

**Report of the World
Commission on Dams**
*remarks on its relevance in the
Manitoba context*

presented at the
Manitoba Clean Environment Commission
hearings on
Wuskwatim Generation and Transmission Projects
Winnipeg
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Patrick McCully
Campaigns Director
International Rivers Network
Berkeley, California, USA



International Rivers Network
Linking Human Rights and Environmental Protection

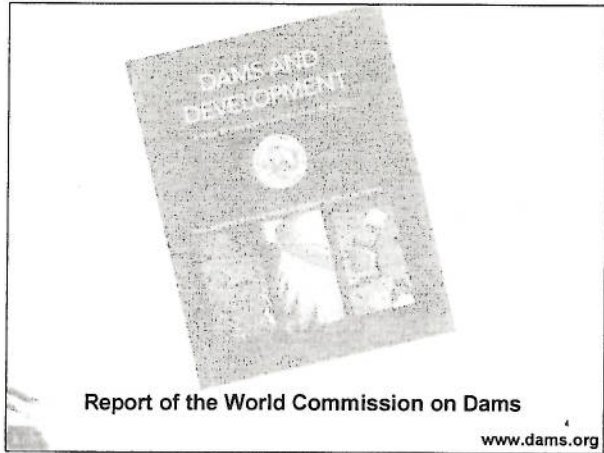
- **Mission:** "to halt destructive river development projects, and to encourage equitable and sustainable methods of meeting needs for water, energy and flood management"
- Provide technical and lobbying support for local groups
- Work to democratize energy and water policies and planning at international level
- Seek to influence governments, international funding agencies e.g. World Bank




International Rivers Network
Linking Human Rights and Environmental Protection

- Personal involvement in World Commission on Dams
 - lobbied for its creation, encouraged NGO involvement
 - Member Dam Review Reference Group
 - Member, WCD Forum
 - Member, Steering Committee, UN Environment Programme Dams and Development Project
 - Member, UNEP Dams and Development Project Forum

*Not a Commissioner, do not speak on behalf of
Commission (disbanded on publication of report)*










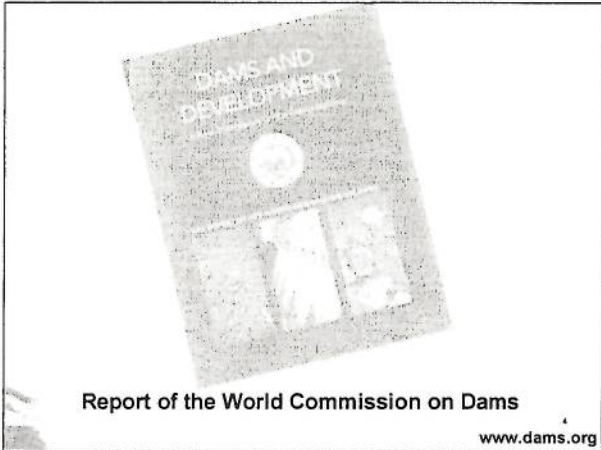


What Was The WCD?

- Independent commission sponsored by World Bank and World Conservation Union (IUCN)
- Multi-stakeholder involvement in selection of commissioners, mandate, funding (\$10m)
 - Governments, agencies, dam industry, NGOs
- Initiative began Gland, Switzerland, April 1997
- Commission launched November 1998
- Report released by Nelson Mandela, November 2000
- UN Environment Programme *Dams & Development Project* to disseminate & promote discussion on report

Who were the Commissioners ?

 Kader Asmal Government South Africa	 Lakshmi Chand Jain Independent India			
 Donald Blackmore River Basin Agency Australia	 Joji Carilo Indigenous Rights Activist Philippines	 Deborah Moore Environmental NGO USA	 José Goldemberg Academic/Government Brazil	 Judy Henderson Development NGO Australia
 Jan Veltrop Dam Engineers USA/Netherlands	 Thayer Scudder Academia USA	 Medha Patkar Affected People India	 Goran Lindahl Corporate Sector Sweden	 Achim Steiner Secretary-General Germany









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Mandate of WCD

- "to review the development effectiveness of dams and assess alternatives for water resources and energy development"
- "to develop internationally-accepted standards, guidelines and criteria for decision-making in the planning, design, construction, monitoring, operation and decommissioning of dams."

