

Dams and Development – A New Framework for Decision-Making
The Report of the World Commission on Dams

A New Zealand Society on Large Dams Perspective

1. Introduction

The World Commission on Dams (WCD) in addressing the debate about dams and development grouped together five principal headings that bring together core values that if advanced will improve the decision making process that deliver improved outcomes for all stakeholders. These headings are:

- Equity
- Efficiency
- Participatory decision-making
- Sustainability, and
- Accountability

Within the framework of international recognition of human rights, the right to development and the right to a healthy environment the WCD has developed seven strategic priorities and related policy principles. These are:

1. Gaining Public Acceptance
2. Comprehensive Options Assessment
3. Addressing Existing Dams
4. Sustaining Rivers and Livelihoods
5. Recognising Entitlements and Sharing Benefits
6. Ensuring Compliance
7. Sharing Rivers for Peace, Development and Security

Not all the issues raised by the WCD specifically apply to New Zealand. For our comments to be meaningful we have firstly commented on dams in New Zealand and the current legislation environment under which we live. This may then allow some of our comments to be put into context by readers from other countries.

2. The New Zealand Situation

1.1 Dam Development

New Zealand had a significant period of dam development that extended from the 1930's through to the mid 1980's and subsequent to that only a small number of large dams have been constructed.

The development of dams principally for hydro-electric power production was important for the economic development of New Zealand. In the 1980's in the order of 80% of our electricity production was based on hydropower. This has fallen to the order of 70% as most new power plants are gas based combined cycle plants. Many New Zealand cities rely on

dams for storage of water for water supply. Our largest city Auckland is served by 10 dams in catchments to the east and west of the city. A number of dam projects have also been developed primarily for irrigation purposes.

There can be no doubts as to the enormous benefits, both direct and indirect, dam building has brought to New Zealand's economy.

New Zealand is a country with a low population density, and dam development has not resulted in large scale displacement of people. One of our larger projects built in the 1980's identified about 250 people directly affected by reservoir inundation.

Most of the hydro dams were developed and owned by the Government using statutory powers, empowering legislation and Acts of Parliament that allowed for the compulsory purchase of land for the developments. These dams are now mainly owned by three state owned enterprises and private companies.

1.2 The Resource Management Act

In 1991 the Government introduced the Resource Management Act. Dam owners with existing water use rights had 10 years to apply for resource consents under the RM Act. Any new dams would require resource consents under the RM Act. Many dam owners have submitted applications for resource consents for their existing dams and are in the process of re-licensing their dams.

The purpose of the RM Act is to promote the sustainable management of natural and physical resources. In this Act "sustainable management" means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while-

- (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonable foreseeable needs of future generations; and
- (b) Safeguarding the life supporting capacity of air, water soil, and ecosystems;
- (c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

An application for a resource consent must include an assessment of any actual and potential effects that an activity may have on the environment (an "AEE"). An "effect" is defined to include:

- (a) Any positive or adverse effect; and
- (b) Any temporary effect; and
- (c) Any past, present and future effect; and
- (d) Any cumulative effect which arises over time or in combination with other effects- regardless of the scale, intensity, duration or frequency of the effect, and also includes-
- (e) Any potential effect of high probability; and
- (f) Any potential effect of low probability, which has, a high potential impact.

In assessing the actual and potential effect on the environment the definition of "environment" is also relevant. The term "environment" is defined to includes

- (a) Ecosystems and their constituent parts, including people and communities; and

- (b) All natural and physical resources; and
- (c) Amenity values; and
- (d) The social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) of this definitions or which are affected by those matters:

If adverse effects of a proposal are likely to be significant then there is a requirement to assess alternative locations and methods of undertaking an activity.

The AEE should also identify those persons interested in or affected by the proposal, the consultation undertaken, and any response to the views of those consulted. Consultation is a key part of most environmental assessments, but it does not mean having deliberations with any party and abandoning the project if those deliberations do not appear fruitful. Consultation does not equate to negotiation, although it may result in an agreement to negotiate.

The RM Act also has provisions that require taking into account the principles of the Treaty of Waitangi signed between the indigenous Maori and the Crown in 1840.

Consent applications are submitted to and heard by Regional Councils, but in areas of national importance the Minister for the Environment has powers to call in the proposal for a hearing before a Board of Enquiry that reports to the Minister. Ministerial and Regional Council decisions can be appealed to an Environment Court.

Consents can be issued for terms of up to 35 years. This means that for long life structures such as dams, the environmental effects will be reconsidered at regular intervals throughout the life of the project as it is handed from generation to generation.

1.3 Recent Issues

This section highlights some recent issues associated with dams in New Zealand.

There are a number of rivers, lakes and sections of rivers that are subject to conservation orders that preclude dam development for water storage or hydro.

Some consent hearings for dams have resulted in conditions that relate to the way the dams are to be operated (e.g. lake operating ranges, downstream ramping rates for discharges, residual flows).

