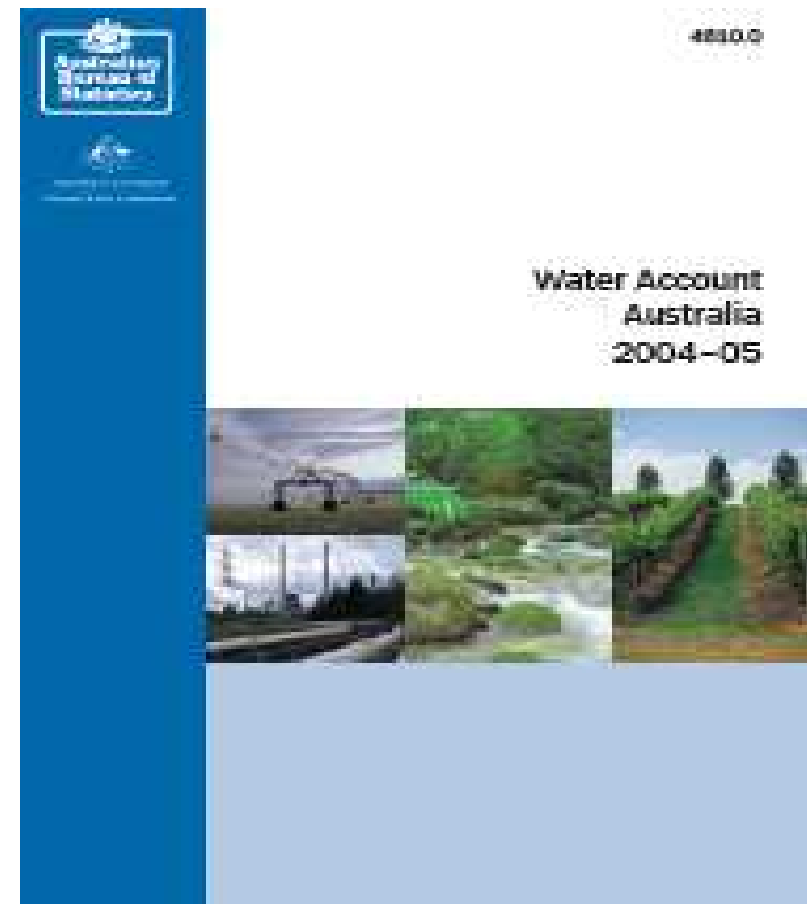


A water account for Australia

Water Accounting workshop

Rio de Janeiro
23-24 September 2009

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Australian Bureau of Statistics



Presentation outline

- Background - what are water accounts?
- Data sources
- Climate conditions
- Results
- Future work

What are water accounts?

At least two views:

- Water balance
- Supply-use framework
 - Physical water accounts
 - Monetary water accounts
 - Emission accounts
 - Hybrid and economic accounts
 - Asset accounts
 - Quality accounts.....

