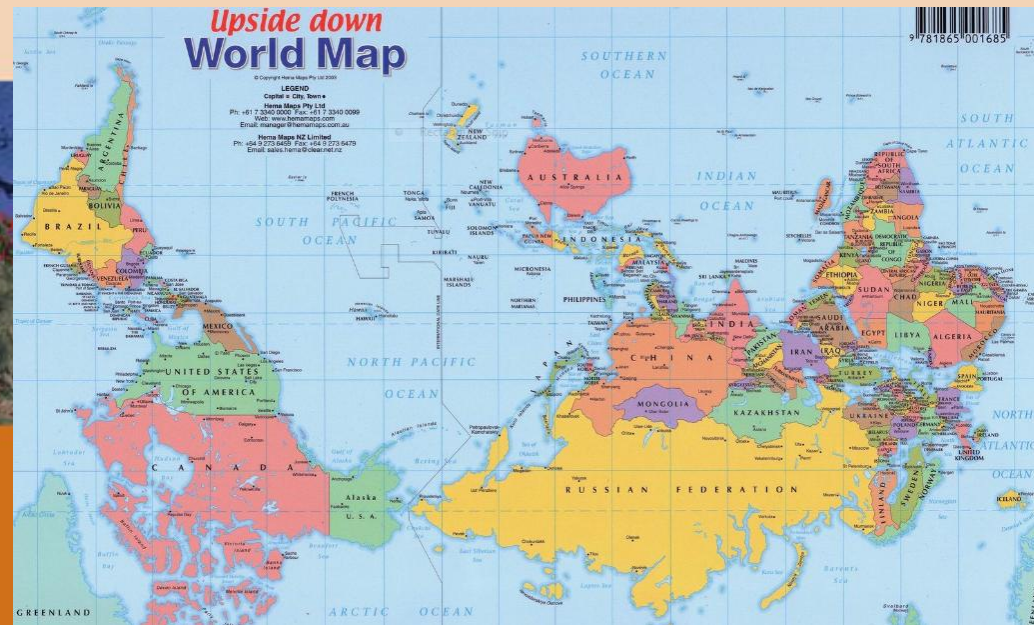


Environmental-Economic Accounting in Australia



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Australian Bureau of Statistics
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Wealth Accounting and
Valuation of Ecosystem Services Partnership Meeting
The World Bank
Washington DC USA

Outline of presentation

- ***Background to recent Australian Government interest in environmental accounting***
- ***ABS work on environmental-economic accounting and the application of the System of Environmental Economic Accounting (SEEA) to land and water***
- ***How ecosystem accounting is being advanced in Australia at a range of levels***



Acknowledgements

- Gary Stoneham and Mark Eingeramm (Victorian Government)
- Jane McDonald (Wentworth Group/Queensland University)
- Andre Zerger (Bureau of Meteorology)
- Phil Gibbons, David Lindenmayer, Judith Adjani and Brendan Mackay (Australian National University)
- Paul Lawrance (Queensland Government)
- Peter Greig (Chair NRM environmental accounting technical committee)
- Mark Lound, Valdis Juskevics, Andrew Cadogan-Cowper, Peter Comisari, David Skutenko (ABS)



We need better data for environmental decision-making

*Australian 2006 State of the
Environment report:*

“The current environmental data reporting system has a plethora of players with little or no incentives for agencies and organisations to collaborate in the collection, management and sharing of specific data.”



2009 Review of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Also known as the Hawke Review.

*Chapter 19 is devoted to national
environmental accounts*

Available on line:

<http://www.environment.gov.au/epbc/review/index.html>



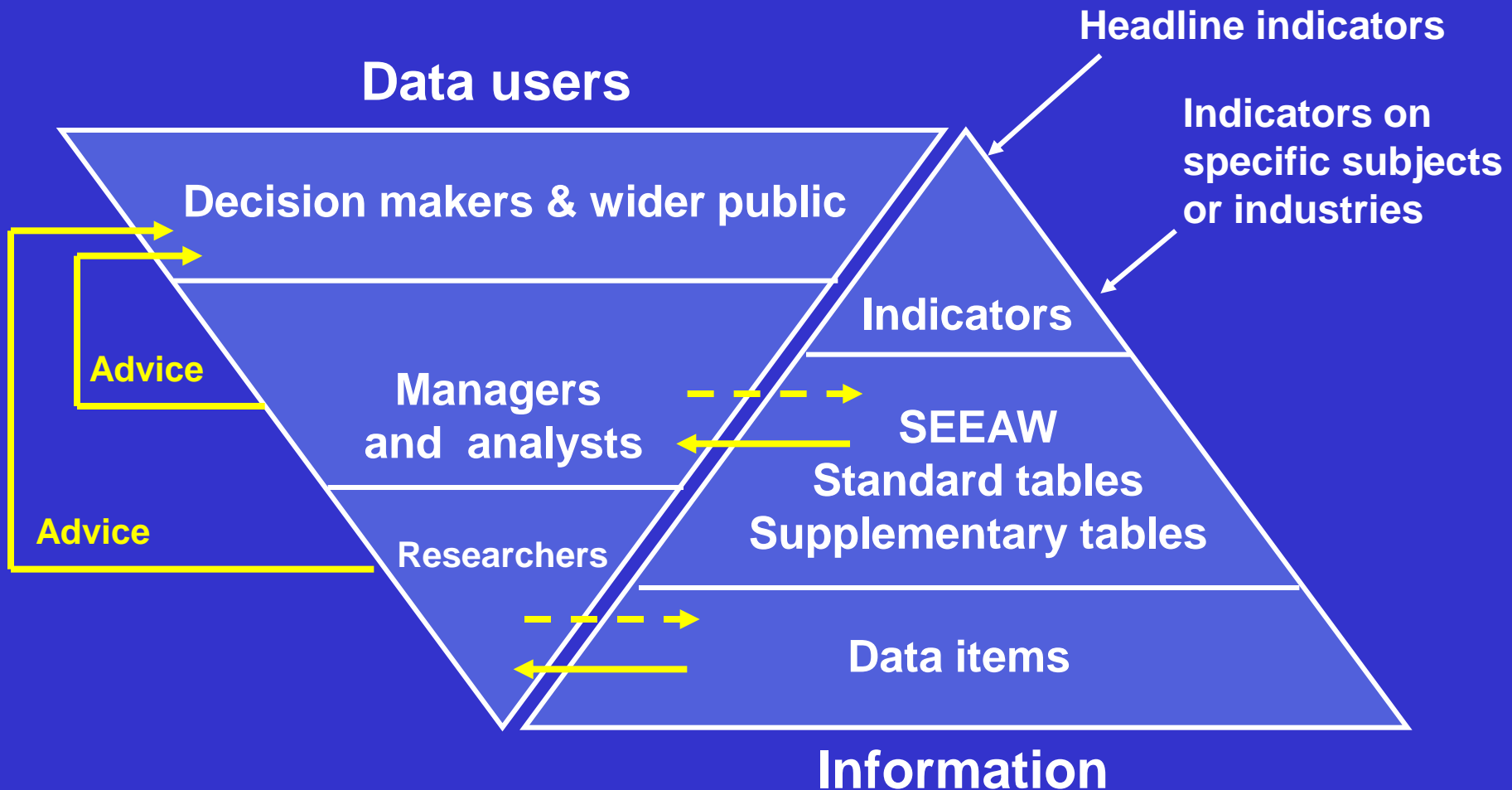
Recommendation 67 (1) of the EPBC Act Review

The Review recommends that the Australian Government, in the interests of promoting ecologically sustainable development, develop a system of environmental accounts to:

- (a) establish baseline national environmental information;*
- (b) provide capacity to systematically monitor changes in the quality of the Australian environment;*
- (c) provide an information basis for improved regional planning and decision-making; and*
- (d) provide a secondary objective of strengthening the capacity of local government land-use planning decision-making.*

