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Water accounting in Australia

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ABSTRACT

This paper introduces water accounting as produced by the Australian Bureau of Statistics (ABS). It provides information about the ABS Water Accounts and highlights the many other organisations involved in the provision and use of water related data in Australia. The ABS Water Accounts have built upon previous reports on Australian water resources and the System of Environment and Economic Accounting [UN (United Nations) 2003. Draft Handbook Integrated Environmental and Economic Accounting. Studies in Methods, Series F, No. 61, Rev. 1. United Nations, European Commission, International Monetary Fund, Organisation for Economic Cooperation and Development, World Bank. New York.]. Information from the ABS Water Accounts is presented along with examples of their use in economic analyses designed to inform public debate and government decision-makers.

A key feature of the Australian environment is that water is relatively scarce when compared with other inhabited continents. Rainfall displays a high level of spatial and temporal variability and droughts are common. In 2004 an Intergovernmental Agreement on a National Water Initiative (NWI) was reached by Australia's national and eight state and territory governments. The NWI aims to address environmental, economic and social concerns about the current and future state of Australia's water resources. The NWI specifically calls for the preparation of annual water accounts, which clearly indicates the expected usefulness of national and regional water accounts.

1. Introduction

Water accounting is a method of organising and presenting information relating to the physical volumes of water in the environment and economy as well as the economic aspects of water supply and use. While water accounting itself is relatively new, information on water resources in Australia has been compiled since the mid-1960s. Such information includes:

- 1963 Review of Australia's Water Resources (AWRC, 1965)
- 1975 Review of Australia's Water Resources (AWRC, 1977)
- 1977 The First National Survey of Water Use in Australia (DNDE, 1981)
- 1985 Review of Australia's Water Resources and Water Use (AWRC, 1987)
- 1995–96 Water in the Australian Economy (AATSE, 1999)
- 2000 Australian Water Resource Assessment (NLWRA, 2001)

The ABS Water Accounts (ABS, 2000, 2004a) have built on these previous resource assessments as well as the System of Environment and Economic Accounting (SEEA). The SEEA handbook was published in 1993 (UN, 1993) and revised in 2003 (UN, 2003).

The aim of the ABS Water Account (ABS, 2000, p. 80) is to:

> "… provide a mechanism to tie together data from different sources into one consolidated information set. … [it is] then be possible to link physical data to economic data sets such

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as Australia's National Accounts and other natural resource data sets. Environmental accounts can facilitate an integrated approach to a range of issues that include:

a. broader assessment of the consequences of economic growth;
b. the contribution of sectors to particular environmental problems; and
c. sectoral implications of environmental policy measures (for example, regulation, charges and incentives).

The advantage of an environmental account is that by linking together physical data and monetary data in a consistent framework it is possible to undertake scenario modeling. Issues that could be modeled include assessing the efficiencies in different sectors of the economy and the environment, and resource implications of structural change."

The ABS Water Accounts contain supply and use tables that track the extraction of water from the 'environment' through to consumptive use, regulated discharges to the environment, and reuse. A supply table illustrates the industry supplying water for use, and a use table shows the industry using the water. The data can be expressed as physical quantities (megalitres) or in monetary units (i.e. Australian Dollars). To date only physical quantities have been published by the ABS.

Internationally a number of nations are developing and publishing environmental accounts. Water accounts in particular have been developed in a number of countries (e.g. Denmark, France, The Netherlands, New Zealand, Spain), and although each country has presented their accounts differently, there is a general agreement on the structure and scope of water accounting. Such agreement seems set to be formalised through the publication of a handbook on the System of Environmental and Economic Accounting for Water Resources — SEEAW (UN, 2006). This handbook, currently in draft form, is the product of a relatively recent collaboration between experts from many countries who came together under the auspices of the London Group on Environmental Accounting, with the United Nations Statistical Division taking a leading role in the handbook's development.

2. Australian environment

Water is a vital resource in every nation, but in Australia water is scarcer than on any other continent with the exception of Antarctica. Australia is a large country (nearly 7.7 million square kilometres) and spans nearly 33° of latitude. It has the highest year-to-year variability of rainfall of all the continents and droughts are common (Linacre and Hobbs, 1977). Mean annual run-off for Australia is 387,000 gigalitres (Gl), but almost half (46%) is in the sparsely inhabited north of the country (Fig. 1: NLWRA, 2001).

At present, water is the focus of intense interest to Australia's governments and the general public. This is partly because southeast Australia, where the majority of the population is located (e.g. Sydney, Melbourne and Brisbane), has experienced below average rainfall for the past three years (Fig. 2), with drought conditions existing in many areas (e.g. New South Wales) and was most severe in 2002 and 2003.

As a consequence of below average rainfall in recent years restrictions on the use of water by households and industry (including agriculture) have been implemented in many cities and most irrigation areas. The impact of the drought on the economy in 2002–03 was estimated to have been around −0.9 percentage points on the volume growth of GDP between 2001–02 and 2002–03 (ABS, 2004b).

While the recent below average rainfall has focused attention on water in Australia, concern over water resources extends back more than a decade. In 1994 the Council of Australian Governments (COAG) embarked on a series of reforms aimed at delivering the efficient and sustainable use of water in Australia. Since then information on all aspects of water use and management has been keenly sought. A range of agencies have been involved in supplying data and the ABS has been one of these agencies.

3. Australian water policy

COAG has played a pivotal role in the development of water policy in Australia. On 25 June 2004 the Intergovernmental Agreement on a National Water Initiative (COAG, 2004) was signed by six of the eight Australian states and territories. The remaining two states signed later. Paragraph five of the agreement contains a summary of the objectives of the agreement:

"The Parties agree to implement this National Water Initiative (NWI) in recognition of the continuing national imperative to increase the productivity and efficiency of Australia's water use, the need to service rural and urban communities, and to ensure the health of river and groundwater systems by establishing clear pathways to return all systems to environmentally sustainable levels of extraction. The objective of the Parties in implementing this Agreement is to provide greater certainty for investment and the environment, and underpin the capacity of Australia's water management regimes to deal with change responsively and fairly (refer paragraph 23)" (COAG, 2004).

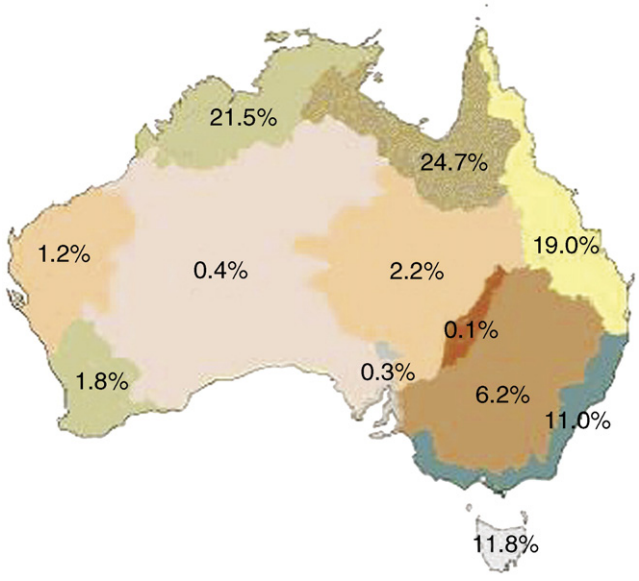

Fig. 1 – Percent mean annual run-off by drainage division. Source: NLWRA 2001 (after AATSE, 1999).