

**NOTES FOR A PRESENTATION TO
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I want to talk about 4 things today:

1. what is the appropriate place of science versus political judgement in water policy making;
2. describe some of the deficiencies as I see them in the current Australian system for linking science and policy making;
3. why "institutions matter" as we try to build science into policy; and
4. describe what a better water science - water policy system might look like, at least in the Australian context.

My starting point is that good water policy making and good operational management of water requires a national system that closely links users and providers of science -

- . Scientists need policy guidance on needs and problems to be solved and where to allocate their efforts
- . And policy makers need science input to identify emerging issues (the identification by scientists of the greenhouse effect is a good example).

I interpret science broadly to include the research necessary to underpin water management decisions. "Science" therefore includes economics and the social sciences, especially as the need for integrated, cross-disciplinary solutions becomes ever more obvious.

Because water is a natural resource, the three disciplines with most to contribute to its management are

- . the natural sciences (to explain and predict the responses of natural systems)
- . economics (to guide choices about the allocation of shares of this valuable resource, and to optimize its use)
- . engineering (to implement solutions where they involve hardware and systems(which they don't always).

However while science is important to good decision making, some of my scientist friends go too far, and I often hear an Australian catch cry: "can't we take the politics out of water?" – in other words, can't we have science become some sort of detached, objective, value-free driver of our water management decisions?.

In my view, no we will never be able to do this.

Science, data and knowledge are certainly essential for good decision making.

But ultimately these are society's choices which must be made through political processes. For example:

which of many water-dependent environmental assets should be protected when water is scarce?

which species, which wetlands, which representative ecological systems (and how many such sample systems)

to what standard should they be protected?

And what level of risk to their integrity and survival is acceptable?

All these are ultimately CHOICES, so water management decisions should certainly be science-rich, and they will almost certainly be better decisions for that. But they should but not science-determined. Choices, judgements and trade-offs will always be required, whether we like it or not.

But even accepting the need for political input on many water related decisions, the Australian system for linking science and water policy (making water decisions "science-rich") has many deficiencies. And I suspect many of the deficiencies in Australia may be shared by other countries.

Some of the problems in Australia:

- . There is no national water science strategy
- . Ineffective priority setting processes to guide science effort
- . Flawed budget setting processes to ensure research efforts really do reflect the identified research needs
- . The many institutions playing on the water science stage have developed haphazardly over many years and lines of communication among them are ad hoc
- . Fragmentation, duplication and overlap among science providers
- . There are difficulties in achieving cross-disciplinary integration of research
- . There is a lack of alignment between state and federal levels of government
- . Vulnerability of basic research and an ever-present risk of loss of science capability
- . Unclear channels for taking up science outputs into water policy and water management.

Before I go on, I want to dwell on one in particular of those problems in our science system: the problem of flawed institutional arrangements

- . Because the older I get, the more convinced I am that institutional arrangements matter!

Flawed institutional arrangements can thwart even the cleverest of scientists with the best of intentions. Too often, science providers can feel disempowered and lack influence. Too often, it is difficult for science USERS such as those in policy making institutions to connect with scientists in science providing institutions. Policy makers often say that they find it difficult to access science outputs in user-friendly form and on time.

And again, it is difficult because of institutional separation to achieve cross disciplinary integration in the wicked problems water managers have to tackle these days.

So it makes sense to me for the institutional makeup of any national science/policy system to be regularly reviewed for

Fragmentation

Unclear roles and responsibilities and lines of communication and accountability among science agencies

Ineffective processes for government to provide leadership to the science effort

Absence of collaborative machinery between institutions

Lack of critical mass in areas that matter most

Optimisation of expensive research infrastructure

... And again, that critical issue of getting the right institutional arrangements for science provider/science user

connectivity.

In designing better institutional processes, I once put a proposal through the Australian Academy of Science to reform the Australian water science system by introducing the following four features:

1. An over-arching national water science strategy
2. An annual 'needs and capabilities forum' giving EQUAL voice to policy makers (what is needed) and science providers (what is capable of being delivered) so that each could talk as EQUALS about what's needed on the one hand and what's possible to deliver, on the other
3. Based on that annual national forum, an annual statement of water policy directions and science needs (probably sponsored by the federal water minister)
4. A transparent annual budgeting process guided by the Minister's policy statement which provides funding to science agencies in three ways:
 1. baseline, stable, multi-year funding to maintain basic research,
 2. targeted allocations to build research capacity in areas of capability need identified in the Minister's statement
 3. all over-layed by the normal ongoing purchases of science to solve specific near term needs.

Well so far, that somewhat idealized four point prescription hasn't been fully taken up by the Australian Government, but some

elements are being tackled.

The first is some work to develop a national water science strategy. The Council of Australian Governments (COAG) has since initiated a process requiring all state and the federal governments to develop a unified water science and knowledge strategy to bring clarity and coherence to the governments' national water science effort. At this stage the strategy is not very detailed but it is certainly stimulating some valuable dialogue among players.

The second is in the URBAN water area where action was already underway before the government became involved.

About 12 months ago, all the players in urban water research (researchers, the government owned water utilities, representatives of the private sector water industry, the universities, a range (around fifty-odd) government and semi-government agencies, and some of the more forward thinking government officials) came together at their own initiative to discuss the problems of water research.

As a result of that historic forum, a national working group has been set up to produce two critical pieces of further work:

1. A draft statement of Australia's urban water research needs and priorities and the gaps (where aren't they being met).

. The idea is to let all the research users (including policy makers) signal the set of national urban water research needs as far ahead as possible, so letting the research providers know the issues they need to focus on. Already a number of research funders have said they may be willing to steer their budgets towards shared national water challenges wherever possible.

2. The second piece of work is to produce recommendations on specific, practical reforms that could be introduced to improve the way scientists and policymakers and other users of research, work together. One such reform under consideration is an occasional national symposium to discuss research needs and capabilities along the lines I mentioned earlier. Another involves the development of a repository for all urban water research data sets. Another involves building channels for SMS enterprises to influence the research agenda. Another possibility is to have deliberate cross membership of the management boards of water research institutions.

I want to finish with a kind of summary - a list of the key attributes as I see them of effective and efficient national water science arrangements.

1. Clear research needs and priorities - perhaps in the form of a national water science research strategy with a generous forward time horizon.
2. A good budgeting process - strategically assigning resources to current and emerging research needs.
3. A place for both policy makers and research providers at the planning table - where they can interact as equals.
4. Clear roles and responsibilities for all players - and clear lines of accountability and communication among them.
5. Acceptance that a good national water science system is a shared responsibility among all sectors - it is not just the responsibility of governments.