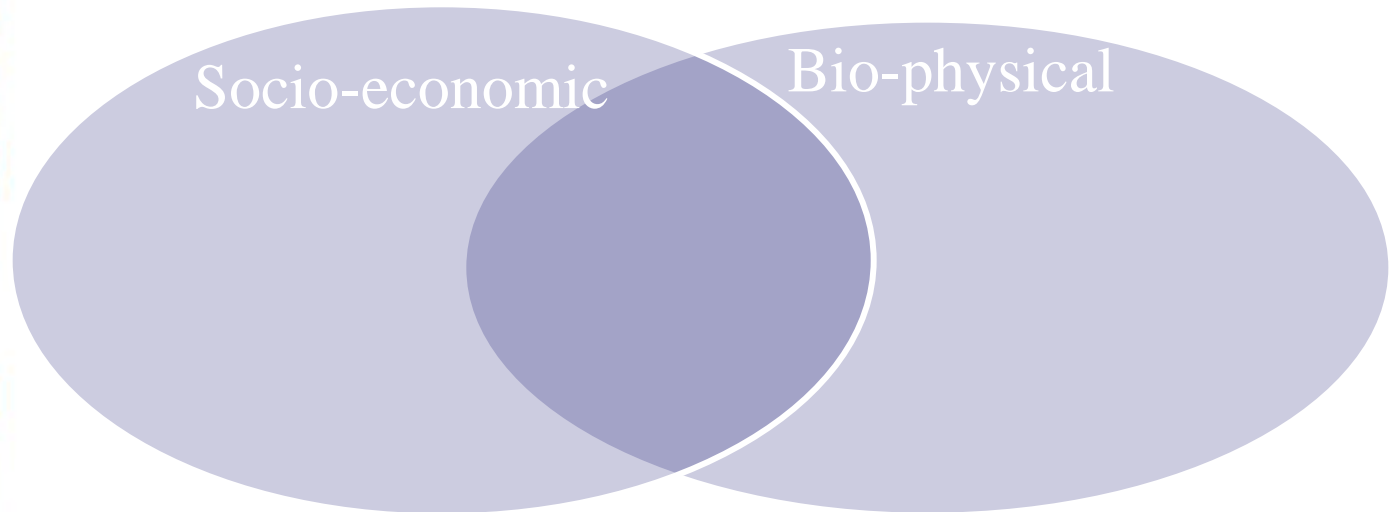


Audiences for information: indicators, accounts and data



An Integrated Environmental-Economic Information System for Australia

Researchers, Non-government organisations



Treasury, ABS, ABARES,
PC, DRET, DEEWR

DSEWPaC, BoM, DCCEE,
Geoscience Australia,
MDBA, ABARES, CSIRO,

Department of Prime Minister and Cabinet

History of environmental accounting at the ABS

- ABS commenced environmental-economic accounting the in the early 1990s
 - Developing monetary estimates for environmental assets within the scope of the SNA
 - A program of environmental-economic accounts within the environmental statistics area
- Dedicated team working on environmental-economic accounts (Staff: 9 water, 5 energy, 5 land, 3 green economy/environment industry, 2 solid waste and EPE, 2 SEEA revision)
 - Strong working relationships between the environmental-economic accounts team, national accounts and survey areas
- Extensive involvement in the SEEA 2003 and SEEA rev

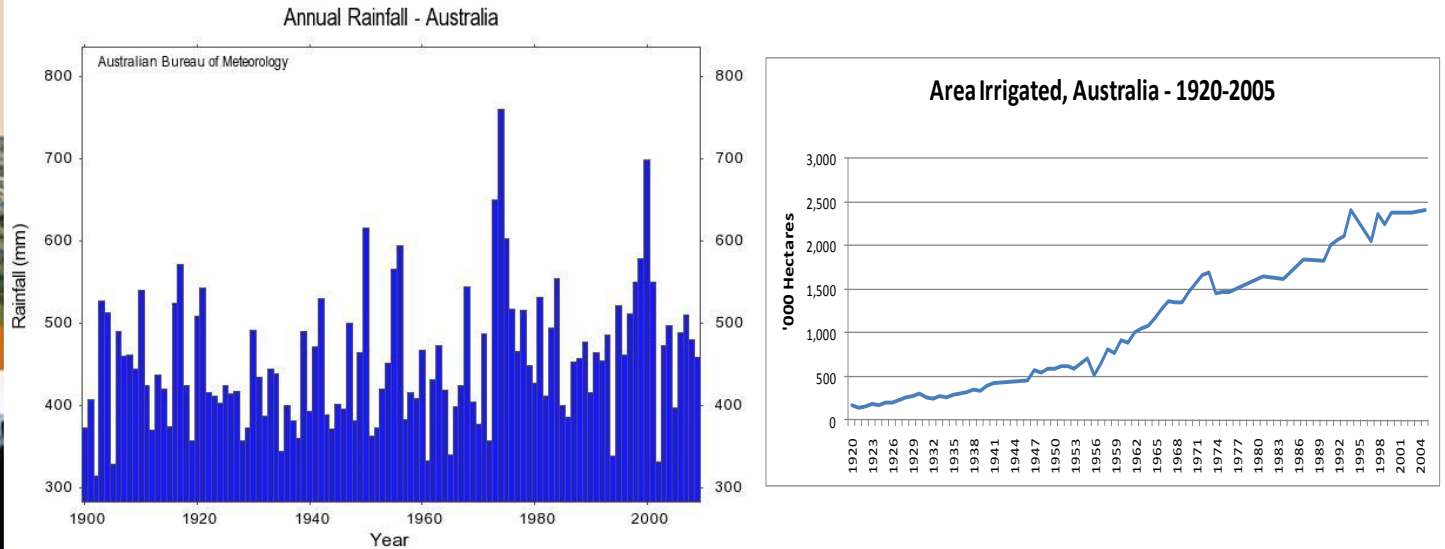


Past ABS environmental accounts

	Stock	Flow	Environmentally-related transactions	Adjusted SNA aggregates
Water	<input checked="" type="checkbox"/> Artificial reservoirs only	<input checked="" type="checkbox"/> Physical, Monetary and Emissions	<input checked="" type="checkbox"/>	
Energy	<input checked="" type="checkbox"/> Physical and Monetary	<input checked="" type="checkbox"/> Physical, Monetary and Emissions		<input checked="" type="checkbox"/>
Minerals	<input checked="" type="checkbox"/> Physical and Monetary	<input checked="" type="checkbox"/> Physical only		<input checked="" type="checkbox"/>
Fish	<input checked="" type="checkbox"/> Physical only	<input checked="" type="checkbox"/> Physical only		
Waste			<input checked="" type="checkbox"/>	
Air			<input checked="" type="checkbox"/>	
Biodiversity			<input checked="" type="checkbox"/>	
Soil			<input checked="" type="checkbox"/>	
Land	<input checked="" type="checkbox"/> Monetary and physical			<input checked="" type="checkbox"/>



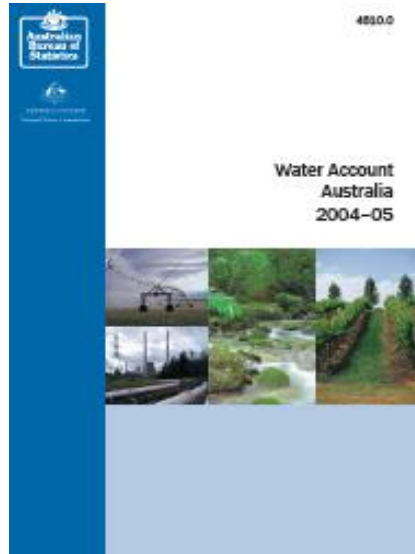
It is not the first time you produce data that is important



It is the 10th time or better still the 50th!