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WCD Work Program

- 8 detailed studies of individual projects/basins
 - From 5 continents
 - Grand Coulee in US/Canada
- Survey of 125 dams
- 2 country studies - India, China
- 17 thematic reviews
 - Social/environmental issues
 - Including Hydro Quebec-hosted workshop in Montreal on greenhouse gas emissions from reservoirs
 - Economic/financial issues
 - Non-dam options
 - Institutional issues
- 4 regional hearings
- 1000 submissions

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Canadian Involvement in the WCD

- 53 financial/in-kind contributors included:
 - Manitoba Hydro
 - Hydro Québec
 - Canadian International Development Agency
 - SNC Lavalin, Inc.
- Hydro Québec actively involved in
 - WCD Forum
 - UNEP Dams and Development Programme Steering Committee and Forum

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WCD Findings: Social Impacts

- estimated 40-80 million physically displaced
- significant number of others affected
- Impacts have been "devastating"
- negative impacts fall disproportionately on indigenous people, ethnic minorities and women
- Local economic benefits of construction "often transient"



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WCD Findings: Biodiversity

- **20% of 9000 freshwater fish species threatened, endangered or extinct, mainly due to habitat loss**
- N. America
 - 123 species of fish, molluscs, crayfish, amphibians extinct during 20th century
 - 38% of 292 US freshwater mussel species extinct/critically imperiled
 - Extinction rate of US freshwater species 0.5% per decade (comparable to losses of tropical rainforest biodiversity)



WCD Findings: Ecosystem mitigation

- Efforts to mitigate ecosystem impacts meet with limited success:
 - Lack of attention to anticipating and avoiding impacts
 - Poor quality and uncertainty of predictions
 - Difficulty of coping with all impacts
 - Lack of monitoring and compliance
- For 87 projects that provided WCD data, 60% of impacts identified were unanticipated

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WCD Findings: Technical & economic performance

- 63 large dams with hydropower reviewed;
 - 35 generated less power than predicted
 - 7 met targets only through increasing installed capacity
- Cost overrun on 81 large dams averaged 56%
- Only half dams reviewed completed within one year of target

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Seven Strategic Priorities

- Gain public acceptance
- Assess options
- Address existing dams
- Sustain rivers and livelihoods
- Recognise entitlements and share benefits
- Ensure compliance
- Share rivers across boundaries



Strategic Priority 2: Comprehensive Options Assessment

- Priority given to maximizing efficiency of existing systems **before** building new projects
- Clearly formulate development needs and objectives through open, participatory process
- Comprehensive assessment of energy needs and options

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Strategic Priority 3: Addressing Existing Dams

- > Introduce comprehensive post-project monitoring and evaluation process
 - should involve affected stakeholders
 - where relevant should be at basin-level
- > Establish formalized operating agreements with time-bound license periods for all large dams
 - agreements/licenses should set out obligations for dam operator and provide legal basis for stakeholder participation in decisions on changes in project design or operation

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Addressing Existing Dams (2)

- > Decommissioning should be option within relicensing process
 - e.g. for safety or where environmental costs outweigh benefits
- > Identify outstanding social issues; develop remedial mechanisms with affected communities
 - "Priority must be given to financing a negotiated reparation plan before funding new dam projects in a specific location or river basin"
- > Identify and act on environmental mitigation and restoration opportunities

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Strategic Priority 4: Sustaining rivers and livelihoods

- > Basin-wide understanding of ecosystem functions, values and requirements and how livelihoods depend on them required before development decisions made
 - "project proponents must assess ecosystem consequences of the cumulative impacts of dams, dam-induced developments and other options along the full length of the river"
- > emphasize avoidance of impacts
- > maintain ecosystem integrity through environmental flows

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WCD recommendations relevant to climate change

- Consider impacts on performance and safety of changing hydrology (*hydro industry currently in denial*)
- Assess carbon emissions through field studies and modeled predictions:
 - assess the carbon and nitrogen cycles in the preimpoundment watershed
 - assess future changes to carbon inputs in the watershed from various activities, including deforestation;
 - assess the cumulative emissions from multiple dams where a dam and its operations are linked to other dams.

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Water resources and climate change

- Climate change will intensify hydrological cycle
 - Some areas will get wetter, some drier
 - Severity and frequency of floods and droughts likely to increase everywhere
 - Major impacts on glacier- and snow-fed rivers
 - More floods in winter, less flows in summer

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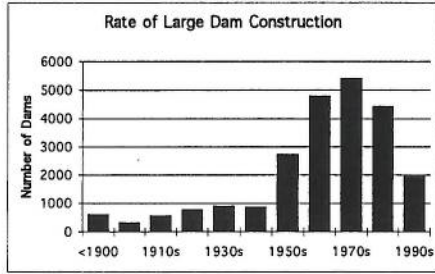
Hydro and climate change

- Reduced power generation due to drought and greater evaporation
- Increased hydrological uncertainties
- Increased sedimentation
- Safety threatened by floods outside design-range of spillways and reservoir operation
- Dams increase impacts of climate change on riverine biodiversity



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End of the large dam era? Worldwide rate of large dam construction



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