Australian Government

National Water Commission

# Water Reform in Australia - the Science Connection

Address to the

Australian Academy of Science

6 April 2010

Ken Matthews, Chair and CEO

**National Water Commission**

# Outline

1. Progress in national water reform
   – the NWC's Biennial Assessment
2. Future reform directions
   – Urban water
   – irrigation & environmental water
3. Improved water science arrangements?
   – some personal ideas

# Biennial Assessment – background

- NWI promises secure and sustainable management of rural, urban and environmental water
- NWC was created to monitor delivery of the NWI
- The Biennial Assessment is our two yearly report to COAG
- 100+ findings; 68 recommendations

# Our messages to COAG

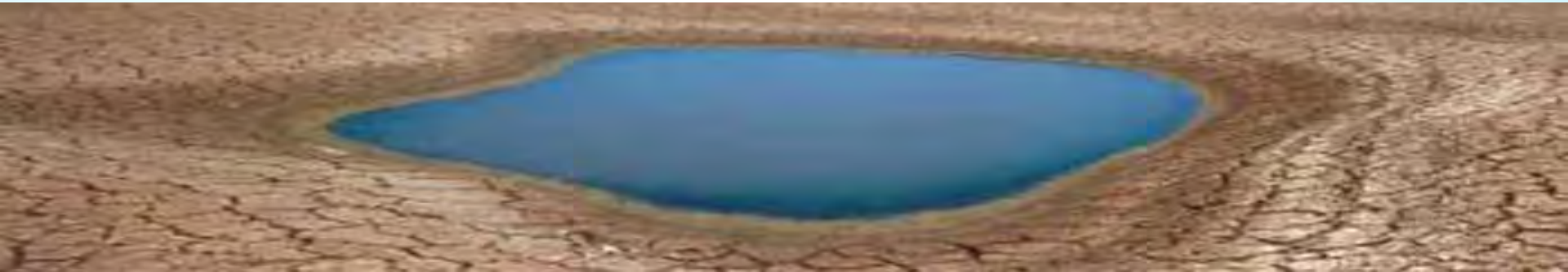
- Despite five years of reform, our water's still in trouble
- Some progress has been made... and the NWI prescriptions are still the right ones
- But there have been delays in almost all areas of reform
- And meanwhile climate change has raised the bar
- It's vital that governments restore momentum and stay the course

# Water reform: what's going well?

- We have a national water reform framework – and despite tough conditions, reform is going better than it would otherwise
- Unprecedented attention and budgets for water, led by the Commonwealth's *Water for the Future* program
- Success in opening water markets
- Progress in urban supply diversification
- First class governance reforms in Murray-Darling Basin
- Water recovery for the environment – at last!

# What's not?

- 15 years later, **overallocation** is still not fixed (although Commonwealth buybacks are helping)
- 40% of promised **water plans still outstanding**; others suspended
- **Environmental aims unclear** and environmental flows being cut
- Continuing **barriers to water trade**
- **Irrigation communities lack confidence** and a clear view of the future as they deal with climate change
- Widespread **urban water restrictions** - supplies still not secure
- **Governments still bickering**, intergovernmental processes too slow, and states hampered by resource constraints



# Some overall NWC conclusions

- NWI prescriptions are still the right ones
- Some tangible examples of success
- But the pace of reform has slowed
- Public is unconvinced; regional communities are unclear, sceptical, confused & seeking better engagement.
- Governments continue to appear at odds
- Renewed reform momentum is needed
- But the States lack policy and implementation capacity

# Some Specific Recommendations

- Spell out rules for water plans in drought periods
- Decisions to cut environmental water should be made transparent
- Independence, capacity & resources for environmental water managers should be improved
- Provide progressive guidance on the emerging MDB plan
- Always assume groundwater connectivity
- Governments should commit  to universal metering
- Improve flow of information to sceptical and uncertain communities

# Some Specific Recommendations cont'd.

- Be clearer about environmental watering goals and reporting
- Publicly identify all overallocated water systems
- Remove all barriers to water trade
- Align water policy settings in favour of adjustment – not resistant of adjustment
- Clarify just who is responsible for longer term urban water planning
- Keep urban water restrictions as a reserve response

- For the MDB, some of these recommendations are being addressed in the Basin Plan, the role of the BoM, and water metering investments

- Others, including those applying outside the MDB, are being considered by officials and advice on the Biennial Assessment is being prepared to go to COAG.