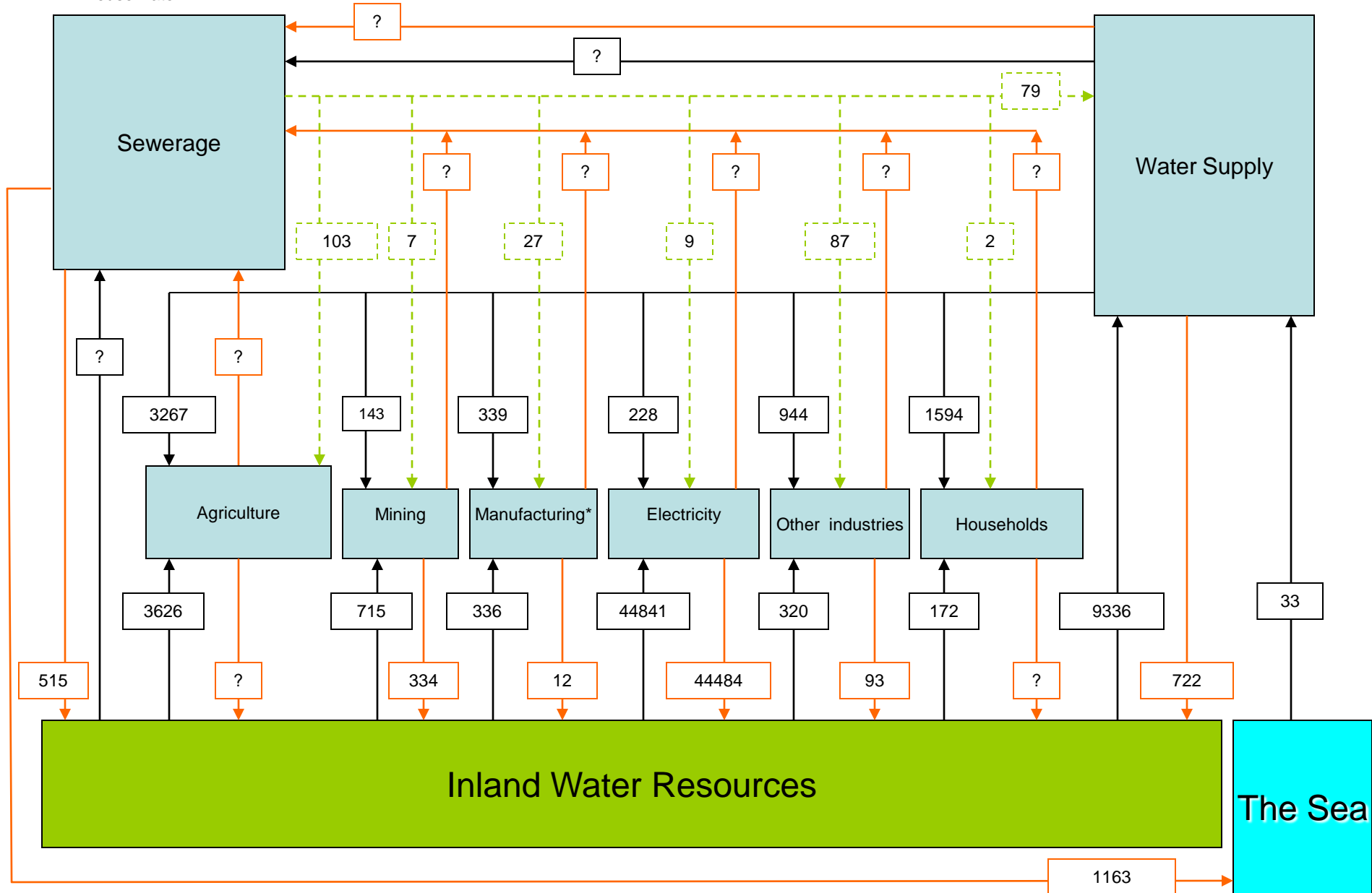
Water Account, Australia



Key

- Wastewater
- Water
- Reuse water

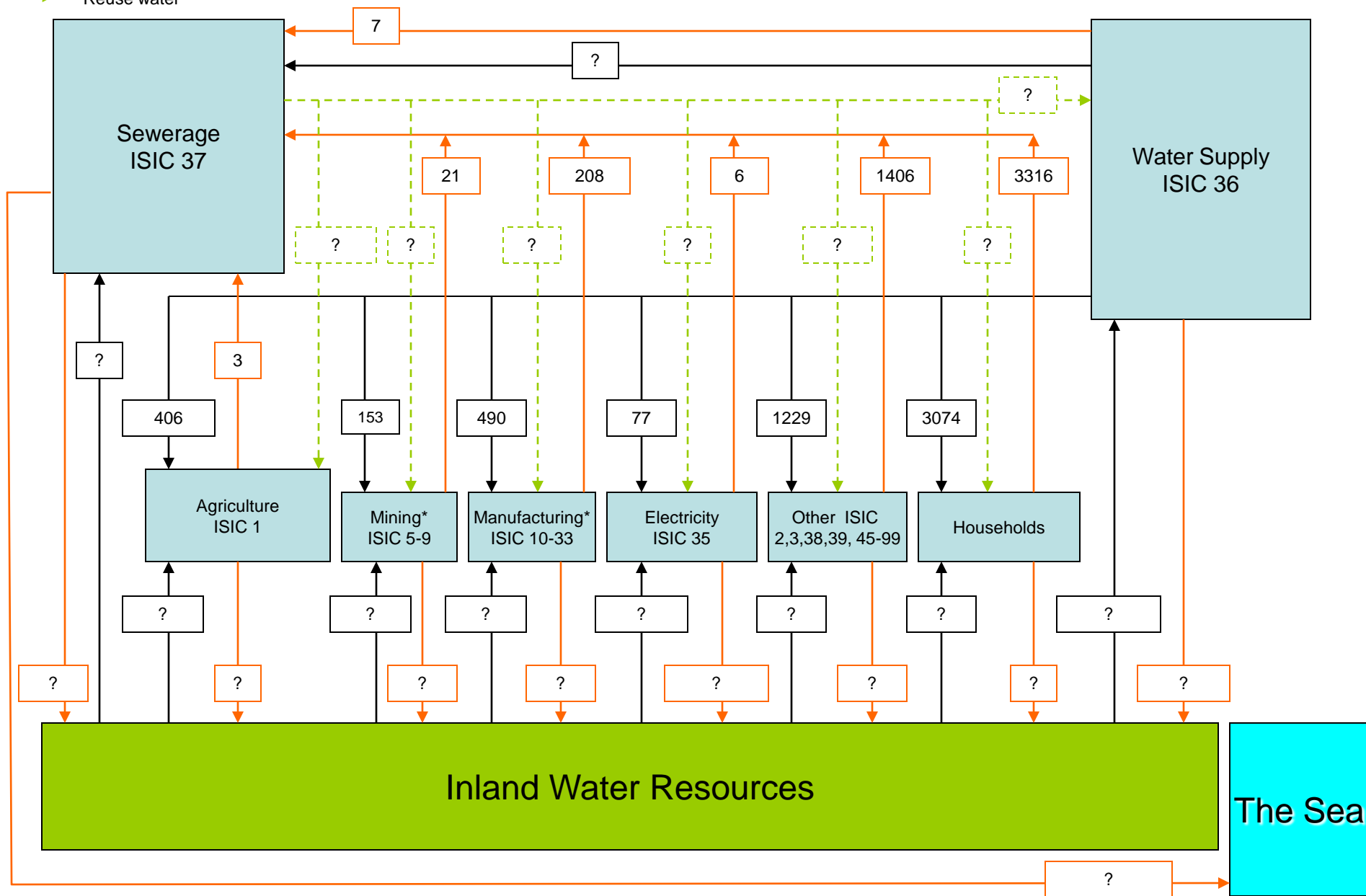
Australia – physical water supply and use, 2008-09 (GL)



