Australian Bureau of Statistics

statistics for informed decision making

Environmental Accounts in Australia

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Presentation outline

1. Environment statistics
2. Environment Accounts
3. Water Account – examples of policy application

Information, Statistics, Accounts - what's the difference?

- Wide range of information about the environment
  - scientific observation and measurement
  - Specific or targetted research studies
  - Statistics - both official and not, eg
    - stocks and flows of environmental resources
    - quality or 'state' of environmental assets
    - environmental related practices of businesses and people
    - economic use of environmental resources
- Collectively comprises an environmental information system

So what are environmental statistics?

- Statistics - *the process of collecting, organising and interpreting numerical data about observable phenomena*

- Assist in formulating and evaluating socio-economic and environmental policies

In Australia, environmental statistics

- are produced by many institutions including the National Statistical Office
- are commonly compiled with a particular regulatory or administrative purpose in mind
  - greenhouse gas emissions
  - Water traded in a market
- are often not well integrated with one another, or other statistics such as economic statistics

Environmental statistics produced by the ABS include:

- Australians and the Environment, 1996
- Environment Protection, Mining and Manufacturing Industries, 2000-01
- Australian Transport and the Environment, 1997
- Australian Agriculture and the Environment, 1993-94
- Environment Expenditure, Local Government, 2002-03
- Salinity on Australian Farms, 2002
- Water Use on Australian Farms, annual
- Energy Supply, Australia, 2005-06
- Natural Resource Management on Australian Farms, 2006-07
- Climate and Australian Farms, 2006-07
- Land management and Australian Farms, 2007-08
- …..and many more……

So what are Environmental Accounts?

Environmental Accounts can mean a number of things to different players:

- a model to monitor and track the health and change in condition of Australia's major environmental assets (Wentworth Group of Concerned Scientists)
- Australian Bureau of Meteorology will be producing National Water Accounts that will present hydrological balances of our water system
- Australia's National Greenhouse Accounts are a comprehensive set of reports outlining Australia's greenhouse gas emissions
- ABS Water Account, Australia, are integrated environmental-economic accounts which describe the flow of water in the Australian economy

For the ABS, Environmental Accounts means

- Presenting comparable information in a systematic fashion using standard definitions
- Presenting environmental data using a framework that is consistent with broader economic data
- Enabling the relationship between the environment and economy to be analysed and understood including understanding environmental and economic dependencies and outcomes
- Following internationally accepted guidelines and facilitate international comparisons
- Providing a system into which monetary valuations of environmental assets and environmental-related flows can be incorporated with physical data

Environmental Accounts produced by ABS

- Since the mid 1990s, the Australian Bureau of Statistics has explored the four types of SEEA accounts.
  - stock accounts in both physical and monetary values
  - physical and monetary flow accounts and physical flow accounts for residuals
  - accounts that portray the environmental transactions in the SNA
  - accounts that show how SNA aggregates can be adjusted to account for the impact of the economy on the environment.

Environmental Accounts released by ABS

	Stock	Flow	Environmental Transactions	Adjusted SNA aggregates
Energy	Physical: ☑ Monetary : ☑	Physical: ☑ ☑ ☑ Monetary : ☑ Residual : ☑ ☑		☑ (subsoil)
Fish	Physical: ☑	Physical: ☑		
Water		Physical: ☑ ☑ ☑ Monetary: ☑ Residual : ☑	☑	
Minerals	Physical: ☑ Monetary : ☑	Physical: ☑		☑ (subsoil)
Waste			☑	
Air			☑	
Biodiversity			☑	
Soil			☑	
Land	Monetary : ☑			☑

Incremental improvements over time

- First account released November 1996
  - Energy Accounts for Australia, 1993-94
  - Opening, closing, net change, production and adjustments for 1993-94.
  - Changes in closing stock given for 1981-82 to 1993-94 using McKelvey classification.
  - Physical supply, conversion and consumption tables
    - Total energy for 1982-83 to 1993-94
    - Primary and derived energy products for 1993-94
    - Residual account for air pollutants and greenhouse gas emissions 1987-88 to 1993-94

Incremental improvements over time

- Subsequent stock and flow accounts for
  - Minerals
  - Fish
  - Water
- Environmental Protection Expenditure Account
- Second release of energy incorporated input-output analysis and embedded energy and emissions

Incremental

- Second release of water included stock measures for all States
- Experimental monetary water
- Third release of water included time series and access, entitlements and trading measures
- Monetary and hybrid water
- Experimental depletion-adjusted SNA aggregates
- Third release of energy included hybrid energy

How are accounts used? Focus on water

- Water accounts identify how much water there is and how it is being used
- Water use data can be linked to economic and social information to assist decision making
- Several examples of this are available but these centre on
  - predicting future demand for water given assumptions about economic and population growth
  - the impact on economic production of reduced water availability for particular industries
  - assessing the economic and technical efficiency of water saving measures

Who uses the ABS Water Accounts

Governments

- Australian (national) government
- Various state governments and their agencies
- National Land and Water Resources Audit
- Bureau of Rural Sciences

Industry groups

- Australian National Committee on Irrigation and Drainage, Water Suppliers Association of Australia, Australian Water Association
- Individual water authorities

Academics and private sector researchers

Examples of uses - research

- Wittwer, G. (2003) – *An outline of TERM and modifications to include water usage in the Murray-Darling Basin*
- Foran, B. and Plody, F. (2002) – *The future of water* (Ch. 6 in Future dilemmas).
- Lenzen, M. and Foran, B. (2001) – *An input-output analysis of Australian water usage*.
- Centre for International Economics (2004) - *Implications of water reforms for the national economy*
- Productivity Commission (2005).

Lenzen, M. and Foran, B. (2001) *An input-output analysis of Australian water usage*.

- 30% of Australia's water use was devoted to domestic food production and a further 30% to food exports
- If by 2050 Australia's population grows to 25 million people and per-capita expenditure doubles, the annual water requirement for Australia may more than double to 50,000 GL per annum

Centre for International Economics (2004)
Implications of water reforms for the national economy

- Irrigation contribution to the economy is $12.4 billion (2.3 per cent of Australia's GDP)
- irrigation directly and indirectly contributes around 171,000 employees (2.6 percent of total employment)
- Reducing water use in the Murray-Darling Basin by 10% (=540 GL) is estimated to result in the loss of 400-900 jobs and $88 million to GDP

Examples of use - Government

- The 2004-05 National Water Account formed part of the National Water Initiative Baseline Assessment
- ABS lead the Water Use theme
  - Water Use
  - How much water is used
  - What are the sources of the water
  - What is the water used for?
- Entitlements, Allocation and Trading Requirements
  - How many water access entitlements were granted?
  - How much water was allocated?
  - How much water was traded?

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Thank you

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