



SUSTAINABLE WATER MANAGEMENT: IMPLICATIONS FOR GOVERNANCE, KNOWLEDGE CREATION AND POLICY IMPLEMENTATION

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INTRODUCTION

- 20th century: fragmented 'silo' approach resulted in conflicting water policies, programmes and projects.
- Engineering and infrastructure: may have met technical criteria, but often failed to address or meet social, economic and environmental expectations.
- Environmental deterioration due to lack of attention to systemic links.

INTRODUCTION, cont'd

- Sustainable water management: WCED 1987; Dublin principles, Earth Summit and Agenda 21 1992; GWP 1995, WWC 1996.
- Sets a very high standard: meeting basic human needs of present and future generations whilst also ensuring that ecological requirements satisfied through fully-functioning hydrologic systems.

INSTITUTIONS AND INSTITUTIONAL ARRANGEMENTS

- Main barriers to sustainable water management are ‘institutional’ rather than technical or economic
- Institutional arrangements:

“sets of working rules that are used to determine who is eligible to make decisions...what actions are allowed or constrained...what procedures must be followed, what information must or must not be provided and what payoffs will be assigned to affected individuals”
(Jaspers, 2003, p.79)

IMPLICATIONS: GOVERNANCE

- How we make decisions and who gets to decide.
- We still rely heavily on state institutions and public agencies with their separate powers and responsibilities related to different segments of the hydrologic cycle and water uses.
- Water governance systems not designed for sustainability or the current environment.

A NEW TYPE OF ENVIRONMENT

- **Turbulence:**

“large competing organizations, all acting independently, in many diverse directions, produce unanticipated and dissonant consequences in the overall environment which they share. These dissonances mount as the field becomes more densely occupied. The result is a kind of contextual commotion. This makes it seem as if the ‘ground’ were moving as well as the organizational figures.” (Trist, 1983, p.273)

A NEW TYPE OF ENVIRONMENT

‘Messy’ problems:

“...multiple and competing goals, little scientific agreement on cause-effect relationships, limited time and resources, lack of information, and structural inequalities in access to information and the distribution of political power.” (Lachapelle et al. 2003, p. 474)

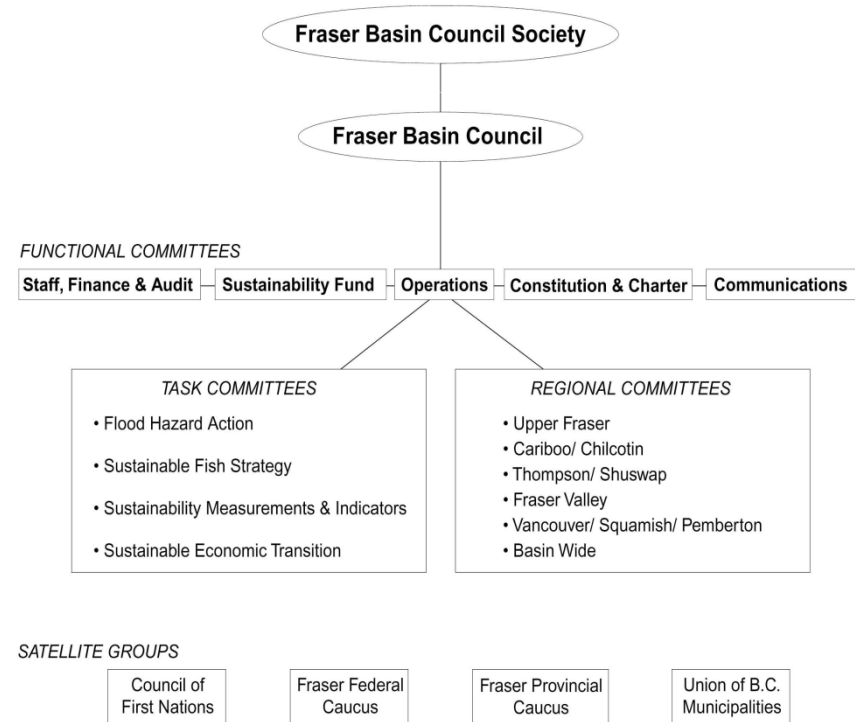
INTEGRATED WATER RESOURCES MANAGEMENT

“ a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.” (Global Water Partnership, 2000, p.22)

IWRM: LIMITING FACTORS

- Lack of institutional capacity at the constitutional, associative and operational levels (Garcia, 2008).
- Too much reliance on improved co-ordination.
- Watershed-based approach does not 'fit' well with problem-sheds and policy-sheds.

