Colloquium on Water

Responses from Speakers

Wendy Craik AM

Steve Dovers

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Title
Institutional challenges in Australian water reform.

Abstract
The 2004 National Water Initiative and the 2007 Commonwealth water policy reforms consolidate and considerable extend decades of policy change in Australian water. They set out a major realignment of water policy and management, stating the vision for which is considerably easier than implementing the detail of the reforms. One of the main challenges with a reform package of this kind is that the institutional system within which it is to be delivered was not designed with current and future challenges in mind, but is rather a reflection of past understanding and imperatives. This presentation will identify the major institutional challenges in Australian water reform, including such areas as regional capacity, the new demands for comprehensive water planning, information provision and flow across agencies, and the policy divide between urban and rural water management.

Biographical Note
Professor Steve Dovers is with the Fenner School of Environment and Society, ANU, where he undertakes research and teaching in policy and institutional aspects of sustainable development. His recent books include "Environment and sustainability policy" (Federation Press 2005), "Institutional change for sustainable development" (with Robin Connor) (Edward Elgar 2004) and , with Karen Hussey, the edited volume "Water and Australian Society" (CSIRO Publishing 2007).

Rick Evans

Title
The impact of Surface water Groundwater interaction on Australia water resources

Barney Foran

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Title
Food Production, agriculture and sustainability

Quentin Grafton

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Title
Public good versus private gain

Abstract
The presentation will evaluate current and proposed water policies from the perspective of public and private net benefits. Without careful attention to the details about how public funds are to be spent to overcome the over use and overallocation of water, there is a real risk that expenditures will not be cost effective and the Australian community will not receive a good return on public water investments.

Biographical Note
R. Quentin Grafton is Professor of Economics and Research Director at the Crawford School of Economics and Government at the Australian National University and Deputy Director of the ANU Water Initiative. He currently serves as Editor of the *Australian Journal of Agricultural and Resource Economics*, is a former Associate Editor of *Marine Resource Economics* and recently a Guest Editor for the *International Journal of Global Environmental Issues*.
He is the author of more than 50 scholarly articles in environmental and resource economics as well as several books including *The Economics of the Environment and Natural Resources* and *Understanding the Environment: Bridging the Disciplinary Divides* that was endorsed by Kenneth Arrow, the 1972 Nobel Laureate in Economics, as a '…pioneering effort in introducing the fields one to another…". His major research contributions include the bio-economic modelling of fisheries, ecological uncertainty, the measurement of efficiency and productivity, social networks and economic growth, water economics, and efficiency outcomes associated with private property rights and environmental management.

Gary Jones

Peter Lane

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Title
Mining Aquifers: The Western Australian south-west Yarragadee, a case study

Abstract
Settlements along the southern part of the west coast of Western Australia originally relied on water from three major river systems. The catchment areas of these systems

have become progressively saline and Perth now draws most of its water from an aquifer. As well a desalination plant has recently been commissioned.
The Water Corporation as applied for a licence to extract 45 gigalitres/year water from the Yarragadee Formation to the south of Perth. This aquifer outcrops and both directly and indirectly is connected to the surface. It provides water into streams and supports wetlands. The proposal is controversial as many scientists consider extraction of this amount of water will do considerable environmental harm.

Biographical Note
Peter is a geologist with some 40 years experience in the oil industry. He is spokesperson for the Cape to Cape Alliance, an environmental group in the south-west of the state. His main interest in the environment has been the economics of logging native forests.

Emeritus Professor Tom McMahon

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Title of Talk
Australian rivers: variability and environmental flows

Abstract
One of the most important parameters in the study of surface hydrology is the variability of streamflow. It has major implications for the amount of water that is available for consumptive and non-consumptive use by humans, and is a key driver of healthy water ecosystems. This paper compares the variability of tropical, temperate and arid Australian rivers with rivers in equivalent climates world-wide. Typically, the annual coefficients of variation of annual flows (Cv) in Australia are about double the Cvs elsewhere (excluding southern Africa). This effect is partly explained by the difference in vegetation characteristics across the world and, secondly, as a result of the higher rainfall variability in some parts of Australia compared with overseas. Other causes of streamflow variability including land use change, river regulation and inter-basin water transfers are discussed. In the paper the impact of relatively high streamflow variability is discussed with reference to reservoir yield, and the severity of low flows on aquatic ecosystems. Finally, several issues including the definition of natural flows as used in environmental flow assessments, and climate change, are also discussed.

Biographical Note
After graduating in agricultural engineering and working for 7 years with a private research foundation, in 1967 Tom McMahon began his academic career joining the Department of Civil Engineering, Monash University. In addition to teaching in hydrology and water resources engineering, his research interests covered flood, low flow and stochastic hydrology. In 1980, Tom was appointed as Professor of Agricultural Engineering at the University of Melbourne and in 1992 as Professor of Environmental Hydrology. In 1981 he received a Doctorate of Engineering and in

1986 he was appointed a Fellow of the Australian Academy of Technological Sciences and Engineering.

Tom McMahon has been active in many areas of research including most areas of hydrology, reservoir storage-yield analysis, stochastic hydrology, global hydrology, water resources management and irrigation technology. In addition, he has supervised research students in the area of irrigation management, exchange rate in irrigation, the impact of environmental flows on availability of irrigation water, and atmospheric computer modelling. He has supervised more than 75 research Masters and PhDs, co-authored 9 books and 500 articles and reports (70% refereed) mainly in hydrology and water resources. He has been active in consulting both nationally and internationally. During his career, he was Co-director of the Centre for Environmental Applied Hydrology, Deputy Director of the CRC for Catchment Hydrology, served on the Council of the University of Melbourne, and as the Head of Department of Civil and Environmental Engineering. Since retirement, Tom continues an active research program in global hydrology and supervises several PhD students.

