

# NATIONAL WATER COMMISSION FELLOWSHIPS PROGRAM: SECOND CALL FOR PROPOSALS, AUGUST-SEPTEMBER 2009

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## PRIORITY AREAS FOR A SECOND FELLOWSHIP ROUND

This Attachment provides brief sketches of priority areas of interest to the National Water Commission for the second Fellowship call.

### Urban water (including regulation, markets and water-sensitive cities)

In recent years, urban water supply has become a critical national issue. Population growth and declining water availability has led to severe water restrictions in many of Australia's towns and cities. Responses by governments include investment in new water supplies, improving the management and delivery of urban water services, and allowing for greater innovation and more efficient water use. As governments have moved to diversify supply options away from the traditional reliance on rainfall dependent catchment storages, they have been confronted by a number of issues relating to planning, regulation, pricing, market and institutional reforms, and public confidence. Similarly the private sector has limited opportunities to invest in water supply, and encounters many barriers to pursuing innovative and efficient options.

#### *Issues*

- Clarifying the regulation of new water sources;
- Planning for improved integrated water cycle management;
- Understanding and implementing decentralised water systems;
- Filling science gaps around recycling and stormwater harvesting;
- Promoting market development, innovation and competition.

### Environmental water management

Water-dependent ecosystems exist within waterways, wetlands, floodplains, riparian areas, estuaries and springs, and can be fed by both surface flows and groundwater. The term 'environmental water' encompasses the identification and delivery of water to sustain the health of these ecosystems. Without adequate water at the required time, these ecosystems lose their capacity to provide for environmental and other public benefit outcomes (NWI clause 23 (iii)). In some cases, the losses may be irreversible; in others, they may be difficult, costly and time-consuming to reverse. Under current conditions, many significant water-dependent ecosystems are under threat.

#### *Issues*

- the extent to which water plans clearly specify measurable environmental objectives and the extent to which they are achieved;
- the security of environmental water allocations and institutional or other impediments to the effective use of environmental water;

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- competition between environmental assets, and challenges in operationalising environmental watering;
- understanding low flows and their importance for sustainable water management.

## Innovative approaches to enforcement and compliance

In a number of critical areas for water reform, more attention needs to be paid to enforcement, monitoring and compliance issues. These include water theft, and the security of water provided for the environment, where, despite generally good progress, the lack of water resource monitoring and compliance is reducing water user and stakeholder confidence.

### *Issues*

- Lack of detailed information on the prevalence of unauthorised or illegal water extraction, or of the downstream costs to communities and to the environment;
- The need for cultural change in rural communities regarding compliance;
- Opportunities for new technologies to improve the cost-effectiveness of compliance and enforcement activities.

## Sustainable irrigation communities

The irrigation sector, particularly in the Murray-Darling Basin, is confronting a future of significant reductions in water availability due to factors such as prolonged drought, climate change and national efforts to return our surface and groundwater systems to sustainable extraction limits. This will inevitably lead to major changes in the structure and composition of the irrigation sector. Structural change is also driven by commodity prices, exchange rates and social trends.

The national water reform agenda aims for a successful transition to a more sustainable and prosperous future by enabling necessary structural adjustment to occur in a smooth and effective manner. Work is needed to identify the necessary structural adjustments that will allow such a transition to be achieved and to develop appropriate resources to assist rural communities to adapt.

### *Issues*

- Impediments to adjustment resulting from inconsistent charging arrangements, water markets, and administrative conditions on trade;
- Developing equitable and culturally acceptable adjustment measures;
- Practicality of rationalising or reconfiguring irrigation districts;
- Appropriate irrigation techniques and management models for northern Australia to enable sustainable agriculture.

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## Climate change and water

Climate change (and a possible step change in hydrology) may lead to river flows, groundwater recharge and evapo-transpiration patterns that are quite different from those experienced during the last 50 years. Declining water availability due to climate change is expected to affect the security of water resources in many areas, both for consumptive and non-consumptive uses. The extent of hydrological impacts of climate change is however uncertain, given the current state of climate science. Dealing appropriately with that uncertainty in water planning into the future is a significant challenge.

At present, few water plans include the possible effects of climate change in considering future environmental water requirements. Under the current water-sharing rules in many catchments, the environment's water access entitlements or flow regime are likely to suffer the greatest impact and consequent reduction in security as a result of reduced water availability.

Added complexity comes from the interaction of policies addressing sectors which share usage of water, or which may impact on availability of water. Water, electricity and carbon markets will interact in many ways. For example, ongoing drought conditions and lower water inflows in parts of Australia are reducing the water available to electricity generators, while lower carbon-emission generating technologies may increase water demand. At the same time, development of non-climate dependent sources of water is leading to increasing demand for energy. Policies aimed at reducing Australia's carbon footprint are also closely linked, both to the energy and the water sectors. Forestry initiatives aimed at achieving carbon sequestration, for instance, can have a negative impact on water availability. A harmonised approach will be required to optimise results across all sectors.

### *Issues*

- Approaches to considering and communicating the uncertainty and risk of future changes in water availability, increased climate variability and extreme events in water allocation planning;
- How water planners can assess socio-economic impacts of reduced water availability due to climate change and how that information can be built into the planning process to be able to better deal with uncertainty;
- Integration of policy in related sectors to ensure that policies are mutually supportive;
- Need to ensure that water policies relating to electricity generation are aligned with the principles of the NWI to improve the adoption of water use efficiency measures and innovation by the sector;
- Informed consideration by the energy sector of future water management options and needs for its planning and investment strategies;
- The water resources impacts of alternative carbon-reduction policy options.