

# Is new policy evidence based - and is it working?

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## Abstract

There is a heightened awareness about the state of natural resources, especially as it relates to the broader community's own well-being and future expectations. The community is becoming more critical of the information being used to create policy and expects sound policy to be supported by strong evidence. To assess the delivery of this expectation at the catchment scale, the author draws on personal experience that does not pretend to bring strong scientific rigour to this critique, however this experience came from being the 'client', a recipient of researched evidence, charged to create management directions based on the evidence presented. Two examples examine the use of evidence. First, evidence that was used to direct investment to meet an end-of-system salinity target that recent review has challenged early assumptions and outcomes. In this example the use of improved monitoring has improved our understanding of the initial targets however access to the review details and the underlying evidence has not been possible. The second examines where policy has been determined to mitigate against the modelled threats of over abstraction to the groundwater resource, salinity intrusion and aquifer compaction. In this case the models have been ably supported by an extensive observation bore network. Given the levels of abstraction and evidence of the identified risks occurring, no comprehensive monitoring program is in place to track the implementation of the current reduction program.

## Keywords

Evidence-based planning, Namoi, salinity targets, NRM, groundwater

## Introduction

There is a heightened awareness in the broader community over the state of their natural resources, especially as it relates to their own well-being and future expectations. The community is becoming more critical of the information being used to create policy and expects sound policy to be supported by strong evidence. There is displeasure with the current suite of political responses (policies), fuelled by a prolonged and destructive drought over most of eastern Australia leading to severe water shortages and insecure future supplies, to the compelling evidence of climate change.

When planning and policies are applied to these natural resource issues they are generally broad in scope and short in time. Given the nature of natural resources and their geographically variable inputs, the provision of evidence that is accepted as 'fact' in one catchment will invariably not apply in another. It follows that a policy as it applies to a nominal area larger than a catchment may not necessarily be based on evidence applicable to that catchment; therefore the policy itself may not deliver its intended consequences or may deliver unintended surprises.

Water and carbon cycles, and species diversity take many years, or decades, to respond to external intervention. It seems only reasonable that proper policy formulation would take account of these long time scales. This paper provides a personal view on the application of evidenced-based policy at the catchment scale (the most appropriate scale for 'outcomes based' policy). Fundamentally however, our short term election cycles that force the continual need for creating and re-creating policies are inappropriate for dealing with longer term natural cycles.

## Scope

The author examines the question posed 'is new policy evidence based - and is it working?', as it relates to the natural world and man's interactions with it. It is not intended to delve into the broader questions of various types of evidence but focus on the provision of scientific evidence as it relates to the proving or

disproving a hypothesis. It should be noted, however, discussion as it relates to evidence raises many questions over the degree of evidence that is required for either development of policy or the general acceptance that the policy is fundamentally sound.

## Discussion

There are many expressions of frustration from within and outside the political system. People talk of 'policy on the run' and 'policy developed by shock jocks, based on fear and ignorance'. It is often said that 'politicians aim for one outcome only- their internment in politics'. These critical comments reflect a view of, 'my view of the world, as I know it, does not match the response that is being offered' and/or that 'the evidence I have does not accord with yours'. The strong perception held by many is that the offending policy is made for a 'political' outcome rather than to provide a proper response to the evidence that has been gathered. It is also true that many policies, based on sound evidence, have been either redirected or dropped due to the responses from the 'offended' recipients.

Would closer examination of the information that was used in determining the offending policy placate concerns? Given the resources available to policy makers, do they use sound evidence gathering and storage techniques, and do they then use this evidence to craft their policies?

In this paper two brief examples that track the development and implementation of policy in the Namoi Valley of northern NSW are examined: first the development of the National Action Plan for Salinity and Water Quality, in particular the provision of end-of-valley salinity targets; and second, the development of policy to manage the valley's groundwater resources.

### *1. End-of-valley salinity targets (The National Action Plan)*

The Namoi Catchment Management Board (NCMB) was established in May 2000, and was primarily charged to 'provide strategic direction on catchment management and to develop an integrated catchment management plan while addressing the environmental, economic and social concerns of the wider community' (NCMB, 2003). The NCMB did directly negotiate many of the management actions at the catchment scale and further assessment and direction has been provided through the Namoi Catchment Management Authority (Namoi CMA), Catchment Action Plan, 2006.