Key

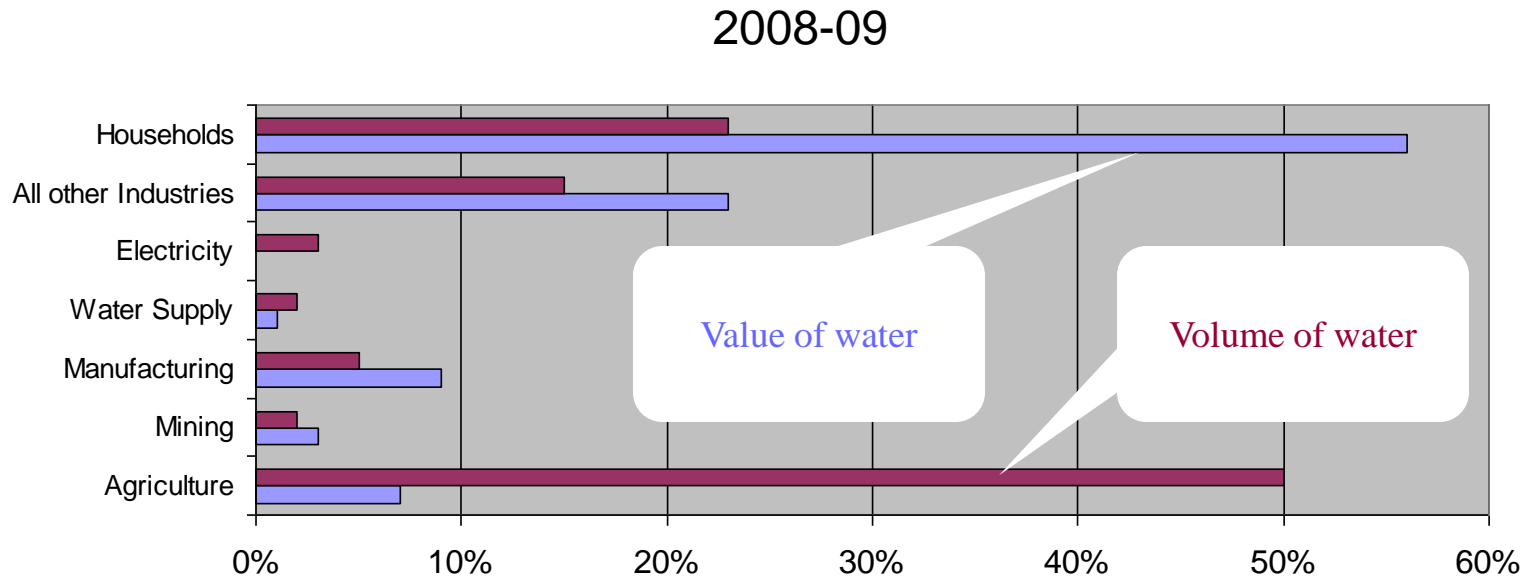
Australia – monetary water supply and use, 2008-09 (million AUD\$)

- Wastewater
- Water
- Reuse water

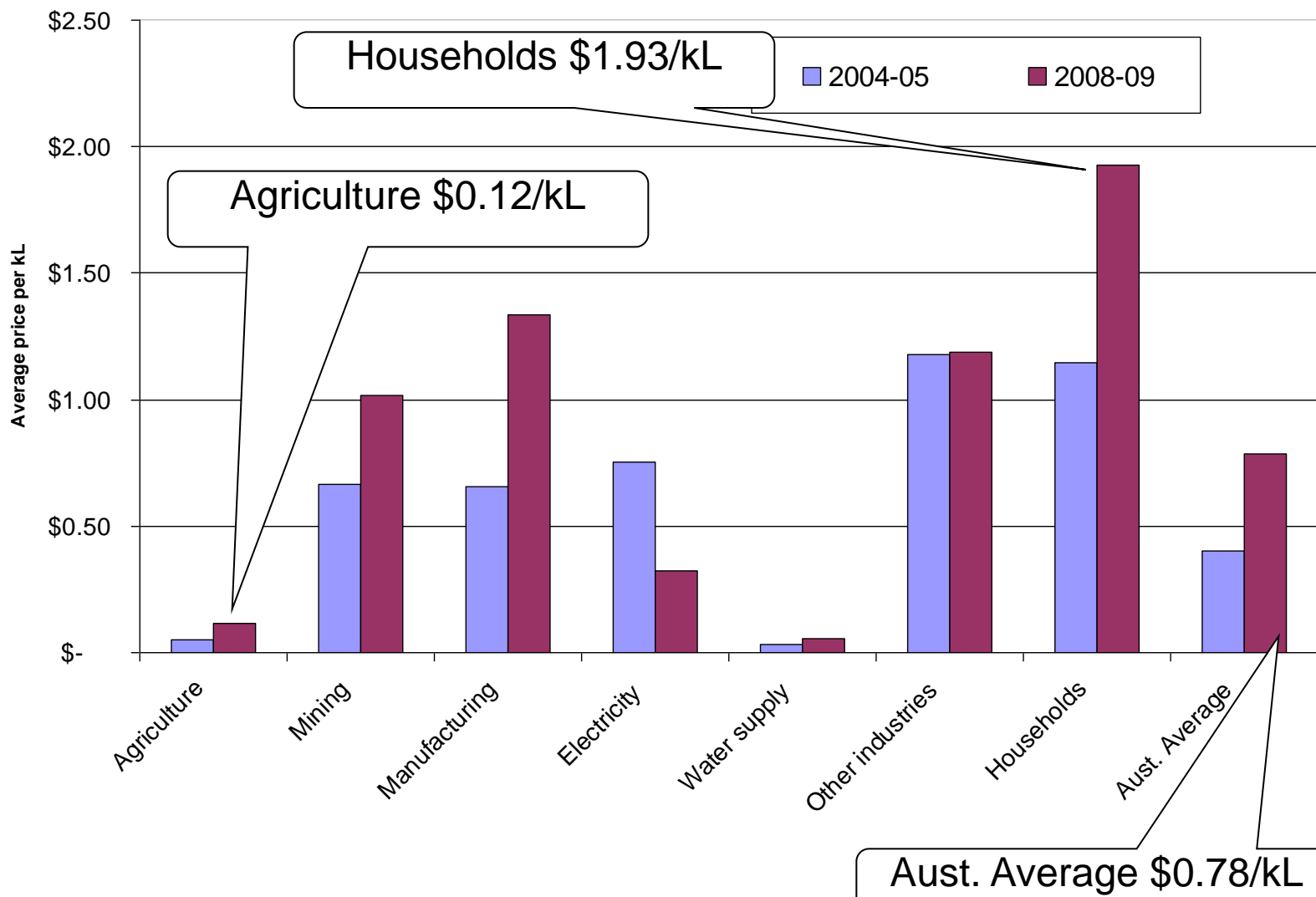


*

Monetary vs. physical use of distributed water (% of total use)

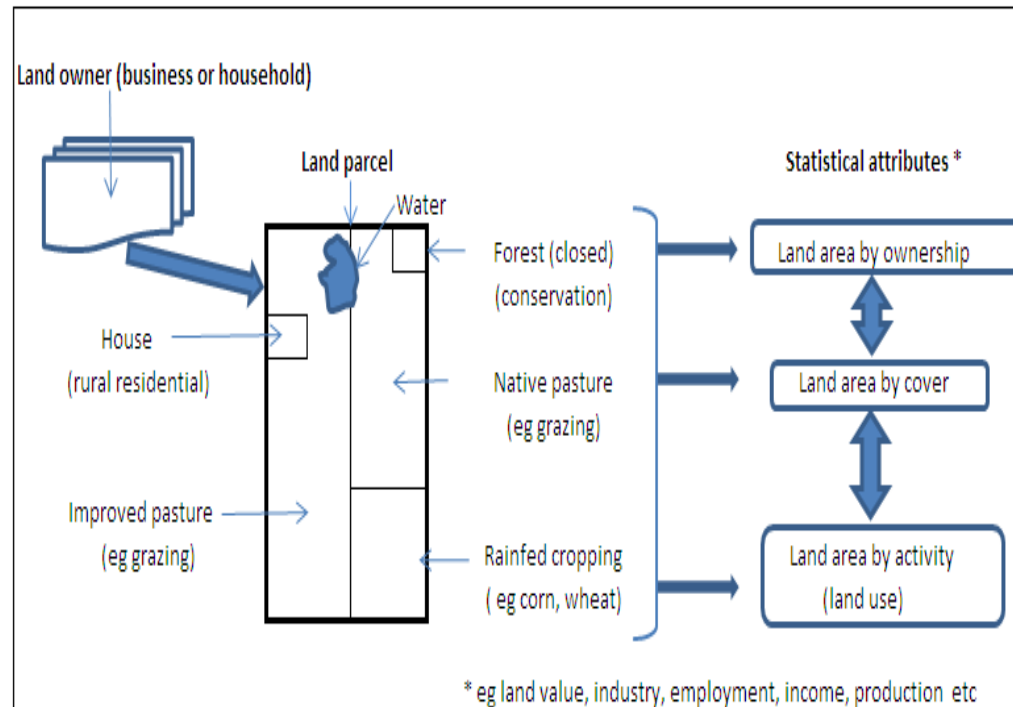


Australian average water prices for industry and households – \$/kL



Land as an asset

- Land has economic and non-economic values
- Nearly all economic activities involve the use of some land
- Land is a complex asset



