project
- Flood control
- Hydropower

Main mechanisms
- Compensation payments for downstream benefits, damages due to inundation, and flood prevention, respectively
- National agencies coordinate management of dams in joint committees and operation plans
- Possibility of additional operational agreements to stay flexible and to consider extra benefits/mitigate impacts
- National compensation for social and environmental impacts through the Columbia Basin Trust

Cooperation background

- In 1909 the Boundary Waters Treaty was signed between Canada and the USA. It provides principles and mechanisms to resolve and prevent disputes regarding transboundary water resources. The treaty further established the International Joint Commission.
- In view of the high hydropower potential of the Columbia River the USA and Canada began negotiations on energy production in the 1940s. Flood prevention was the second main concern of the countries, playing out especially after the devastating flood of 1948.
- Preliminary investigations and negotiations resulted in 1961 in the Columbia River Treaty (CRT) (implemented in 1964). The agreement includes the construction of four dams, obligations for flood control as well as stipulations on cost and benefit sharing. It is valid for 60 years.
- A range of treaties, conventions and agreements regarding other transboundary rivers have further been signed by Canada and the USA.

Joint planning and dam management mechanisms

- One U.S. and one Canadian Entity were designated as in charge of implementing the CRT. The U.S. side is represented by Bonneville Power Administration and the U.S. Army Corps of Engineers, which is responsible for operating the Libby Dam; the Canadian Entity is represented by British Columbia Hydro and Power Authority, which is responsible for operating the Canadian treaty dams.

Source: Hyde, John 2011

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- The duties of the Entities include: coordination of plans and exchange of information; periodic calculation of compensations and benefits; establishment and operation of a hydro-meteorological system; preparation of hydroelectric operating plans and flood control operating plans for the Canadian storage; etc.
- The Entities coordinate weekly on planned storage discharge and to take corrective measures if necessary due to specific reasons.
- Under the treaty, two main operating plans guide system operations: the Assured Operating Plan (AOP), which is developed by the Entities for a six-year period to guide flood control and power generation operations, and the Detailed Operating Plan (DOP), which is prepared annually.
- The treaty allows Canada substantial flexibility to operate its individual projects as long as the net flow requirement at the border of the USA is met.

Specific provisions/measures

Cost and benefit sharing

- Canada paid/pays for the construction and operation of the three Canadian project dams, whereas the USA covers costs for the Libby Dam.
- The USA share with Canada one-half of the estimated increase in U.S. downstream power benefits (called the 'Canadian Entitlement'). Canada sold this Entitlement for US$254 million to a consortium of U.S. utilities for a period of 30 years. Since the agreement expired in 2003 the power benefits are delivered on a daily schedule to the Province of British Columbia.
- The USA further paid Canada one-half of the value of the estimated future flood damages prevented in the USA during the first 60 years of the treaty. Canada chose to receive a lump sum payment (in total US$64.4 million). In addition, the U.S. Entity can call upon Canada to operate additional storage for additional compensation payments by the USA ('Called Upon' flood control).
- The USA compensated for the costs for resettlement and relocation of transport infrastructure in Canada for the inundation caused by the Libby reservoir.

Impact monitoring/mitigation

- The Entities regularly adopt Supplemental Operating Agreements (SOA) to address national environmental and social concerns (such as fish flow and recreation water level requirements, wildlife and vegetation issues, heritage site protection), and to gain additional power benefits during the operating year. Within this framework it is e.g. possible to adjust storage releases in both countries, either on a mutual basis or with one side receiving compensation for incurred power losses in return for adapted storage releases.
- In Canada the Columbia Basin Trust was set up in 1995 to compensate people affected in the basin for social and environmental impacts. The trust was endowed by the Province of British Columbia with CAN$295 million and CAN$2 million annually for 16 years. This Trust also runs social and environmental monitoring programmes.

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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