

Phase 2 Strategic Direction



Overview

The National Program for Sustainable Irrigation's mission is to provide Australia with leadership through collaborative investment in research and innovation to achieve sustainable irrigation. It aims to achieve this mission by defining, commissioning and managing research projects that produce new information of national importance and facilitate its adoption.

The National Program for Sustainable Irrigation (NPSI) is beginning a new 3 year phase bringing together 13 investors from government, commodities and water providers. The Program will provide leadership to identify, scope, purchase and manage research useful to partners that can substantially improve the sustainability of irrigation.

History

Coordinated investment in irrigation research and development first commenced through the National Program for Irrigation Research and Development (NPIRD) in 1993. In June 2002 the National Program for Sustainable Irrigation (NPSI) Phase 1 was born and had a strong focus on addressing critical environmental issues affecting the sustainability of irrigation. NPSI successfully strengthened collaboration between industry and government by focusing on the planned outcome of 'substantial improvement in the environmental and productive performance of irrigated agriculture and horticulture in Australia'.

NPSI Phase 1 undertook 30 research projects with diverse project teams and researchers. Some project examples include:

Geophysics for the Irrigation Industry

The 2004 NPSI/ANCID fellow, David Allen, travelled to various countries to investigate the application of geophysics in irrigation planning. Further NPSI investment shaped this work into a book on how to use geophysics to assist in the planning and management of irrigation developments by identifying the size and depth of aquifers, the connectivity between surface and ground water, the salinity of aquifers, the mineral composition and depth of the soil and the chances of successful water boring.



Re-use Water

This project consulted with stakeholders to develop and produce:

- a practical guide for horticulture growers on how to use recycled water based on knowledge and experience of growers in the Virginia Pipeline Scheme and Werribee Irrigation District
- a training overlay to complement existing irrigation management training with a focus on the differences associated with recycled water
- guidelines for developing recycled water schemes

Evaporation

Evaporation continues to be one of the biggest contributors to water loss from our irrigation systems. One NPSI project examined the night time evaporation in various climatic zones across Australia and considered the relationship of dam shapes and other influences. This project showed that the annual night time evaporation is considerably higher, in the range of 40 – 60 per cent rather than 10-15 per cent as previously thought. A simple tool was also developed to assist farmers to determine how much water a dam was losing. The evaporation Ready Reckoner uses a spreadsheet to:

- calculate the cost of installing an evaporation reduction system
- calculate how much water is saved from evaporation

Governments could also use the tool to assess the investment they may need to make to encourage landholders to reduce evaporation.

Northern Australia Irrigation Futures (NAIF)

The aim of NAIF is to provide new knowledge, tools and processes to support debate and decision making regarding irrigation in northern Australia. The NAIF project is helping decision makers to address the likely future role of irrigation in northern Australia. Key questions are: Should we irrigate in northern Australia? If so, where should we irrigate, what should irrigation look like, and how should it be managed? The project delivers its final report late in 2007 and is focussing in 3 key areas:

- Sustainability framework
- Tropical groundwater systems
- Irrigation mosaics

NPSI Phase 2

Phase 2 is a three year program which aims to collaborate with irrigation research investors Australia wide to define, commission and manage research projects that provide benefits to a broad range of commodities facing shared irrigation issues.

NPSI Phase 2 will undertake three strategies:

- 1 Commissioning and Managing Research
- 2 Leadership and Collaboration
- 3 Knowledge into Practice

Commissioning and Managing Research

Some of the research priorities for Phase 2 include:

- investigate the relationship between various farm irrigation systems and plant performance
- better understanding the root zone
- systems level sustainability: tools for irrigators, water suppliers and policy makers to measure change
- socio-economic implications of new activities such as the National Plan for Water Security
- climate, energy and water – trade-offs and opportunities
- evaporation

A number of research questions will be investigated including:

Research Question	Change
How can whole irrigation systems be harmonised so that irrigation is a sustainable component of the landscape, at the same time as being resilient to unanticipated shocks?	What are the systems-level messages for policy makers and planners?
How would a harmonised system function at various scales in existing and new irrigation systems?	What are the implications for refurbishing existing systems?
What are the water and solute triggers and tolerances at (on and below) the rootzones of plants that can affect plant production?	How should this fundamental information be interpreted across different climatic zones and commodities?
What are the further definitions of wetting and drying characteristics of soils?	What management strategies will minimise negative impacts and maximise production?
Given the emerging information about systems-level harmonisation, soil characteristics, and rootzone triggers and tolerances, what research can be shaped that may lead to substantial breakthroughs in concepts, technologies, designs or practices for production and the environment?	How do producers, industries, water managers and policy makers know that they are acting sustainably?

Leadership and Collaboration

A Program Management Committee (PMC) provides leadership and strategic oversight to the program including setting research priorities and program expenditure. The PMC comprises both skills-based members and representational members nominated by Program Partners. Daily administration of the Program is undertaken by Land & Water Australia with a Program Coordinator leading and managing the program.

By bringing together government, industry and research organisations, NPSI is able to coordinate the interests of irrigators regardless of commodity group. In addition to program partnerships, NPSI has developed relationships with other organisations including the Cooperative Research Centre for Irrigation Futures, National Water Commission and the Murray Darling Basin Commission.

In addition to program level partnerships, some individual projects will require their own set of partners and investment. This introduces another level of collaboration within the Program that allows investors to specify and target their funding and interests.





Knowledge into Practice

One of the biggest challenges facing the adoption of new knowledge, technology and practice is understanding change processes. People and organisations will adapt and adopt new information into their policy, planning or practice at different rates and times not necessarily related to the quality or usefulness of the new information. Understanding the characteristics of information, ideas, technologies and knowledge that influence adoption, will enable NPSI to better inform and assist its target audience. Phase 2 investment will use the following models of knowledge and extension:

- **Technology development** - Adoption requires a focussed and applied effort working with users of the new technology and industry stakeholders
- **Information access** - People require different information at different stages of their decision making and in a form that suits their individual needs. A Knowledge Harvest targeted at commodity groups, water managers and policy makers will be undertaken

The website and knowledge base from Phase 1 will continue into Phase 2 and will be continually updated to ensure their usefulness to our stakeholders.

External Evaluation

In addition to a detailed monitoring program to understand progress and target issues, Phase 2 will include an evaluation component that will report on how the program has performed against its strategic objectives.

Such an evaluation has been undertaken by Hassall & Associates for Phase 1 which found that NPSI:

- created a forum to identify and discuss issues impacting on sustainable irrigation
- was consensus based and forward looking and
- provided a mechanism for partners to invest in irrigation research of direct relevance and to share knowledge

The report also found that the program scored very highly on direct relevance to industry, knowledge management and smart science.

Final Word

NPSI offers a unique service – providing leadership to identify, scope, purchase and manage research useful to partners, that can help to substantially improve the sustainability of irrigation. Phase 2 will enable irrigation industries to be responsible and profitable users of water. Research results will be developed for use by practitioners, policy makers and planners so that irrigation within a landscape can be environmentally sustainable, productive, and valued.

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