Land value in Australia

- Total land value at 30 June 2010 was AUD\$2,749 billion, up slightly from AUD\$2,722 billion at 30 June 2009
- Rural land accounted for %330 billion or ~12% of total land value
- At 30 June 2010 land represented 31% of all of total assets (= AUD\$8,791 billion)
- At 30 June 2010 land represented 80% of all of natural resource assets (=AUD\$3,397 billion)

From the Australia System of National Accounts

All values are in current prices

At 26 March AUD\$ = 1.01 USD\$

Billion = 1,000,000,000 or 10^9



Australian GDP adjusted for depletion of subsoil assets and land degradation:

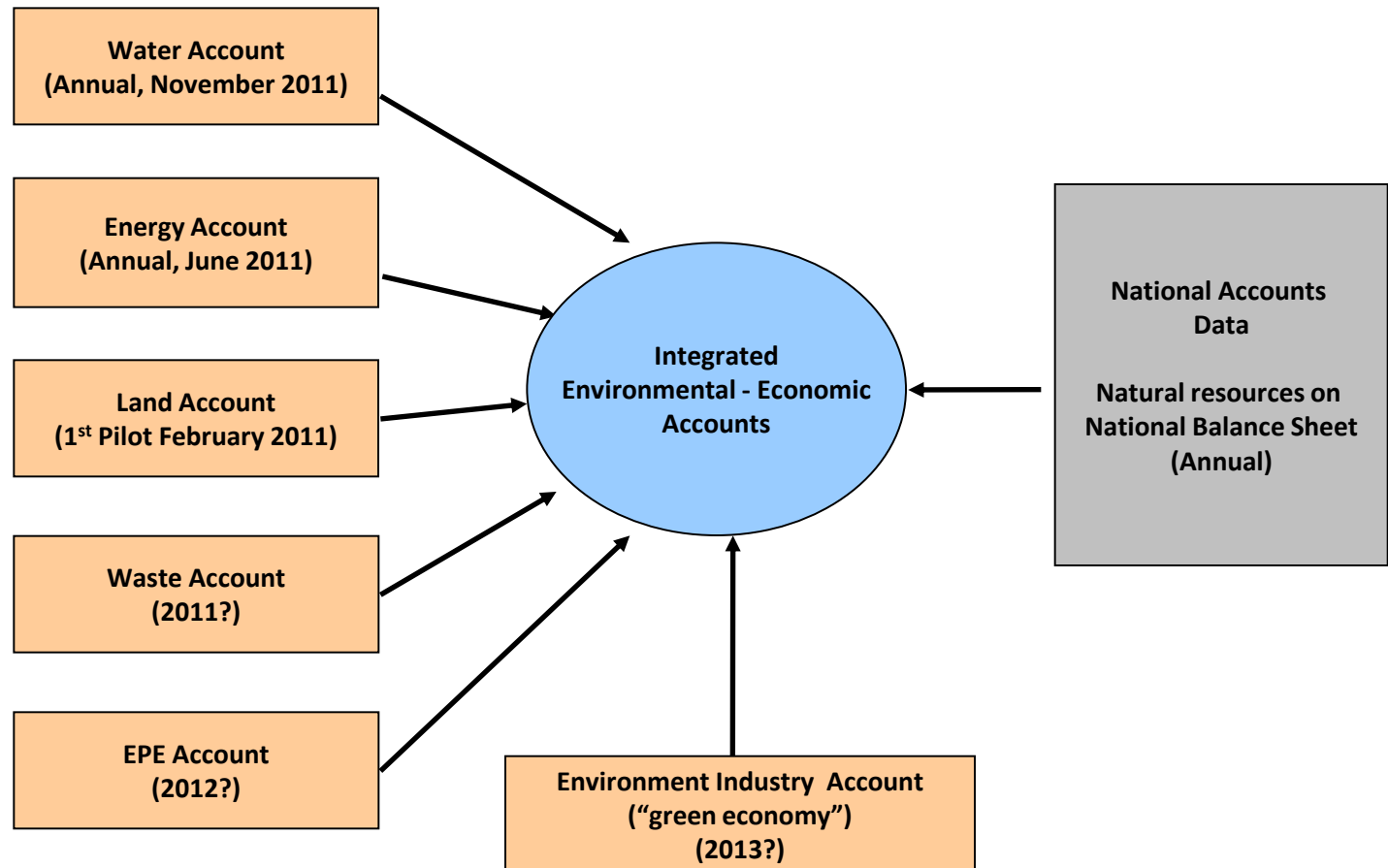
- For 2007-08 financial year was negative AUD\$4,429 million



Photos: David Freudenberger from Greening Australia

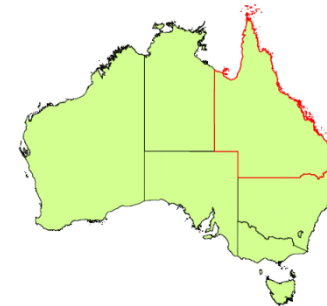
Current ABS Plan for Integrated Environmental-Economic Accounts

<http://www.abs.gov.au/ausstats/abs@.nsf/mf/4655.0.55.001>



Pilot Land Account for the Great Barrier Reef Catchments

<http://www.abs.gov.au/ausstats/abs@.nsf/mf/4609.0.55.001>



Land account integrated:

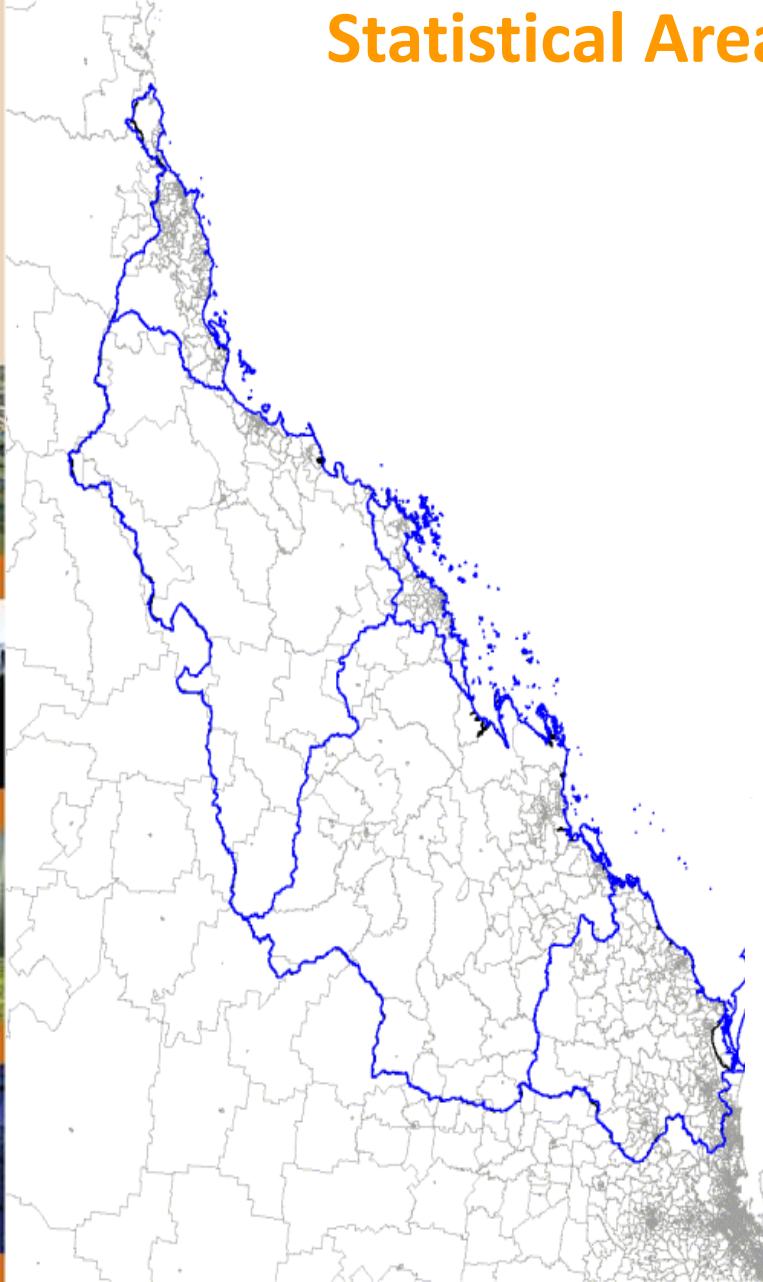
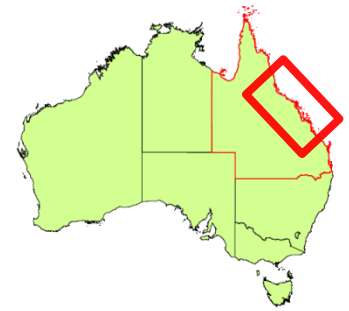
- Environmental data
- Economic data
- Social data