Bear McPhail

Title
A Geological Perspective

Paul Perkins AM

John Reid

Title
Culture and Water

Lord Selborne KBE FRS

Title
Keynote Address: British Water Reform: Lessons for, and from, Australia

Abstract
South-East England has a reputation for grey skies and constant rain, yet faces a crisis in its water supply. In 2006 water management became a national concern with public outrage at hose pipe bans, drought orders and other restrictive measures.

The British public is used to an unmetered, low priced water supply and expects the water industry provide water without restrictions. The reality of a heritage of thirty years underinvestment in water infrastructure, a bungled privatisation of water supplies and a failure to plan adequately for the water requirements for the new housing in South East England has led to a wake-up call.

The House of Lords Select Committee on Science and Technology visited Sydney and Melbourne in January 2006 when conducting an inquiry into UK Water Management to compare the response in Australia to a six year national drought in a hotter climate with the UK's record.

We reported that the Australian public have a much greater understanding of the need for severe water restrictions than the British public, yet water use in the home is much greater than in the UK – around double the UK's 160 litres per person per day. This can largely be accounted for by a far greater use of water outside.

In Australia water saving measures such as tough regulations on sustainability and water use in new homes are more advanced. Measures besides compulsory installation of rainwater tanks included replacement of top-loading washing machines and low water use fittings such as aspirated taps and restricted flow shower heads.

Both the UK and Australia take a 'near-zero' risk approach in the provision of water reuse. There is abundant available technology for reusing rain water, waste water, and sewage but public perception has limited the application of this technology for potable supplies. In the UK using rivers that have received effluent from waste water treatment plants as the source of potable supplies is common, yet the public will not accept waste water direct from the treatment plant. In Australia there is much greater resistance to recycling water for drinking (see experience of Toowoomba referendum).

Practice in the UK is behind that of Australia in aquifer storage and recovery, and rainwater harvesting. If the UK is to make better use of this technology it needs to put in place appropriate policy and fiscal incentives that will drive water conservation at both a local, domestic level and at catchment-wide level.

In the UK public support for water saving measures is limited by a perception that the water shortage is due to unacceptable levels of water leakage (Thames Water leakage is over 30%), excessive profits of water companies and a failure of various regulatory authorities to co-ordinate their activities. Only an agreed basis for long term planning with transparent, agreed methodology on demand forecasts and supply management will lead to wider acceptance of the need for new reservoirs, water transfer systems and even desalination plants. Our report returns time and again to what we saw as a lack of an agreed methodology for forecasting demand.

The UK has seen a decline in industrial and agricultural use of water which has helped to meet the increased demand for domestic water. In Australia there appears to be a cultural barrier to challenging existing agricultural water rights or to reviewing national priorities for water use. As a British farmer I am impressed by the ability of Australian farmers to hold on to such a high proportion of the nation's water resources. 70% of all water use in Australia is for irrigation yet as much as half of this appears to be wasted.
However Australia's National Water Initiative managed by the National Water Commission has the potential to drive national water reform. The UK should set up a similar overarching Commission.

Biographical Note
Lord Selborne is a member and a past chairman of the United Kingdom's House of Lords Select Committee on Science and Technology and chaired an inquiry on UK Water Management which reported in June 2006. He also chairs the Foundation for Science and Technology, The Royal Society's Science in Society Consultative Group

and the Board of Trustees of the Royal Botanic Gardens, Kew. He has previously served as Chancellor of the University of Southampton, President of the Royal Geographical Society, Chairman of the Joint Nature Conservation Committee and Chairman of the Agricultural and Food Research Council.

Will Steffen

Dingle Smith

Title
How we got where we are?

Abstract
The pattern of water use in Australia is the outcome of environmental history. As such it reflects the nature of the resource and the socio-economic factors surrounding its development. As a national we are well-endowed with water but the variability, spatially and temporally, is extreme. This challenge led to an ever-growing infrastructure culminating in the massive post-World War 2 mega-projects undertaken by State and federal governments. Water is a renewable resource but the last twenty years have brought the realisation that for many regions the resource development is close to capacity. The resource stays constant but technology, values and institutions change. `How we got where we are' looks at the past and the need for changes in approach.

Biographical Note
In 1976 Dingle was a founder member of the Centre for Resource and Environmental Studies, the forerunner of the Fenner School of Environment & Society, ANU. A life-long academic his interest in water research commenced with glaciology in the Canadian arctic, progressed to limestone hydrology in Jamaica and from the late 1970s until retirement focussed on water resources in Australia. Author of `Water in Australia: Resource and Management' (OUP).

Alistair Watson

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Title
The Flawed History of Irrigation in Australia: Faltering Attempts at Reform

Abstract
Several scholars (Campbell, Davidson, Musgrave, Powell, Randall) have provided a damaging critique of the history of irrigation in Australia illuminating the underlying unsuitability of large-scale irrigation to local conditions. Their analysis revealed a disjunction between political enthusiasm for irrigation and the actual physical, climatic and economic circumstances confronting Australian agriculture that informed

academic commentary and mainstream public service advice. The views of these critics were confirmed when irrigation reached its economic and technical limits by the mid-1980s. Environmental damage from irrigation became a major public concern. A comprehensive program of water reform was initiated in the early 1990s. The paper discusses the major features of those reforms; some successes and failures. It turns out that many mistakes of the past are being repeated in different guise. Romanticism about water in Australia and political opportunism still compromise genuine progress in water reform.

Biographical Note

Alistair Watson is a freelance agricultural economist based in Melbourne. Previously, he was Chief Research Economist of the Australian Bureau of Agricultural and Resource Economics and Senior Lecturer in Agricultural Economics in the School of Agriculture and Forestry of the University of Melbourne.

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