Water Balance

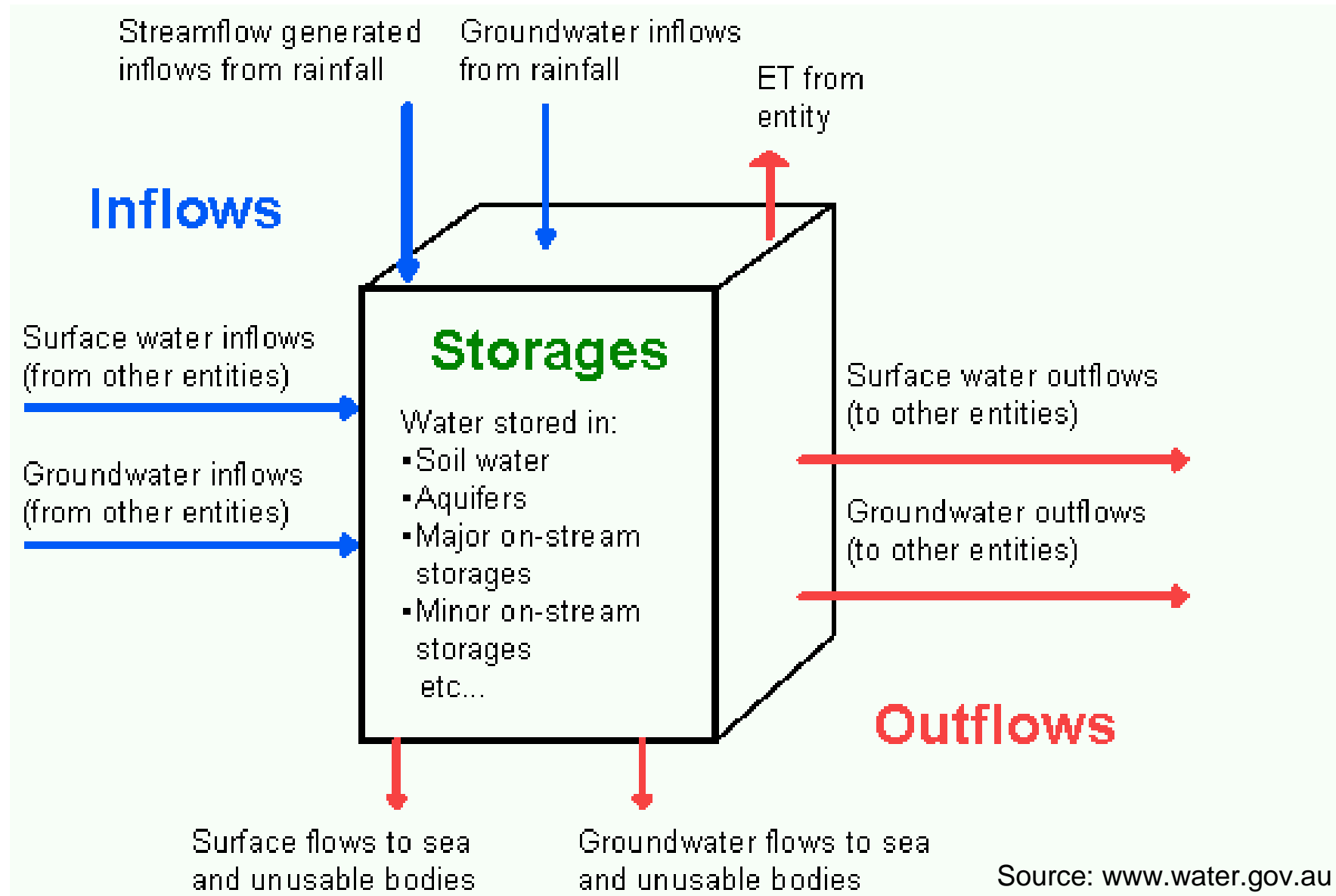
- Scientists and hydrologists are primarily interested in physical water balances in the environment
- Stocks and flows of water into and out of water management areas

Water Balance

The key elements in the water balance are:

- Storage at beginning of period
- Inflows
- Outflows
- Change in storage
- Storage at end of period

