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Cost-benefits & economic performance

Cost-benefit analysis and assessment of long-term economic performance are keys to achievement of economic sustainability.

Issue

Cost-benefit analysis is, and has been for a number of years, a decision support tool used in the economic appraisal of hydropower projects. Risks with the absence, or limited application, of cost-benefit analysis can include:

- project cost over-runs;
- projects not delivering their stated benefits;
- social and environmental impacts either not or only indirectly accounted for;
- multiplier effects on a regional or local economy not taken into account; and
- beneficiaries and adversely affected parties not clearly identified.

Management

The determination of the economic sustainability of hydro projects requires a comprehensive evaluation of the impacts on resources and the calculation of project costs and benefits through time. Some benefits are inherently difficult to quantify and may require the application of sophisticated tools such as contingent valuation or hedonic pricing methodologies. Nevertheless, assumptions will need to be documented, and at a minimum, the following should be taken into account.

Costs

- Land acquisition costs in terms of the actual economic value of the land as opposed to arbitrary valuations.
- Costs for construction, operations and maintenance, with recognition of the split between foreign and local currency, financing options and the anticipated exposure that these might give in terms of exchange rate variation.
- Costs for investigation, monitoring and adaptive management, including adequate allowance for planning, siting and design in response to social and environmental impact assessment.
- Full capital and recurrent costs of environmental and social mitigation plans

- Costs for the replacement of the main items of equipment after a defined period, and for the rehabilitation of civil works where this becomes necessary.

Benefits

- Full quantification of the energy and power benefits (generally measured in terms of the displaced alternative) and ancillary benefits such as spinning reserve, system regulation and improved thermal efficiency.
- Multi-purpose / multiple use benefits to downstream users and other riparian interests, including irrigation, water supply, flood mitigation, water-based transport, and the improved regulation of other hydropower stations downstream.
- Where feasible, benefits that accrue to local communities including job creation, local industry, recreation, training, improved health care and sanitation, or environmental benefits.
- Accrued benefits at a national and regional level, including any additional taxes, industrial development and improved infrastructure or multiple use benefits that are attributable to the project.
- Recognition of savings on greenhouse gas emissions, and improved local air quality, to the extent that this can be quantified.

At the end of the day decisions to approve or reject a proposal are made in a political and economy wide context. Recognition should be given to the fact that whilst cost-benefit analysis can incorporate direct cost and benefits, and efforts made to price externalities, cost-benefit analysis is not an all encompassing solution. Its acceptance can however be improved if assumptions are seen to be transparent and explicitly stated.