Data was spatial explicit





Great Barrier Reef Statistical Area 1 regions



Survey forms included maps of individual land parcels

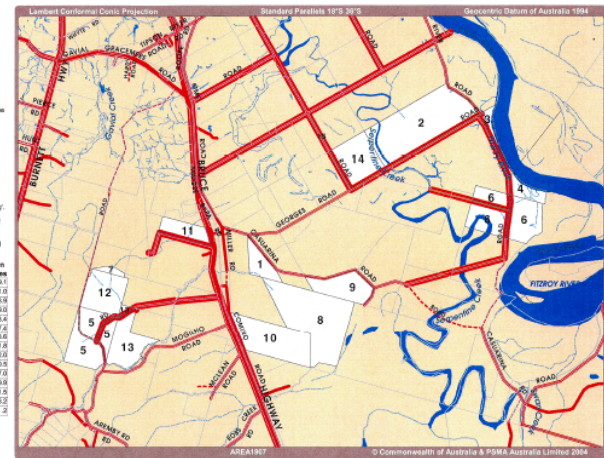


Based on or contains data provided by the Department of Natural Resources and Mines, Queensland 2006 which grants no warranty in relation to the data including accuracy, reliability, completeness or suitability and accepts no liability, including without limitation, liability or responsibility for any loss, damage or costs (including consequential damage) relating to any use of the data.

For the purpose of the accompanying agency, CMAA's land parcels collected while on this map constitute 'Your holding', the ID in the table corresponds to the parcels on the map. The total area of your holding is also listed below.

Total Holding Area (Hectares)
2006

ID	Lot	Plan	hectares
1	100	LN100	56.1
2	110	LN100	371.0
3	130	LN100	36.8
4	130	LN100	46.0
5	1838	LV40442	185.4
6	193	LN100	347.6
7	2	RP04040	13.0
8	2	RP04040	341.0
9	3	RP01366	112.0
10	2	RP01050	216.0
11	773	LN2113	67.0
12	505	LV40239	156.0
13	963	LV40239	131.0
14	99	LN100	143.0
15	1	NP02110	3



0 2 Kilometres

▲ N

Your Map Holding (15 Parcels)

- Highway
- Main Road
- Sealed Road
- Unsealed Road
- Vehicular Track
- Your Land Parcels
- Land Parcels
- Creek
- Water body

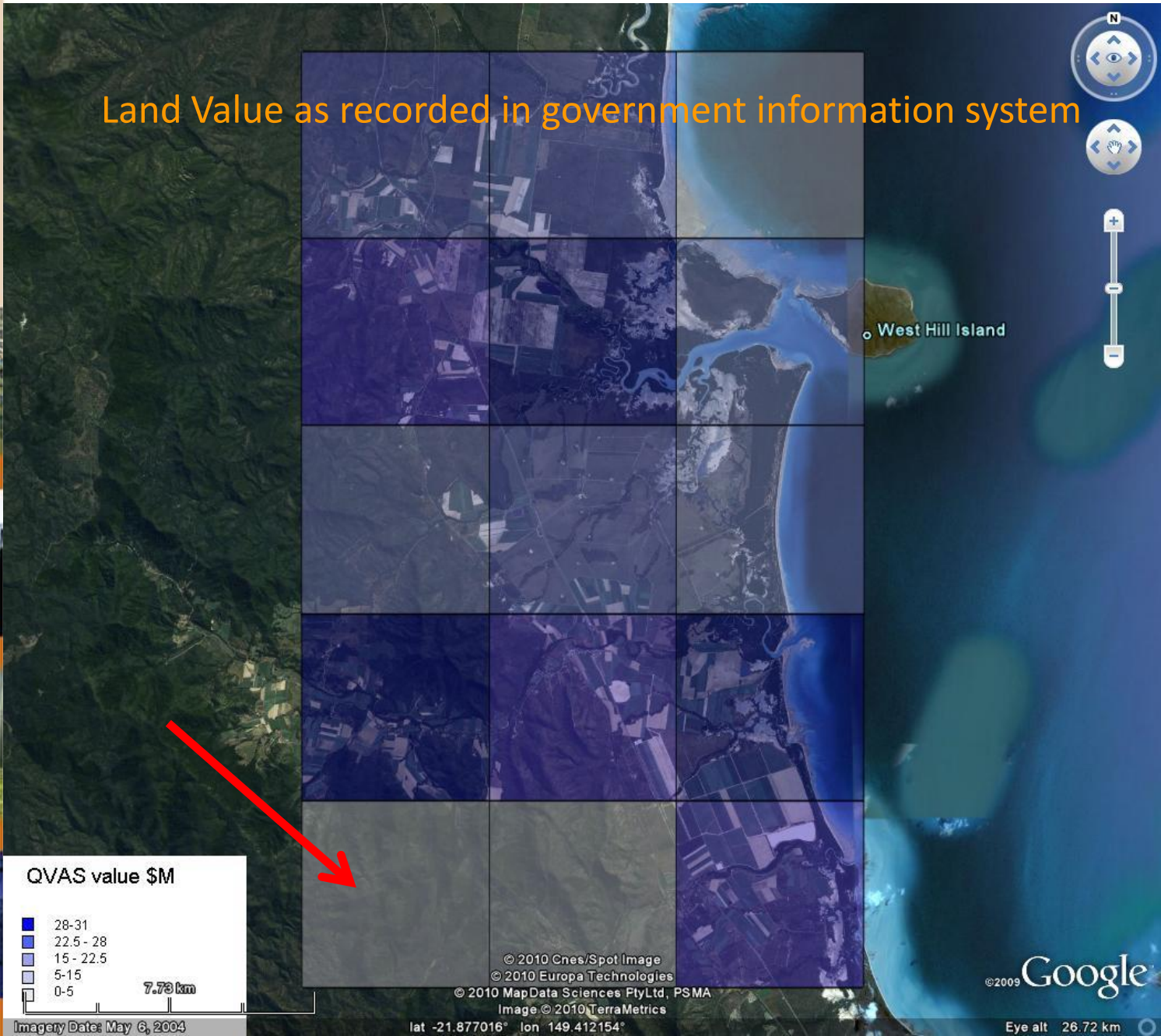
Land Account Outputs

Tables (NRM and GBR region)

- Land Use by Sector (hectares)
- Land Use by Sector (AUD\$)
- Land Use classified by ACLUMP
- Dynamic Land Cover
- Vegetation cover 2006 and pre 1750
- Forest Extent and Change 1998 to 2008
- An interactive Google Earth[®] showing:
 - Counts of population (i.e. population) and businesses
 - Fire, temperature and rainfall
 - Rateable land value and land use