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# Future Directions: Continuing to work on the basics

- Overallocation – still the central issue
- Improved water planning
- Improved water markets
- Improved environmental water management
- Improved data, science, knowledge & public understanding
- ... and better water decision-making processes, both public and governments

# Urban Water – coming out of the emergency

- Coming off restrictions
- Explicit strategic plans for our changing-climate future
  - More secure urban water, efficiently provided
  - From water security to water efficiency (technical & economic)
- Water  Sensitive Cities; IWCM; recycling; stormwater
- Regulatory reform (health & environmental)
- Rural – urban trading
- Further third party access; more & more private sector
- ... and the right institutional arrangements & governance for the new era

# Rural & Environmental Water – despite the rain the pressure will continue

Pressures:

- for explicit planning for, & adaptation to, climate change
- to deal better with adjustment pressures on communities & industries
- to deal better with adjustment pressures on the environment
- for clearer choices among ecological assets and watering regimes
- for greater accountability for water use (both consumptive and environmental)
- for improved stakeholder access to information, planning & decision making
- for better federal/state, & state/state, relationships

# It is vital to keep the reform pressure on.

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# Science in Australia

- As a natural resource-based economy Australia relies more on the natural sciences in policy formulation
- The public policy agenda in Australia is relatively rich in natural science issues (NRM and environmental)
- It is the disciplines of science and economics that have most to say about NRM
- Various agencies have helped bridge the science-policy gap (e.g., BRS; LWA; & CSIRO) - but the gap remains

# Water Science in Australia

- Water is often a location-specific issue
  - unlike other areas of science such as say, IT, nuclear physics, or nanotechnology
- Examples:
  - the specific hydrology of Australian floodplain rivers
  - Australia's unique aquatic ecology
- These unique-to-Australia water science challenges require a considered, targeted Australian science effort

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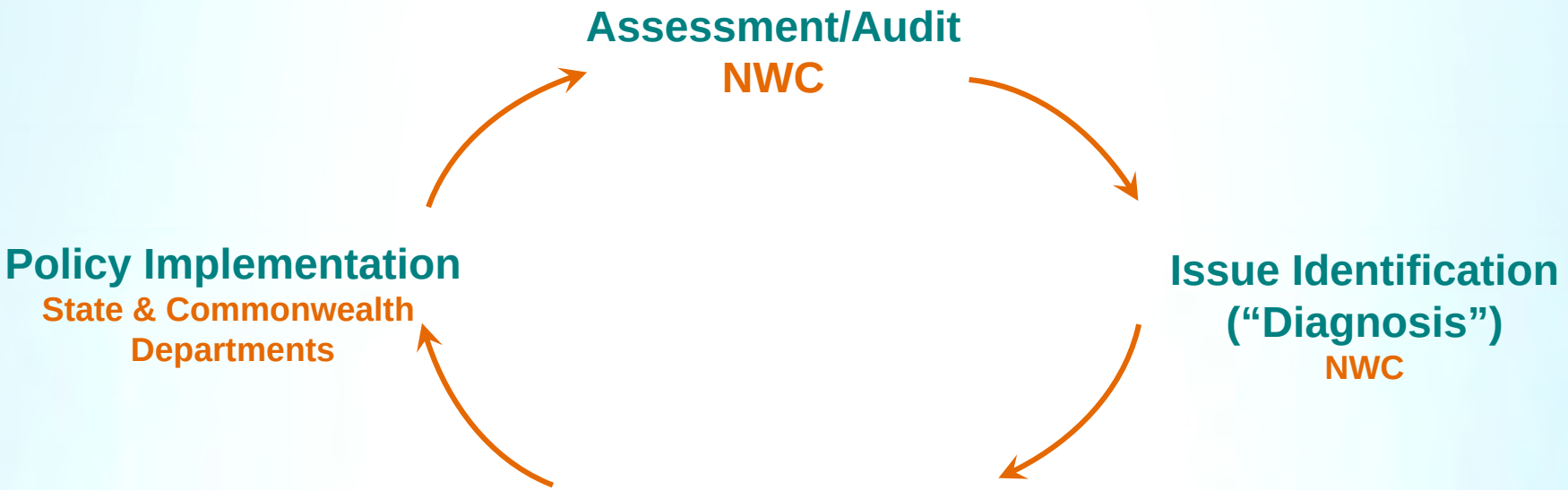
# The Water Reform Cycle




