Senate Standing Committee on Economics
ANSWERS TO QUESTIONS ON NOTICE
Industry, Innovation, Science, Research and Tertiary Education Portfolio
Additional Estimates Hearing 2011-12
15 February 2012

AGENCY/DEPARTMENT: COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION

TOPIC: Water for a Healthy Country Flagship

REFERENCE: Written Question –Senator Bushby

QUESTION No.: AI-108

What does CSIRO consider have been the most tangible, practical achievements of the Water for a Healthy Country Flagship over the course of its existence?

ANSWER

There have been numerous achievements and impacts from the work of the Water for a Healthy Country Flagship. The following are a small number of highlights of Flagship outcomes supporting improved policy making and decision-making and helping to create economic benefits.

- **Sustainable yields assessments** - These comprehensive assessments of current and future water availability in major water systems across Australia have provided governments and industry with an unprecedented level of water information. The assessments have been provided a framework for decisions around future water policy, allocations, resource planning, management and investment. Through the improved understanding of sustainable yields, the Flagship is now influencing optimal targeting of $3.1 billion of water buy backs in the Murray Darling Basin by the Australian Government.
- **Technical manual for assessing hotspots in channel and piped irrigation systems** - The technical manual is designed for irrigation water providers and consultants, to help them evaluate water losses and gains in open-channel irrigation delivery systems, as well as in piped irrigation delivery systems. Through the manual, the Flagship is influencing Australian Government investment decisions that will improve the efficiency of over $3 billion of irrigation infrastructure investment.
- **Improved water information systems** - The Flagship has developed systems for the Bureau of Meteorology to support better water infrastructure investment decisions and cost savings in data collection, and better efficiency of water allocation and use.
- **Stormwater harvesting options analysis** - The first national study to quantify stormwater harvesting potential at city scale within a triple bottom line assessment framework. The analysis showed that stormwater harvesting for irrigation purposes in urban Canberra could save up to three gigalitres per year of potable water. Through this analysis the Flagship has influenced over $19 million of investment into new ponds by the ACT Government.
- **Future inflows to Victorian catchments** - Revised assumptions regarding future inflows to Victorian catchments, contributing to improved efficiency of alternative supply infrastructure investment decisions by the Victorian Government, valued at more than $5.4 billion.
- **Water: Science and Solutions for Australia – a** comprehensive book launched by CSIRO in November 2011 provides the latest information on the status of Australia's water resources,

their future prospects and the potential for using water more effectively to meet the growing demands of cities, agriculture, heavy industries and the environment. It seeks to provide a bridge from the peer-reviewed scientific literature to a broader audience and also provides an overview of CSIRO's long history of publicly funded research in this vitally important area.

- **GISERA:** CSIRO and Australian Pacific LNG Pty Ltd are founding members of the Gas Industry Social & Environmental Research Alliance (GISERA). An initial investment of more than $14 million over the next five years will fund research into the socio-economic and environmental impacts of the natural gas industry. This initial focus will be directed at Queensland's CSG-LNG industry but will have potential to expand to address impacts and opportunities associated with different gas industries and geographies. GISERA is unlike previous investments in CSG because of its regional and public good role and its desire to provide a whole of industry focus.
- **Forestry impacts on water Availability:** CSIRO has developed new tools to help government and industry water management agencies better estimate how forest plantations affect stream flows in local catchments. Undertaken by a team of CSIRO Water for a Healthy Country Flagship scientists for the National Water Commission (NWC) and Forest & Wood Products Australia, the project developed modelling tools to provide greater confidence in estimating the impact of new plantations on catchment stream flow. The tools assist governments to identify threshold levels to trigger planning, management and/or regulatory measures to appropriately account for forestry plantation water use.
- **Using mining by-products to reduce algal blooms**. A joint project between CSIRO and the Western Australian Department of Water investigated a range of mining industry by-product materials, which are currently unused, to determine whether they could instead be used to filter nutrients from natural waters or to treat wastewater that would otherwise be discarded. A by-product was added to soil at a turf farm in the Swan Canning catchment, and was shown to remove 97 per cent of phosphorus and 82 per cent of nitrogen from the shallow groundwaters. Adding the by-product also reduced water use and improved turf health.
- **Digital Elevation Model:** A new computer model launched in 2011using NASA-developed technology will provide the most sophisticated mapping of the dry continent ever. This new model provides the best ever maps of terrain shape and water flow paths across the continent and is expected to dramatically improve our understanding of Australia's landscape and water resources. The 30-metre resolution Digital Elevation Model will also create three-dimensional landscape images, so the extent of potential floods can be better understood. The model is the product of combined efforts by CSIRO, Australian National University, Geoscience Australia and the Defence Imagery and Geospatial Organisation.
- **The South Eastern Australian Climate Initiative (SEACI):** The report on SEACI Phase 1 *Climate variability and change in south-eastern Australia*, launched in 2010 highlights the effects of climate variability and change on the water resources of the south-east. Changes to large-scale atmospheric circulation patterns are impacting on rainfall and runoff in the south-east, particularly in the southern Murray–Darling Basin and Victoria. These observed changes indicate a shift in the overall climate of south-eastern Australia, similar to what has been experienced in rainfall and runoff in south-west Western Australia since the 1970s. For SEACI Phase 2 next step is to determine to what extent some of the changes we have seen so far are linked to global warming, and to figure out how these conditions may change into the future in a warmer world.
- **A clearer picture of Australia's water resources:** CSIRO and the Bureau of Meteorology (BoM) have developed a new data transfer format which enables the BoM to produce a clearer picture of Australia's water resources. The Water Data Transfer Format (WDTF) allows the BoM to more efficiently collect and process the 6 million data files of water resource information supplied by more than 200 organisations every 12 months. The web-based WDTF

has been developed to allow data providers to efficiently deliver water observations data to the Bureau in a format that is more easily loaded into the BoM's Australian Water Resources Information System. These tools will help streamline water data delivery by organisations, while providing the assurance and confidence that their data delivery solution is commercially available and supported by the water IT industry.