CASE STUDY: FRASER BASIN, BC, CANADA



FRASER BASIN COUNCIL (est. 1997)

- Collaborative governance and management:

“pooling of appreciations and/or tangible resources, e.g. information, money, labour etc. by two or more stakeholders to solve a set of problems which neither can solve individually.” (Gray, 1985, p.912)
- **‘CARIBOO’** governance model (Watson, 2004)

IMPLICATIONS: KNOWLEDGE CREATION

- Water governance and management continues to rely on synoptic analysis.
- Sustainability requires ethical and moral judgements, in addition to scientific knowledge.
- Implies different types of knowledge and ‘expertise’ needed to deal with increasingly complex water-related problems

EXAMPLE: LOWESWATER, NW ENGLAND



The National Trust



WARNING
The blue-green algae on this water may be **TOXIC**.

You are advised not to bathe, drink the water or fish, or allow your dog to swim therein.

Loweswater Knowledge Collective

- Respects and values different views and interpretations of the problem(s) in the watershed
- Openly debates knowledge and expertise
- Accepts the need to make decisions despite uncertainties
- Seeks collective action on basis of shared understanding and commitment



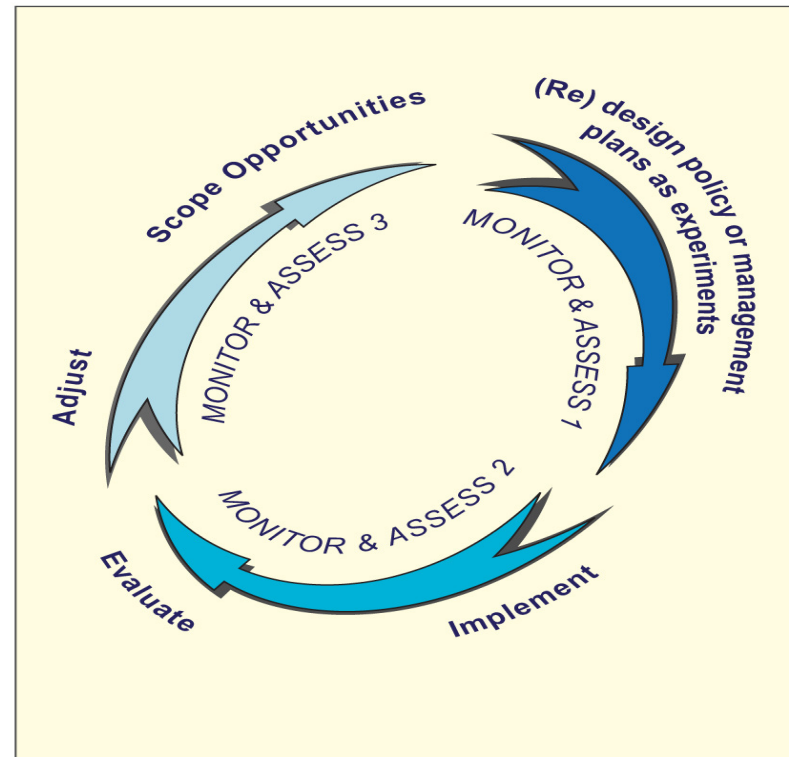
ADAPTIVE MANAGEMENT

“The most pervasive single feature of resource and environmental management is uncertainty. The more we learn about complex and dynamic environmental systems, the more we realise how little we actually know.”

Noble (2004, p.442)

“A formal process of continually improving management policies and practices, by learning from the outcomes of operational programmes.”

Nyberg and Taylor (1995, p.241)



IMPLICATIONS: POLICY IMPLEMENTATION

- ‘Implementation gaps’ are widespread in the water sector
- A programmed approach traditionally preferred
- An adaptive approach better suited to unstable environments characterised by uncertainty, complexity and conflict

CONCLUSIONS: COPING WITH TURBULENCE, COMPLEXITY AND 'MESSY' PROBLEMS

- Re-design governance and management arrangements to deal with increasing hydro-social complexity.
- Develop institutional capacity for IWRM at the constitutional, associative and operational levels.
- Develop 'collaborative cultures'.
- Link decision making operating in different policy arenas and at different scales, including but not limited to watersheds/river basins.

CONCLUSIONS: cont'd

- Recognise the value of different forms of knowledge and expertise.
- Deal with uncertainty using adaptive management and planned cycles of experimentation, monitoring, evaluation and learning.
- Analyse implementation conditions and requirements as part of the policy and planning process

MOST IMPORTANT OF ALL

- Custom-design water governance and management arrangements for particular political, legal, economic, social, cultural and hydrologic conditions, and avoid using a fixed ‘universal’ model

“There is no simple solution for implementing the concept of IWRM; it depends on the particular framework and institutions related to the water resources of a country.” (Blanco, 2008, p.91)

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