Diagnosis → Incubation → Acceptance → Handover

# An NWC diagnosis: there are problems in Australia's water science arrangements...

Good water management should be science and evidence based. The NWC has pushed hard for better science and better access for science, e.g.,

- NWC recommends "COAG initiate a national water science strategy to guide science efforts in the water sector" – NWC February 2008
- NWC recommends "jurisdictions collaborate in the development of a national water science strategy..." – NWC October 2009

# Some Water Science Needs

Better science is needed for key water reform challenges:

- Climate, seasonal, weather & hydrological forecasting
- Climate change adaptation
- Identifying environmental assets & water regimes
- Environmental externalities
- Improving environmental water management (effectiveness/ efficiency)
- NWI-consistent water planning
- Groundwater-surface water connectivity
- Managing water interception
- Enabling integrated water cycle management
- Informing health and environmental regulation of water
- Enabling new water technologies e.g., recycling

# A National Water Science Strategy

- These are all national issues, but Australia lacks a national water science strategy
- ...and certainly lacks a policy-led science strategy
  - national water policy priorities should lead national water science priorities
  - and water science should be more influential in shaping national water policy
- COAG has called for a National Water Knowledge and Research Strategy
  - work now well underway

# Specifically, what's needed?

- Clearer strategy: A national water science strategy
- Better resource allocation: Policy & management-led budgets; clearer budget setting processes; budget predictability, including for basic research
- More coherent institutional arrangements: Less-fragmented water science institutions; optimisation of research infrastructure; better user/provider connectivity
- Improved governance: Better arrangements for: 1. policy input to science; 2. science input to policy; 3. science input to water management; 4. science profile with Ministers
- Role Clarity: Commonwealth/State alignment; clearer roles of policy makers, other science users, science brokers, science providers, public sector vs. private sector roles, basic vs. applied science roles

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# Possible Elements of a National Water Science Strategy

1. National water research objectives
2. Key Result Areas and timeframes
3. Identification of gaps in water science capacity
4. Roles & responsibilities of science players
5. Funding and resource allocation guidance
6. Processes for governments to provide leadership
7. Pathways for policy input by the science community
8. Collaborative machinery between institutions
9. Arrangements for a long term water knowledge repository
10. Adoption and innovation pathways
11. Water science research infrastructure needs
12. Monitoring and review arrangements

# Water Science Institutions

Institutional arrangements matter!

- Flawed institutional arrangements can thwart the cleverest scientists with the best of intentions.
- Governments have made significant investments in water research in recent years
- But, despite some progress:
  - *capacity is still fragmented;*
  - *effort is dissipated;*
  - *critical mass is lacking;*
  - *priority setting is unconvincing*
  - *and applied research is more readily funded & secure than basic research.*

# Example: Urban Water Research in Southeast Queensland

1. Urban Water Security Research Alliance (Qld Government, CSIRO, GU and UQ)
2. Smart Water Facility (Qld Government, Gold Coast City Council, GU and other Universities)
3. Centre of Excellence in Recycling (Qld Government, GU, UQ, Others)

Also:

- eWater CRC
- CSIRO Water for a Healthy Country Flagship
- Water Quality Research Australia

Many overlaps in topics; all drawing on same small pool of researchers.

# Institutional arrangements matter!

- Science providers feel disempowered and lack influence
- Difficult for science users to connect with science providers
- Difficult to access science outputs in user-friendly form, & on time
- Policy makers do not always invest enough time in understanding the science
- Difficulties in the (increasingly important) integration, cross-disciplinary work. Science, economics and social science silos.
- University funding formulas may discourage interdisciplinary work
- National strategic & basic science work is displaced by tactical work

We can do better.

