TECHNICAL CHALLENGES

Removing Accumulated Sediment

Dams trap immense quantities of river sediment. An estimated .5% to 1% of the world's total reservoir storage capacity is lost annually to sediment accumulation. In addition to creating problems for existing dams, sediment poses challenges during dam removal. Sediment removal is likely to represent the most costly and technically intensive aspect of decommissioning large dams.

Specific sediment removal techniques vary depending upon the amount of sediment, reservoir characteristics, project age, and the effectiveness of periodical flushes, if at all feasible, to pass trapped sediment downstream. Sediment removal must be conducted carefully, as excessive release can damage sensitive downstream habitat. On Washington's Elwha River, for example, experts propose gradual, incremental drawdowns to transport sediment without harming spawning habitat or juvenile salmon.

A potential effect of sediment flushing is release of accumulated contaminants into fisheries or water supplies. Following removal of a 9-meter-high dam on New York's Hudson River in 1973, tons of trapped toxins were suddenly exposed in the old riverbed or flushed downstream. Hazardous waste in sediment poses significant health risks, degrades water quality, and ultimately requires extensive cleanup efforts. Thus, thorough sediment analysis and prior assessment of the foreseeable effects of releasing sediment must be included in decommissioning studies.

Finding Alternatives to Replace Dam Functions

A key aspect of dam removal planning is early identification of alternative sources of hydropower, irrigation and public water supply, or other dam functions. Dam removal often entails trade-offs between competing river functions. However, US experience with dam removal demonstrates that replacement can often be accomplished with minimal difficulty. For example, a single hydropower dam may contribute only a fraction of a region's overall power—alternate sources are often available, and conservation measures can eliminate demand for this electricity altogether. In other cases, such as in the removal of 12 small dams on California's Butte Creek in 1998, dismantling dams has only negligible effects on water supplies due to mitigation measures (e.g., improving efficiency of irrigation systems). Developing a comprehensive management plan that accounts for displaced dam functions minimizes the negative impacts of removal. Where changes or impacts are unavoidable, society may accept them as the price of long-term river restoration.

Funding Decommissioning

Dam owners do not set aside money for decommissioning. One reason is the lack of formalized institutional arrangements ensuring regular, periodic monitoring of dams. The World Bank-sponsored World Commission on Dams calls for stringent dam performance evaluations every 3-5 years and recommends setting aside funds for future decommissioning. Decommissioning funds established before or during project operation, such as those mandated for nuclear power plants in some countries, will help offset future decommissioning costs, especially for large dams. Those who build, finance, and operate dams should be held responsible for the costs of decommissioning them.