However, the NCMB was directed to adopt one target, without discretion or assessment, the end-of-valley salinity target. '*This recommended target comes straight from the NSW Salinity Strategy. Average river salinity at the end of the valley is predicted to rise from the current 680 EC to 1050 EC in the year 2020, 1280 EC in the year 2050 and to 1550 EC by the year 2100. (Murray-Darling Basin Ministerial Council, 1999, p.32).*' (NCMB, 2003)

Members of the NCMB challenged the target, for its appropriateness and assumptions behind the target. Consideration was given to lowering the target and improving the monitoring, not to remove the responsibility to deal with what seemed a substantial problem, nevertheless to use the principles of adaptive management in the face of an uncertain problem. The NCMB was advised that there were technical reasons not to reduce the target; however, the chance for the NCMB to change the target was removed due to 'a no more negotiation stance' by the relevant technical agencies.

Concerns from within the NCMB of the evidence that set the target related to; conflicting evidence from external studies, the monitoring periods used to gauge stream salinity, and the methods used to determine the salt loads for the 'current' situation and the extrapolation to future loads. It was accepted by the NCMB that the methodology used involved complex models and that the results reflected the validity of any current data and the assumptions made to provide predicted trends.

Since the introduction of the Namoi CMA, and stronger requirements for the use of State-wide standards in the delivery of all aspects of NRM programs, the move to a performance based and systematic management approach has led to a more rigorous assessment of many of the early assumptions. This assessment was due, in part, to the movement from attitude, to behaviour, change programs, increased funding into management

actions and more 'outcomes' orientated investment planning. All require a higher understanding of the spatial location, and potential successes, of the investments.

As the Catchment Action Plan is implemented, and continuously improved, by the Namoi CMA, two pieces of evidence will be of critical importance. First, the review of the target itself, and the assumptions that were made in the early stages. (Most of the catchments' investment dollars are attached to this management target and the strategic use, and, correct location targeting, of management actions will be driven by the required outcomes from the salinity target.) Second, the recommendations found in the Blueprint on the upgrade of resource condition monitoring programs.

In relation to the first area, New South Wales has undertaken a peer review of its own work presented to the MDBC for the last salinity audit undertaken in 1999 (MDBC, 2006). Obviously putting in place processes that are continually determining the validity of the evidence adds substantial credibility to the status of the work and its conclusions. The Science and Information Board of the NSW Department of Natural Resources oversighted the review, it was commenced in 2005 and Catchment Management Authorities (CMAs) have received preliminary advice about the results, not a final report.

The Namoi CMA received advice from the Director General of the DNR of the results and highlighted potential management implications. The advice pointed out that the preliminary findings were correct in broad terms; however, it did warn that more work was needed to be able to be conclusive on the results for specific catchments. In particular it would appear that the audit has revised predicted future trends and will result in the need to revise the in-stream end-of-valley salinity targets..... *There are eight northern catchments in the Gwydir and Namoi and Border Rivers out of 36 that are displaying trends towards lower salinity values and a further sixteen for which the trend slopes are statistically insignificant.....*” (NSW Salinity Audit Update for Dryland Areas within the Murray Darling Basin, Preliminary Advice to CMAs, Letter to Namoi CMA 9 January 2006 from Director General NSW Department of Natural Resources)

As was pointed out in the advice the results of the audit may mean changes to the investments within the catchment. Changing the outcome will lead to changes to the priority, and locations, of investments within the catchment. Unless the governance requirements, especially in relation to forward planning and budgeting through the 3 year Investment Strategies, that now surround the National Action Plan and NHT programs are altered it would appear that the next two years of the programs' funding have essentially been locked into place, based on the historical knowledge.

In relation to the second piece of evidence on upgrading the monitoring of the resource condition, the upgrade has been completed and continual recording of the Goangara site (end-of-system) has now been operational for 3 to 4 years. (W. Mawhinney, NSW DNR, *pers.comm.* Feb. 2007) The new evidence obtained from this improved monitoring would have contributed substantially to the results of the audit review. Parts of a sound, and stable, systematic plan-do-check-act cycle of adaptive management are beginning to emerge.