Land Value as recorded in government information system



QVAS value \$M

- 28-31
- 22.5 - 28
- 15 - 22.5
- 5-15
- 0-5

7.73 km

Imagery Date: May 6, 2004



Berserker

Rockhampton

West Rockhampton

Depot Hill



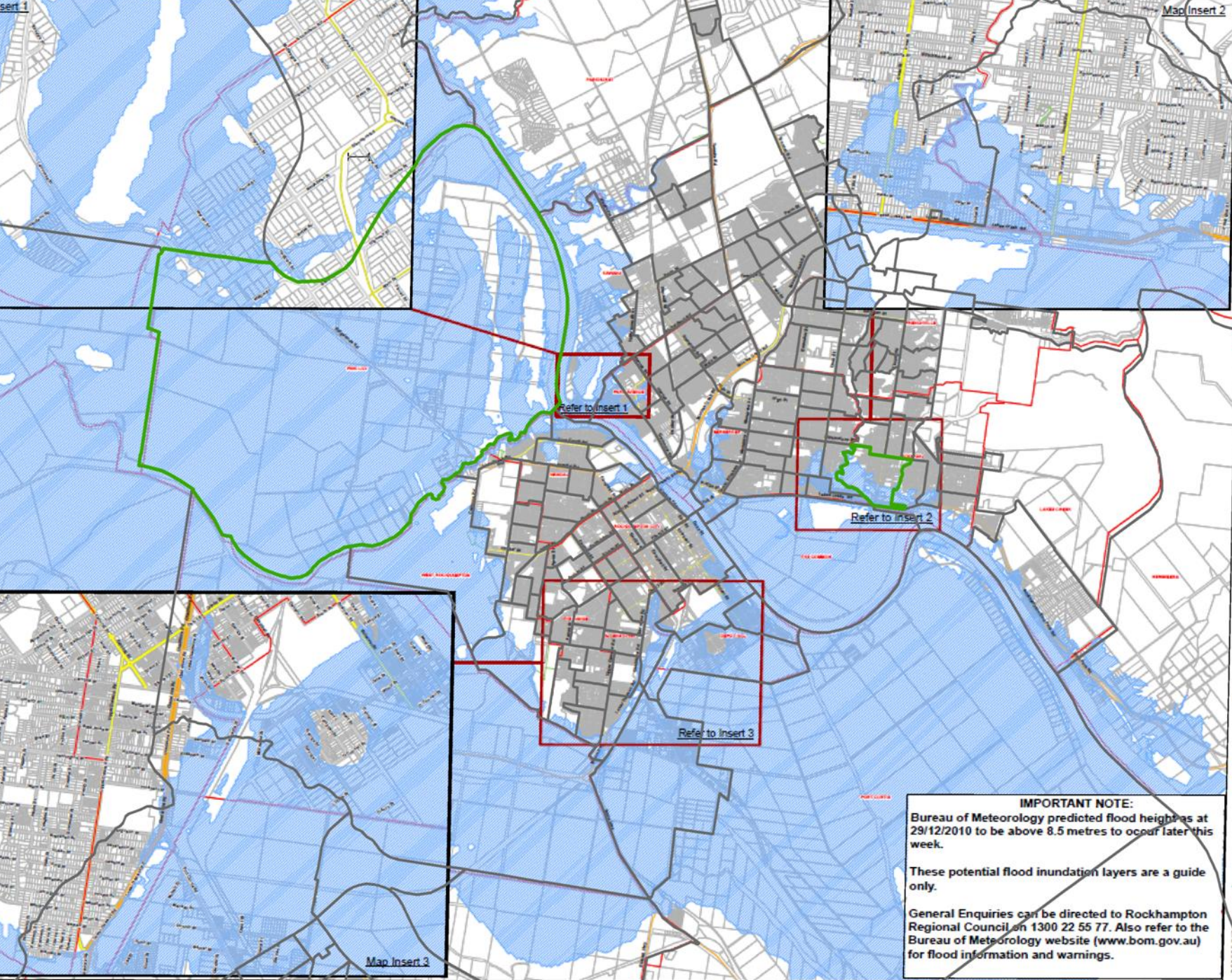
Data item	Value	Unit
ABN count	27	No
Estimated Population, 2006	251 to 310	No
Employment Range	20 to 199	No
GVIAP, 2005-06	-	\$'000
GVAP, 2005-06	9,419.8	\$'000
Water Use, 2005-06	421	ML

Source: [ABS](#)

2. Rateable value and Land use

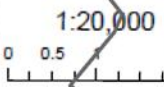
2.1 Land use and rateable land value

Data item	Value	Unit
Area of this SA1 region	3,123.6	Ha
Rateable Value	15.4	\$m
Agriculture	52.8	%
Retail/Wholesale	2.1	%
Transport Storage	-	%
Industrial	0.9	%
Sport, Recreation, Accommodation	-	%
Community Services	3.3	%
Residential	14.6	%
Vacant Land - Urban	4.5	%
Vacant Land - Rural	0.2	%



Potential Flood Inundation

Potential Flood Inundation Gauge Height of 9.0m



IMPORTANT NOTE:
 Bureau of Meteorology predicted flood heights at 29/12/2010 to be above 8.5 metres to occur later this week.

These potential flood inundation layers are a guide only.

General Enquiries can be directed to Rockhampton Regional Council on 1300 22 55 77. Also refer to the Bureau of Meteorology website (www.bom.gov.au) for flood information and warnings.

Map Insert 3

Refer to insert 1

Refer to insert 2

Refer to insert 3

Map Insert 2



Complimentary Spatial & Temporal Data available in Queensland

Land valuations (QVAS) Statewide 2010/11

Land Use Mapping (QLUMP) 2009/10

Ground Cover Index (sub-annual)

Foliage projected cover (annual)

Wetlands mapping

Rural leasehold lands

Regional ecosystems mapping

Soil attributes, hazard and risk mapping

Measured experiments and monitored sites

Modelled data (paddock, sub-catchment & catchment)

Attendance at land management improvement workshops

Regional Body investment plans

Local council NRM improvement programs



Adding biodiversity to the pilot land account

- Biodiversity (or plant and animal species) is a component of ecosystems
- The ABS working with researchers at the Australian National University, the University of Queensland and the Bureau of Meteorology to investigate adding ecosystem/biodiversity and carbon stocks to the experimental land accounts.
- Species number and abundance is correlated with area and arrangement of native habitat (species area curve)
- This applied research should inform both the development of land accounts in Australia as well as the development of ecosystem accounts within the SEEA framework (i.e. SEEA Volume II)



Ecosystem accounting and The SEEA Vol. II



Australian Government
State and Territory governments
Wentworth Group (Non-government organisation of scientists)
Trials in Natural Resource Management regions
SEEA Volume II and the Australian Bureau of Statistics

Australian Government

National Plan for Environmental Information

- Response to EPBC Report
- Work led by the Department of Environment (SEWPaC)
- Work just beginning
- Formation of the Australia Government Environment Information Advisory Group, Chaired by BoM
- Other development and review work is in planning



Victorian Government



- Trial land account to be produced by the ABS and Victorian Government
- Similar outputs to first trial in Queensland
- Possible addition of value for ecosystems:
 - Victoria has more than 1 million hectares of native vegetation on private land
 - Investigate the use of data from Bushtender/ecotender to get values for environmental goods and services



ecoTender in Victoria

- A market created by auctioning conservation contracts to landholders
 - Multiple environmental outcomes
 - Reveals supply price of environmental goods and services
 - Large investment in spatially referenced landscape information
 - Landscape information linked with scientific capability
 - Information about stocks and flows
- Other market schemes
 - Native Vegetation Exchange
 - BushTender



Wentworth Group of Concerned Scientists

In 2008 the group produced a regionally-based model for environmental accounts. This model was created to provide:

- A mechanism to measure state and condition of our environmental assets and how they change over time,
- Information to underpin landscape and land use planning at all scales, and
- A system to guide better investment decisions in environmental management and repair.



A Common Currency for Building Ecosystem Accounts

Environmental assets will be measured using a reference
condition benchmark

- *The Econ.*

This will enable:

- Comparison of the relative state of one environmental asset with another,
- aggregate information at different scales and for different assets,
- account for environmental asset condition over time, and
- allows indicators of ecosystem condition to be selected for individual regional ecosystems rather than applying blanket indicators to the continent.