# So, what's wrong with the system we have?

- No strategy
- Ineffective priority setting processes
- Flawed budget setting processes
- Fragmentation, overlap, duplication
- Difficulties in cross-disciplinary integration
- Weak policy/science links & science/policy links
- Unmet research needs
- Vulnerable basic research
- Lack of Commonwealth/State alignment

# Possible Features of a better National Water Science System

1. A national water science strategy – 3 yearly cycle?
2. An annual "Needs and Capabilities Forum" involving water science users and providers
3. Based on (2.), an "Annual Statement of Water Policy Directions and Science Needs" (sponsored by the Commonwealth Minister?)
4. A national water science provider coalition "Water Science Australia", inside, not outside, the water policy system (see over ...)
5. A transparent annual budgeting process

# What might "Water Science Australia" look like?

- It would be a national coalition of the leading water science provider institutions
  - "science" includes economics, social sciences
- It would be accountable to a Board: 50% science providers, 50% science users. Independent chair.
  - Allowing for user pull and science push
  - Improved two-way interactions between users and providers
  - Board would provide science advice to the Commonwealth water minister
- It would nurture both basic and applied water science

# What might "Water Science Australia" look like? (cont'd)

- Strong identity: a strong corporate identity (a "national champion" for water science) but member organisations would also retain their prior identity
- Close understanding of needs: inside the water policy and planning process, not outside looking in.
- Real commitment of researchers: Not less than 25% of researchers' time (would require a transition period)
- High Quality Science Agenda: e.g., national intellectual leadership; continuing national and international peer review of all members

# Why a new institution?

- It is not a new institution: it's a coalition
- Would provide a national focus and champion for water science – currently lacking
- Would provide complementary national capacity for water science providers to respond to science users
  - Essential if science providers are to be brought "inside" the water policy system

# Possible roles of WSA

1. an informed broker of science services
2. a clearing house for national science collaboration (or competitive tension)
3. science input to water policy
4. science interpretation services
5. science services to the public sector
6. sale of services to the private sector
7. recommend budget allocations internally (see later slide)
8. national champion for water science
9. a national gateway to international water science

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5. **A transparent annual budgeting process (see over...)**

# More strategic and predictable budget arrangements

- Part A: Triennial baseline funding to Water Science Australia coalition members for basic and pre-competitive research
- Part B: Triennial and annual targeted allocations to grow capacity in areas of need identified in the “Annual Statement of Water Science Needs”
- Part C: For budget planning purposes, government users of applied science would provide, during the process of developing the “annual statement”, indications of their priorities and budgets for specific science purchases in the year ahead

# More strategic and predictable budget arrangements (cont'd)

- Member organisations of WSA would identify their capability & capacity relevant to the Strategic Research Plan
  - They would receive Part A & B funding accordingly
  - Based on Board recommendations, final decision by Minister
- Part C funding would be received via a competitive bidding process for specific work tasks

# What's different?

Unlike now:

- Water science would be guided by a coherent national water science strategy developed with real input by science providers, & issued by the Minister
- There would be a structured, national process for delivering the necessary science underpinnings for water policy & water management
- There would be a transparent and publicly defensible budget setting process
- WSA would participate as an equal in the annual needs & capabilities forum
- WSA would take science "inside" the national water management system

# What's different? (cont'd)

- Purchaser directors on the WSA Board would be serving executives of science-using organisations, not just eminent names – so engaging the attention of key users
- WSA would account to the Minister for its performance – so engaging attention for water science at the political level
- ... and it would have a world class priority setting process, see over...