A number of dam owners have increased the efficiency of existing hydro plant with turbine upgrades, and updated operating control systems.

At Alexandra it is acknowledged that 45 years of sediment accumulation in the downstream reservoir has raised flood levels by over 3 metres since the Roxburgh dam was built. The Crown and dam owner have paid money to the community for flood protection works and to compensate for adverse effects. The dam operator now draws the reservoir down by about 6 m ahead of floods. This has resulted in over 11 million cubic metres of sediment being redistributed in the lake since 1994, and some 4 million cubic metres of sediment being flushed downstream. The flood water level reductions at Alexandra have been about 1.7 metres since this operating procedure commenced.

Fish passage has been a hot topic in the re-consenting process for dams.

The availability of natural gas as a fuel source has seen modern gas fired power stations as the preferred means of meeting New Zealand's growth in electricity demand in the short term future. Future hydro potential is generally remote from the main centres of growth in New Zealand, whereas gas can be piped to allow the plants to be located close to the load centres.

Some limited wind power generation has been installed in New Zealand, principally in one wind farm. However it is of interest to note that there has been considerable community opposition to wind farms close to "Windy" Wellington and no projects have been successfully advanced close to the city.

3. NZSOLD Comment on the WCD Report

We can see in the WCD report many areas of common ground between the legislative environment in New Zealand and in publications such as the ICOLD Position Paper on Dams and Environment.

The principle of equitable and sustainable development (and management) of water and energy resources is one we endorse. We would encourage consideration of the definitions of "sustainable management" and "environment" as given in our Resource Management Act as a means of ensuring that the well being of people and communities are addressed in any developments as well sustaining the potential of natural and physical resources to meet reasonable foreseeable needs of future generations.

Dam development to achieve outcomes such as irrigation and food production, energy production, secure water supply, flood mitigation and multi-purpose outcomes is not dissimilar to other human endeavours to improve our wellbeing. Some times we better our goals, other times we achieve them, and sometimes we do not and make mistakes or discover outcomes previously not considered. This process enables us to seek continuing improvement and we see the WCD Report (and the outputs from other bodies such as ICOLD) as giving pointers and direction as to how this might be achieved.

The WCD Report is primarily divided into two sections:

Part I: The WCD Global Review of Large Dams

Part II: The Way Forward

Part I is a looking backwards (hindsight) exercise and identifies many of the past and continuing impacts dams have, both the desirable outcomes and some of the adverse effects.

We in New Zealand can judge our dam development in a similar way and acknowledge the significant benefits to the country, and also some aspects that could have been addressed in a different manner to improve the environmental and social impacts of dams. Our re-consenting process is in some ways helping dam owners and stakeholders to successfully address some of the concerns.

But in looking backwards we see that there are trends that indicate continuing improvement in the way developments proceeded and past impacts are being addressed. The situation is

not significantly different from the view expressed by ICOLD in their Position Paper on Dams and Environment as indicated in point (d) quoted below:

“Projects must be judged everywhere and without exception by the state of the art of the technologies involved and by current standards of environmental care. The scope for reducing any detrimental impacts on the environment through alternative solutions, project modifications in response to particular needs or mitigating measures should be thoroughly investigated, evaluated and implemented.”

A significant criticism of past large dam projects has related to re-settlement and costs borne by especially the poor and vulnerable communities. We are encouraged to note the trend in recent years to acknowledge this difficulty and we support the WCD goals and the ICOLD statements in their position paper on dams and the environment to address this issue. Both for existing dams and new dams we support a win-win situation for developers and their neighbours. This is an important and necessary goal.

In Part II, which the way forward, the WCD Report proposes adoption and implementation of the following policy principles:

1. Gaining Public Acceptance
2. Comprehensive Options Assessment
3. Addressing Existing Dams
4. Sustaining Rivers and Livelihoods
5. Recognising Entitlements and Sharing Benefits
6. Ensuring Compliance
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There are many similarities in these principles, aspects of our resource management act and the ICOLD position paper on dams and environment.

The definition of sustainable management in our RM Act, (managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety) acknowledges development as a means of providing for peoples needs. In some countries this is an urgent priority.

We foresee that for many countries that in order to provide for the wellbeing, health and safety of people that the 21st century will be for them a century of dam building where the natural and physical resources are available.

The key efforts should therefore be to produce guidelines that bring out the good practices that should be adopted to avoid, remedy or mitigate adverse effects of the development. This does not preclude, as has happened in New Zealand, areas being set aside in various regions or countries with conservation orders to limit or exclude dam development.

The World Commission on Dams when looking beyond their existence see their report as only a starting point and not a blueprint. A good practice guideline for future dam development is in our view a sensible step forward. The WCD finish with “We have told our story. What happens next is up to you.”

For NZSOLD and ICOLD we consider the way forward is to remain involved with the sustainable development debate and to contribute their experience to the various forums that will arise.