Water Balance



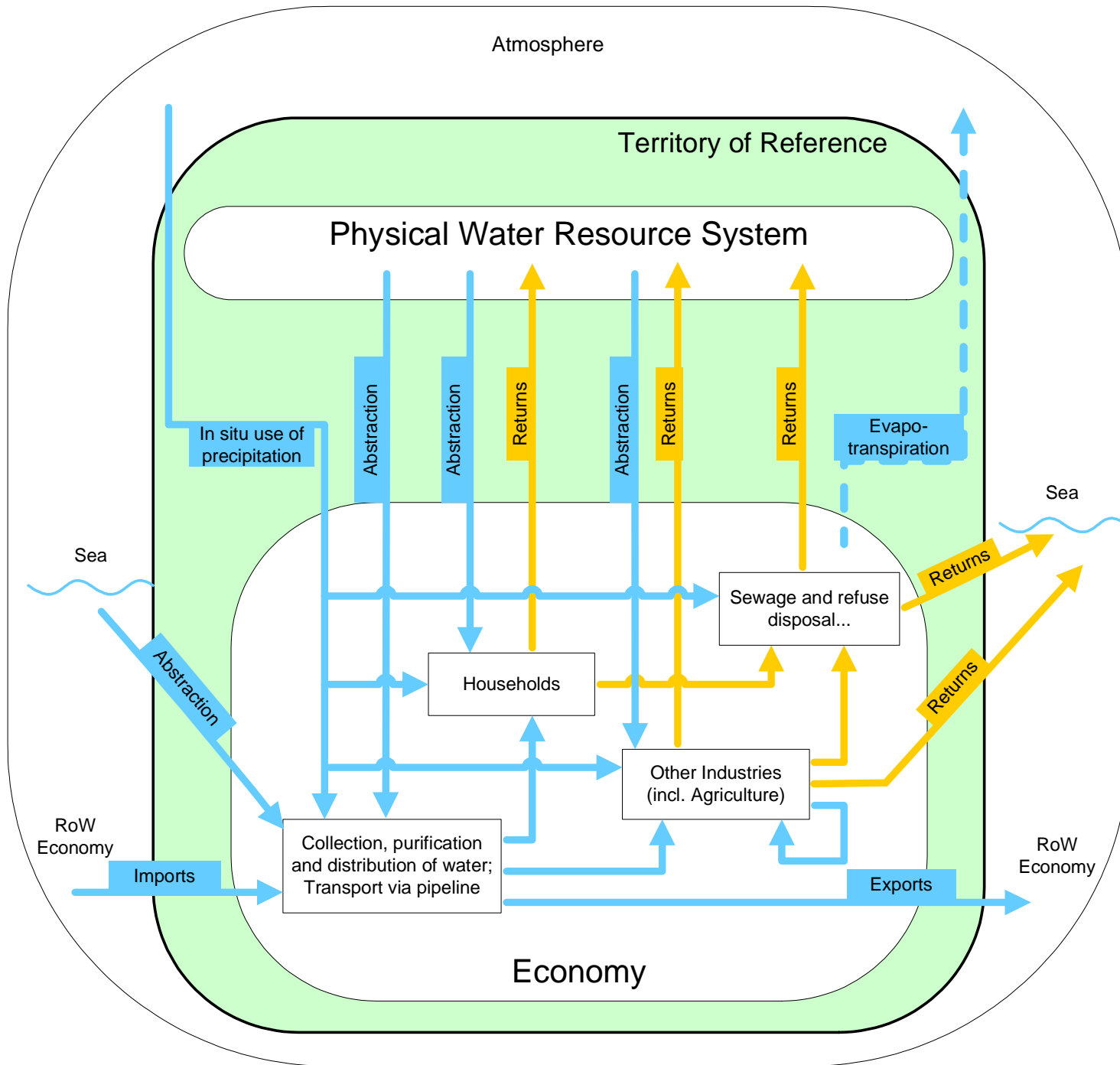
Water Balance

	Opening storage volume	Closing storage volume	Surface water inflows	Groundwater inflows	Surface water outflows	Groundwater outflows
WMA Name	All volumes shown in GL					
New South Wales						
Gwydir Regulated	5,490	5,569	1,217	73	1,142	68
Richmond	2,920	3,017	317	167	315	73
Namoi Regulated	20,490	20,419	1,011	173	1,080	176
Macquarie Regulated	9,239	9,243	376	110	377	105
Hunter Regulated	1,568	1,555	411	110	483	51
Lachlan Regulated	76,830	76,784	228	193	258	210
Murrumbidgee Regulated	119,534	119,800	2,548	558	2,466	373

Source: www.water.gov.au

Supply-use Framework

- System widely used by statistical agencies to compile national accounts and various satellite accounts
 - Consistent with the international standard
- Looks at the flow of water from the environment into the economy and back again
- Can be integrated with other social and economic data

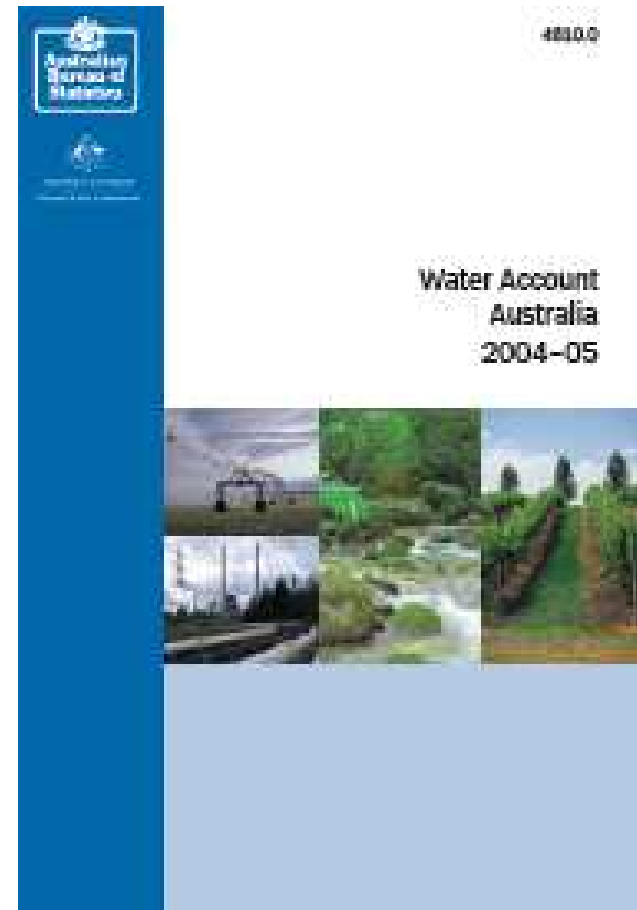


What is the ABS water account?

