Water Governance Research
– Queensland

Brian W. Head
University of Queensland
brian.head@uq.edu.au

NCCARF Water Governance Forum

Canberra, 16 November 2010
Water supply ‘crisis’ - major trends

- In most western nations, old water infrastructure is no longer seen as delivering sufficient water supplies in many regions.
- This has been caused by three main pressures:
  - changing patterns of rainfall in catchment areas;
  - depletion of groundwater aquifers; and
  - increased population needs and industrial demands.
- Broader catchment management issues around water quality.
- Water-sharing politics and multi-level governance solutions.
- Is this a genuine ‘water crisis’ or a series of policy and governance crises?
- Are these challenges best addressed by:
  - new technologies? or
  - better designed policies and appropriate sustainability practices?
Queensland rural water policy & research

• **Rural** water research issues have been predominant in last three decades (i.e. until the urban water crisis of recent years). Main examples:
  – Policy responses to the 1994 and 2004 COAG Water Agreements
  – Qld *Water Act 2000* required water resource assessments & allocation plans for every major catchment – this process increased the need for good science, & thorough stakeholder consultation.
  – NRM regional planning studies in 1990s arising from Integrated Catchment Management /Landcare initiatives;
  – NRM regional planning and projects under the NHT2 and NAP programs 2001-2007.
Rural water overview  (cont’d)

– Bilateral agreements with Commonwealth 2003 and 2007 concerning water quality issues to protect Great Barrier Reef; role of GBRMPA and Productivity Commission reports concerning issues and solutions.

– *Wild Rivers* conservation legislation 2009 – declaration of specific catchments (Cape York & Gulf); political debates re indigenous development.

– Emerging issues about groundwater contamination risks arising from Coal Seam Gas industry (central & southwest Qld).
Urban water research issues

• Urban water policy changes in Southeast Queensland after major drought 2004-09.
• This crisis reinforced supply-side emphasis but some broader innovations also emerged.
• Broader questions raised concerning:
  – scientific knowledge & evidence-based planning/policy in the context of uncertainty and climate change;
  – role of participatory processes and stakeholder collaboration in water planning and implementation;
  – what works best with complex or wicked problems;
  – squeezing out ‘water quality’ and ecological issues which had developed over time in a decentralised SEQ framework.
Decline in water stored in three SEQ dams 1994-2009

CRISIS RESPONSE
Responses to urban drought in SEQ

- **Context:**
  - prolonged low rainfall; major dams at 20%
  - risk of continuing low-rain trend
  - expected major variability in climate.

- **Response:** urgent Qld Govt consideration of roles, responsibilities and resources:
  - clarify State’s strategic policy responsibilities
  - better long-term water planning capabilities
  - centralisation of planning powers
  - centralisation of water asset management
  - tighter demand side measures
  - increased supply side measures
  - new research on water technologies & public opinion.
Responses to the water crisis

<table>
<thead>
<tr>
<th>Supply-side responses (i.e. establishing alternative and supplementary water supplies)</th>
<th>Demand-side responses (i.e. reducing water consumption through demand management measures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• desalination plant</td>
<td></td>
</tr>
<tr>
<td>• wastewater purification plant (recycled water facility)</td>
<td></td>
</tr>
<tr>
<td>• build new dams</td>
<td></td>
</tr>
<tr>
<td>• increase capacity of existing dams</td>
<td></td>
</tr>
<tr>
<td>• ‘water grid’ pipelines</td>
<td></td>
</tr>
<tr>
<td>• aquifer recharge if feasible</td>
<td></td>
</tr>
<tr>
<td>• stormwater capture considered for industrial re-use</td>
<td></td>
</tr>
<tr>
<td>• incentives for domestic rainwater tanks</td>
<td></td>
</tr>
<tr>
<td>• restrictions on certain water uses</td>
<td></td>
</tr>
<tr>
<td>• installation of water-efficient devices</td>
<td></td>
</tr>
<tr>
<td>• water metering</td>
<td></td>
</tr>
<tr>
<td>• higher prices for water</td>
<td></td>
</tr>
<tr>
<td>• consumption targets for localities or industry sector users</td>
<td></td>
</tr>
<tr>
<td>• information, education and publicity</td>
<td></td>
</tr>
</tbody>
</table>
Supply-side responses

- 1. **establishing alternative and supplementary water supplies**: e.g. through
  - new dam announced 2006 (unpopular at local level; over-ridden by federal Minister 2009);
  - increase capacity of existing dams;
  - new pipelines to form a “Water Grid” connecting storages;
  - new facility for **desalination** and further sites identified;
  - new facilities to **purify waste-water** for recycled uses (but indefinite delay on potable use); and
  - incentives provided for domestic rainwater tanks.

- These six measures are widely seen as the primary focus of “urban water security” in SEQ.
Demand-side responses

• **2. reducing water consumption through demand management:** e.g. through
  – higher prices
  – better metering of water usage
  – restrictions on certain water uses/practices
  – subsidised installation of water-efficient devices into domestic and industrial buildings
  – developing target-driven responses for residential household consumption & various industrial sectors.

• Reduction target (T140) met comfortably through community education. Incentives and restrictions were eased when the ‘crisis’ eventually passed.

• However, considerable effort to refute a report by ISF suggesting that demand management could largely meet the crisis conditions, and that a dam was unnecessary.
Wicked obstacles to water strategy success

1. Hard to define and measure many of the risks and thus calculate the options and trade-offs.
2. Complex inter-dependencies of processes and structures need to be analysed & addressed.
3. Responsibilities may be vague or may stretch across many organisations.
4. Cooperative, coordinated and collaborative responses may be required – but these are very difficult to mobilise.
5. There are inherently no clear and correct solutions.
6. Proposed measures may have unpredictable impacts and consequences.
7. Program tools may have different impacts across different locations.
8. Solutions may require behavioural changes by citizens and stakeholder groups (rather than relying on regulation).
Research on adaptive vs crisis management

• Governments often prefer to fund water research aligned to current crisis response or policy/program priorities.
• Critical and/or long-term research generally overlooked.
• Iterative and adaptive approaches seem necessary for dealing with water policy adjustment and the innovation challenges arising from climate change.
• Adaptive frameworks recognise uncertainty by
  – acknowledging the provisional status of knowledge;
  – seeking to “pool” knowledge and encourage “flows”;  
  – working simultaneously on connected issues (e.g. climate variability, public health risks & ecological management;
  – recognising the diversity of competing views and interests; 
  – acknowledging a mix of instruments may be necessary to address a range of policy and program objectives.
A few references