## *2. The Namoi Valley groundwater resources.*

The chronology of events in the move to sustainable use of the groundwater resources is outlined in the Namoi Groundwater Expert Reference Panel Report (DLWC, 1999). The first evidence that the resource was becoming 'over-allocated' was recorded in the late 1970's and was followed a decade later by the first policy response - a moratorium on the issue of new groundwater allocations. Evidence that groundwater abstraction was causing aquifer compaction was also presented in 1980.

The chronology details a series of policy responses during the time. These policy response were providing increasing interventionist actions to the management of the system as new information on the 'supply' side, the ability of the resource to supply into the future without any risk to it, was generated. The 'demand' side, the activation of licences that were previously granted, kept increasing.

Policy responses moved from moratorium, a freeze on the issue of new licences, to embargo, a total ban of the issuing of any new licences. This was followed by negotiated early voluntary entitlement reductions, and phased voluntary allocation reductions. Both of these policy responses were in consultation with the irrigators and were designed to 'voluntarily' reduce the need for any further reductions or harsher policy interventions that were mooted by the technical analyses. Finally, a program of forced entitlement removals

was implemented (2007). This final stage is incomplete and the plans in place allow a ten- year staged reduction in entitlements, and in many individual cases, use. This phased reduction is designed to add to the adjustment assistance, complementing the monetary compensation agreed by both the NSW and Federal Governments.

The scaling up of the policy response was due to the enormity of the over-allocation. Licensed entitlements exceeded sustainable yields by five and six times in many of the zones. Within the most severe zone, irrigators each receive less than 5% of their preliminary licensed entitlements as their share of the sustainable yield.

Much of the evidence of impact to the resource presented during this time was based on 'observation', predominately through an extensive bore monitoring network. The network provided an extensive pattern of watertable levels across all of the discrete management zones in the Upper and Lower portions of the Valley. Regular physical monitoring took place over the irrigation season, predominately summer, with decreased observation during the 'off' season, winter. This has allowed the extensive database of groundwater behaviour to help develop, and ground truth, a range of sophisticated groundwater modelling tools. It is generally agreed that the hydrogeological knowledge of the Namoi Valley is sound.

By its hidden nature, the management of groundwater will always be difficult and the underpinning science will be complex and imperfect. Apart from the observation bore network, which monitors water level only, it must be asked if there are other pieces of evidence that reflect on the status of the current resource and its future ability to provide for sustainable use. As previously mentioned the move to sustainability was premised on two risks to the resource; first, the loss of the aquifer itself through compaction; and second the intrusion of salty water as pressure gradients are altered due to the drawdown of the aquifer by pumping.

The realisation of these threats would make groundwater unusable and severely impact on the social and economic future of the area. As serious as the threats are, no valley-wide monitoring program has been implemented to assess the risks. (Work undertaken in 1999 highlighted the consequences of over-abstraction in one zone. However this zone remains un-monitored and extremely vulnerable to deteriorating water quality through salinity intrusions.) The NSW Monitoring and Evaluation Strategy, 2006, outlines the use of risk assessments to groundwater resources as part of the program and will be implemented on a needs basis. The Namoi CMA waits in anticipation of the application, and scale, of this program.

## **Conclusion**

Is new policy evidence based and is it working? Overall, it would be hard to justify a singularly positive response to the question.

In a management sense it is rare to be certain of the projected outcomes and management should prepare itself, and provide the mechanisms and tools to allow it to adapt to changes in knowledge. The opportunity for 'catchment management' to be adept in its management direction was historically low as 'command and control' interventions were preferred by previous Governments. Changes to the governance arrangements, responsibilities been accepted by local stakeholders and the withdrawal of many publicly funded technical services has provided a greater opportunity for 'catchment management' to be more inquisitive of the underlying 'science', necessary management actions and local policies as they apply to NRM. It remains to be seen how the use of the traditional technical interventionist policy approach and a rigorous adaptive management regime will interact.

Recent moves by the NSW Government to performance-based reporting across all sectors of Government services should increase the use of evidence within a more rigorous and systematic planning and monitoring framework. In time we will be able to judge the effect of this change. However, the lack of access to the peer-review in the case of the NSW Salinity Audit Review and the lack of a substantial monitoring program to protect the most secure water resource within an inland valley are not encouraging.

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