- The ABS Water Account is compiled according to the System of Integrated Environmental and Economic Accounts (SEEA)

What has the ABS Produced?

- Three editions released:
 - 1993-04 to 1996-97
 - 2000-01
 - 2004-05
- Four-yearly cycle
- An evolving and improved process each time
- Next release due in Dec 2010 in respect of 2008-09



Content of the latest ABS water account

- National level supply and use tables, 2000-01 and 2004-05
- State and territory supply and use
- Chapters that focus on certain industries and households – eg Agriculture, manufacturing and mining, households, water supply
- Water Stocks
- Water access, entitlements and trading

Data sources

- Large number of sources, including ABS survey data and other sources
- Stocks
 - Geoscience Australia
 - Bureau of Rural Sciences
 - Bureau of Meteorology
 - Industry associations
 - Australian National Committee on Large Dams

Data sources

Flows – supply and use

- The main ABS surveys used were:
 - 2004-05 Water Supply Survey
 - 2004-05 Agricultural Survey
 - 2004-05 Mining and Manufacturing Surveys
 - 2004-05 Electricity Generators Survey of Water Use
 - 2004-05 Service Industries Survey (including sporting and horse and dog racing associations)

Putting the data in context

- Rainfall
- Runoff
- Dam storage levels
- Area irrigated

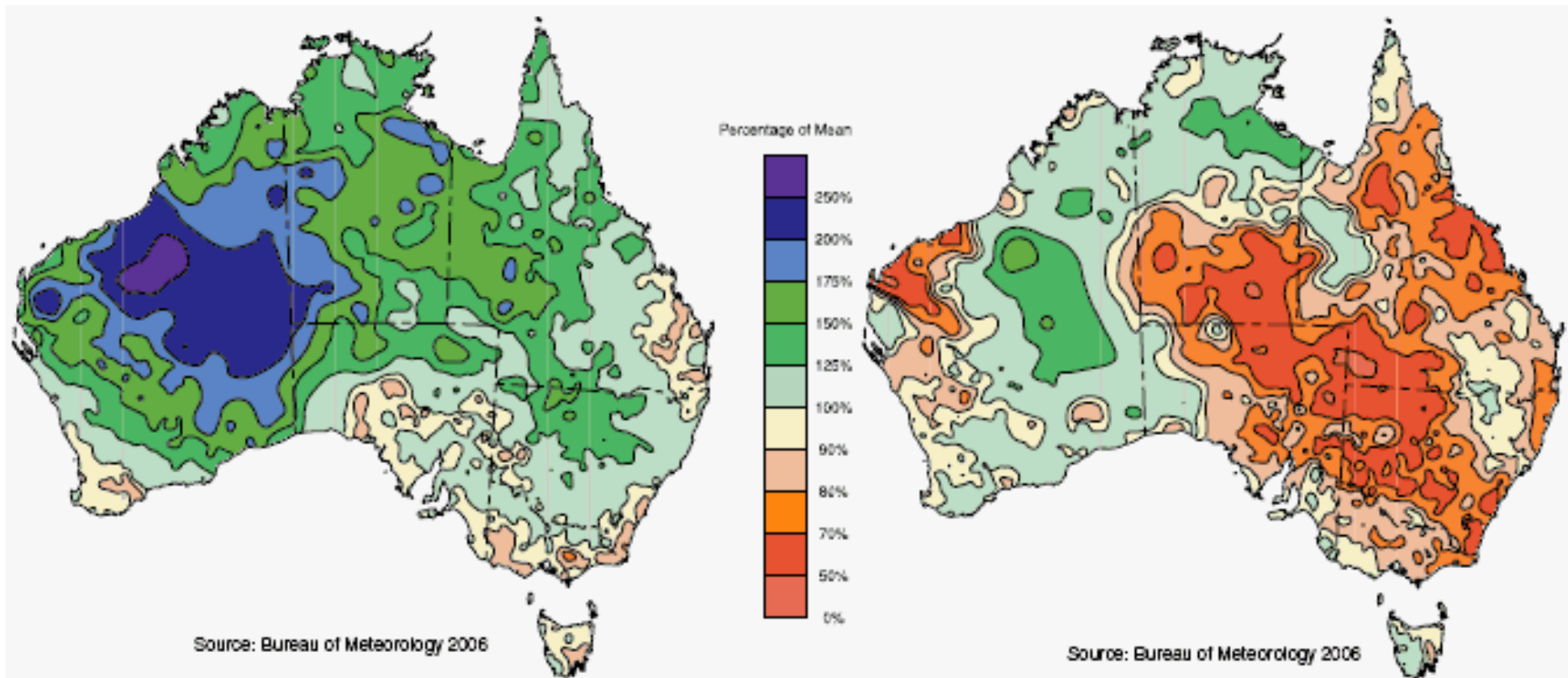
Rainfall

- Water supply and use needs to be viewed in the context of Australia's climate
- 2004-05 was a dry year compared with 2000-01
- Drought or below average rainfall was experienced in many parts of Australia