# A World Class Priority Setting Process

| | |
|---|---|
| National needs and capabilities forum | Users & Providers |
| ↓ | |
| Annual statement of water policy directions and science needs | Commonwealth Minister |
| ↓ | |
| Three year strategic research plan | WSA Board |
| ↓ | |
| Annual rolling program of research | WSA |

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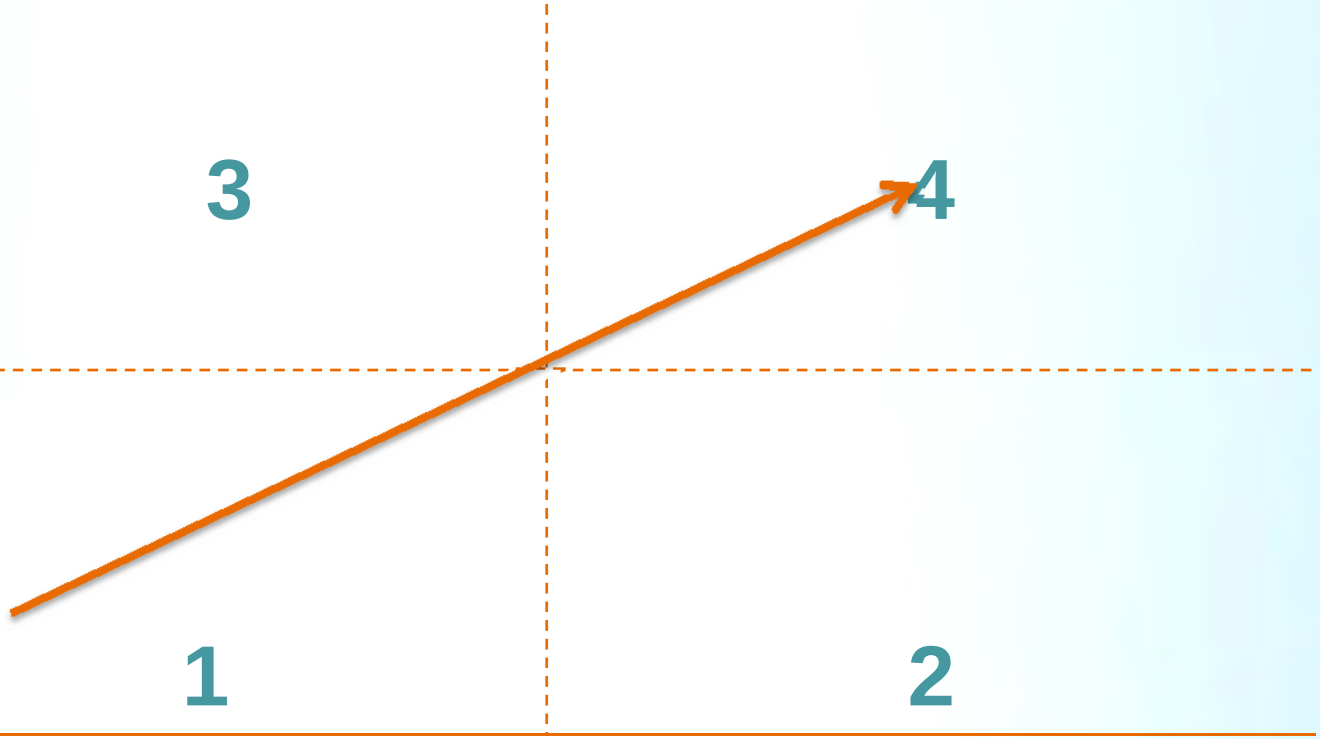
# Determining Applied Research Priorities

- Importance of topic
- Potential yield
- Consequence of success




- Research tractability
- Progress & success to date
- Synergies with other work
- Collaborative contribution of research team

# Conclusion: Radical but necessary change

- Reform of water science arrangements would be an important and overdue national capacity building initiative for the water sector
- Given the importance of water it would be a strategic microeconomic reform, consistent with the current national strategic priority placed on water
- It would improve the water management bang for the water science buck, while empowering water science providers
- It may comprise a model for other sectors' science arrangements

These ideas are offered for further discussion in the science community. They are not NWC recommendations.

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# Can't we "take the politics out of water"?

- Science, data and knowledge are essential
- But ultimately these are society's (i.e., political) choices
  - *Which environmental assets should be nurtured?*
  - *How big a redgum forest?*
  - *How green a wetland?*
  - *How often a hatching or nesting event?*
  - *How resilient do we want the ecosystem?*
  - *What risk to our assets will be acceptable?*

*Hence, decisions should be science-rich & science adequate, but not science-determined.*

*Choices, judgements and trade-offs will always be required.*