Regional environmental accounts: Trials by Natural Resource Management Groups

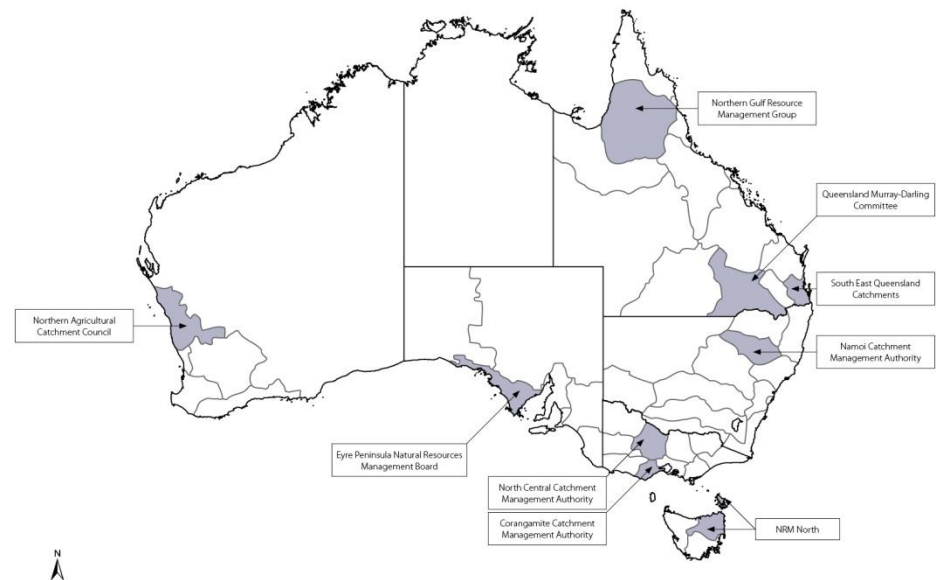
- Australia has 56 regional Natural Resource Management groups
- 9 of these will participate in a continent scale trial of building regional environmental accounts in 2011.
- The trials will use ecosystem indicators against a reference condition benchmark (i.e. The Wentworth Group concept) to measure the state and change in condition of their environmental assets.
- The first set of regional accounts will draw on existing data wherever possible to create the environmental (ecosystem) asset stock accounts, and use time series information to establish historical trend accounts.
- The stock accounts be based on a measure of 'condition' and quality, not just quantity.
- Each unique region will produce a terrestrial and aquatic ecosystem account
- The accounts will be comparable and able to build a set National Environmental Accounts, and draws expertise from academics, the ABS , BoM and other Commonwealth and State government agencies



NRM Trial Regions

- 1 Corangamite Catchment Management Authority
VICTORIA
- 2 Eyre Peninsula Natural Resources Management Board, SOUTH AUSTRALIA
- 3 North Central Catchment Management Authority,
VICTORIA
- 4 Northern Agricultural Catchment Council,
WESTERN AUSTRALIA
- 5 Northern Gulf Resource Management Group
QUEENSLAND
- 6 NRM North, TASMANIA
- 7 Queensland Murray-Darling Committee,
QUEENSLAND
- 8 South East Queensland Catchments,
QUEENSLAND
- 9 Namoi Catchment Management Authority,
NEW SOUTH WALES

Nine Participating Regions



Contributions to SEEA Volume II on ecosystem accounting

- ABS will be an active participant in the Development of SEEA Vol II over 2011 and 2012.
- ABS is collaborating with academics from 2 universities and other national and state government agencies on contributions to Vol. II



Key issues for Australia

Defining, separately identifying and valuing

- ecosystem assets
- ecosystem goods and services

Increasing the application of accounts in decision-making

- Need potential users to better understand accounts

Building technical capability

Improving base data





Workshop on Monitoring for
Improved Conservation in Australia

24-25 February 2011

Lessons from Environmental Accounting for Monitoring Biodiversity Conservation

Michael Vardon

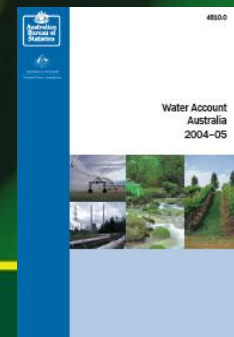
michael.vardon@abs.gov.au

statistics for informed

decision making

Biodiversity Conservation Strategy 2010 – 2030

“Outcome 3.3.1 - An increased representation of biodiversity and ecosystem services and goods within national accounts”




10 Lessons from Environment Accounting for Improving Biodiversity Monitoring




Lesson 1 – Build on the past

Lesson 2 – Must have sound institutional arrangements and legal basis



Lesson 3 – Learn by doing and accept what you have



Lesson 4 – Regular and on-going beats infrequent and *ad hoc*

Lesson 5 – Need to build capacity


Lesson 6 – Integration of biodiversity data with other data is critical

Lesson 7 – Determining what to measure and how to measure it

Lesson 8 – Deciding how much is enough for effective monitoring

Lesson 9 – Ability to access and interpret data

Lesson 10 – Defining the questions and flexibility





References and contacts

ABS – www.abs.gov.au

Victorian Government – www.vic.gov.au

ecoTender

<http://www.dse.vic.gov.au/DSE/nrence.nsf/LinkView/F18669E8E2A4C02FCA256FDB00031592DC837B2FCBEF4B4BCA2573B6001A9728>

Native Vegetation Exchange

<http://www.google.com.au/search?hl=en&source=hp&q=Native+Vegetation+Exchange&meta=&aq=f&aqi=g1&aql=&aq=>

Bushtender

<http://www.dse.vic.gov.au/DSE/nrence.nsf/LinkView/15F9D8C40FE51BE64A256A72007E12DC37EBE3A50C29F4F8CA2573B6001A84D5>

Mark.E.Eigenraam@dse.vic.gov.au and Gary.Stoneham@dtf.vic.gov.au

Wentworth Group – www.wentworthgroup.org

Accounting for Nature: A Model for Building the National Environmental Accounts of Australia, 2008.

<http://www.wentworthgroup.org/uploads/Accounting%20for%20Nature%202nd%20Ed.pdf>

Accounting Metrics for Building Regionally Based National Environmental Accounts, 2009.

<http://www.wentworthgroup.org/uploads/Regional%20Based%20Accounting%20Metrics%20Final.pdf>

A Common Currency for Building Environmental (Ecosystem) Accounts - A proposed standard for Environmental (Ecosystem) Accounting for the international 'System of integrated Environmental and Economic Accounts', 2010. Paper prepared for the 16th Meeting of the London Group on Environmental Accounting, 25-28 October, Santiago, Chile.

<http://www.wentworthgroup.org/uploads/A%20Common%20Currency%20for%20Building%20Environmental%20Ecosystem%20Accounts%20Final.pdf>

pcosier@wentworthgroup.org (Peter Cosier) and jmcdonald@wentworthgroup.org (Jane McDonald)

Natural Resource Management Groups

Regional Environmental Accounts trial

peter.greig@ccma.vic.gov.au (Chair Technical Environmental Accounting Standards Committee)





Thanks for your attention

Questions?



What national environment accounts should provide

(from EPBC Act Review, paragraph 19.30)

- *Provide measurable ways of comparing and assessing environmental assets over time;*
- *Provide a practical base for investing in future actions for environmental assets;*
- *Provide information to underpin evidence based decision-making;*
- *Better target private and public investment at the program and project level;*



What national environment accounts should provide (paragraph 19.30, continued)

- *Provide measurement and understanding of the impacts and effectiveness of policies and investments;*
- *Allow for better identification and management of risks;*
- *Provide greater community visibility on environmental outcomes;*
- *Guide environmental and land-use planning, including through environmental impact assessments and regional planning; and*
- *Identify and address gaps in reporting requirements and inform the SoE reporting process.*



In addition, national environment accounts should

(from EPBC Act Review, paragraph 19.32)

- *Be based on scientifically robust measurements of specific indicators;*
- *Involve a standardised approach to data collection, management, monitoring and reporting;*
- *Involve collection, coordination and reporting at a regional scale; and*
- *Be established and maintained under enduring institutional arrangements with clearly defined roles and responsibilities for all levels of government.*

