Book review

ICOLD Bulletin Preprint 161: Dams and Water Transfers: An Overview

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This bulletin has been prepared by the Committee on Dams and Water Transfers to give an overview of inter-basin water transfers (IBWTs), recognising that these can be a solution to the problems of rising water demands and lack of water storage. These transfers rely on the use of dams, pumping stations, canals or pipelines to transfer water from river basins with an excess of water to those with a deficit.

Chapter 2 provides a register of known IBWTs. This is based on the work undertaken by the International Commission on Irrigation and Drainage in 2003 to compile a list of schemes and salient facts such as average transfer volumes, purpose and year of completion.

Chapter 3 first looks at water balance studies with an assessment on the need of water transfers. This includes assessing whether there is a water deficit within a basin based on the likely future demands and whether this can be addressed using IBWT. Second the roles of dams and reservoirs in water transfer is considered, the principal ones being

- storage to facilitate water diversion through a water conveyance system
- flow regulating reservoirs
- link between water conveyance systems.

Finally, different methods of achieving a transfer are set out including the possible layouts of combinations of dams, canals and pumping stations for water transfer.

The assessments of environmental and social impacts of inter-basin transfers are explored in Chapter 4. Impacts are predicted and mitigation measures are identified. Environmental impacts on source and recipient basins and water transfer facilities are discussed, namely river ecosystems and erosion and sedimentation. The social impacts reviewed are the effects on local populations, loss of livelihood, cultural heritage and health of people.

Chapter 5 considers the economic evaluation by way of benefit and cost analysis. It is noted that indirect benefits are difficult to quantify. It is recommended that value engineering is undertaken to assess alternative schemes and to use a value index (the ratio of benefit to cost) to compare schemes. To progress, ideally a scheme needs to be financially viable, technically feasible, socially acceptable and environmentally sustainable. However, it is difficult to simultaneously achieve all these conditions.

Finally, Chapter 6 outlines alternatives to IBWT that can be carried out 'in-basin' to negate the need for the IBWT. These mainly focus on demand management and on water use efficiency schemes.

The bulletin provides a useful overview of methods for assessing the proposed IBWT schemes in terms of their technical, economic, environmental and social aspects.

A. Morgan