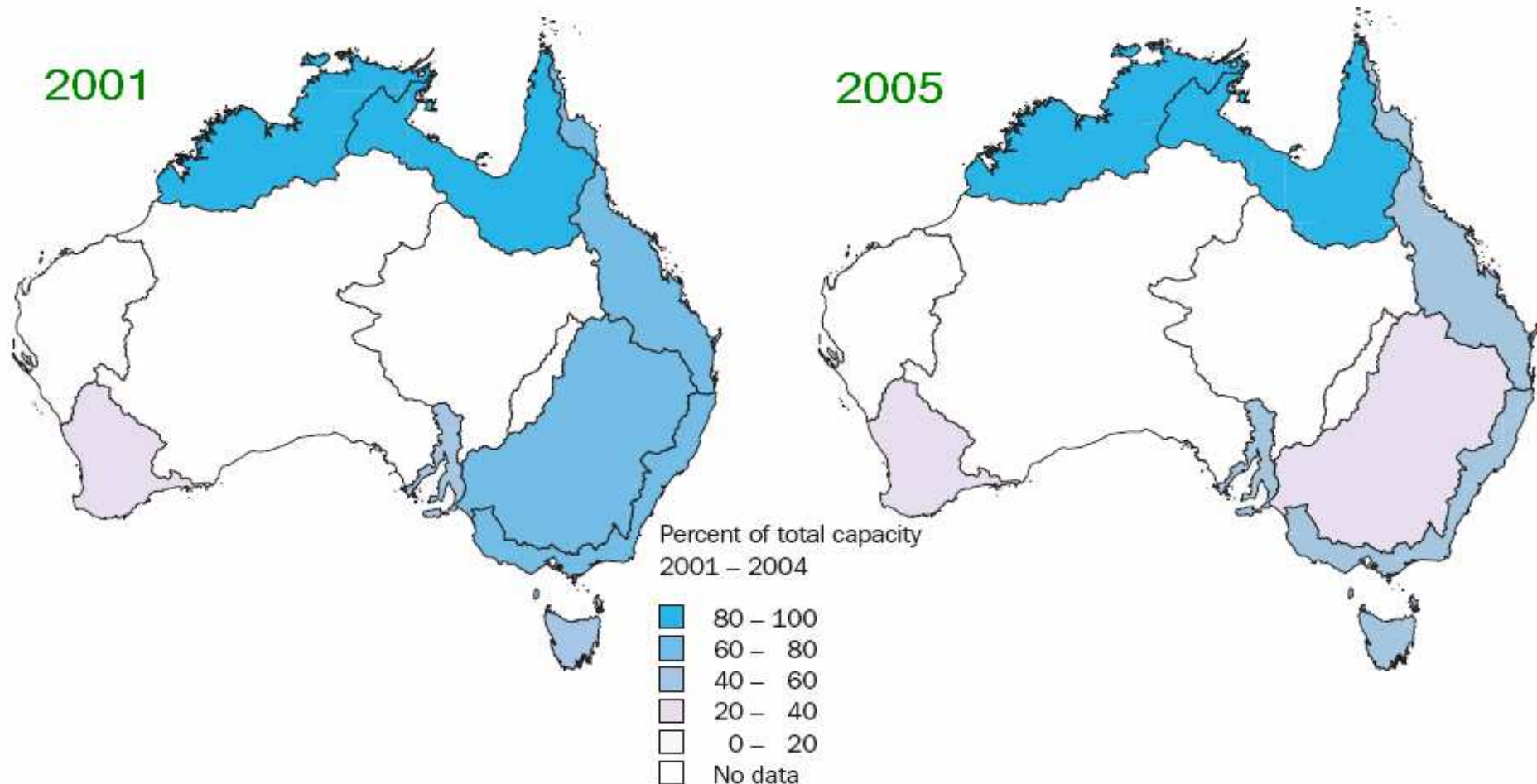
Percentage of Mean Annual Rainfall

1998-99 to 2000-01

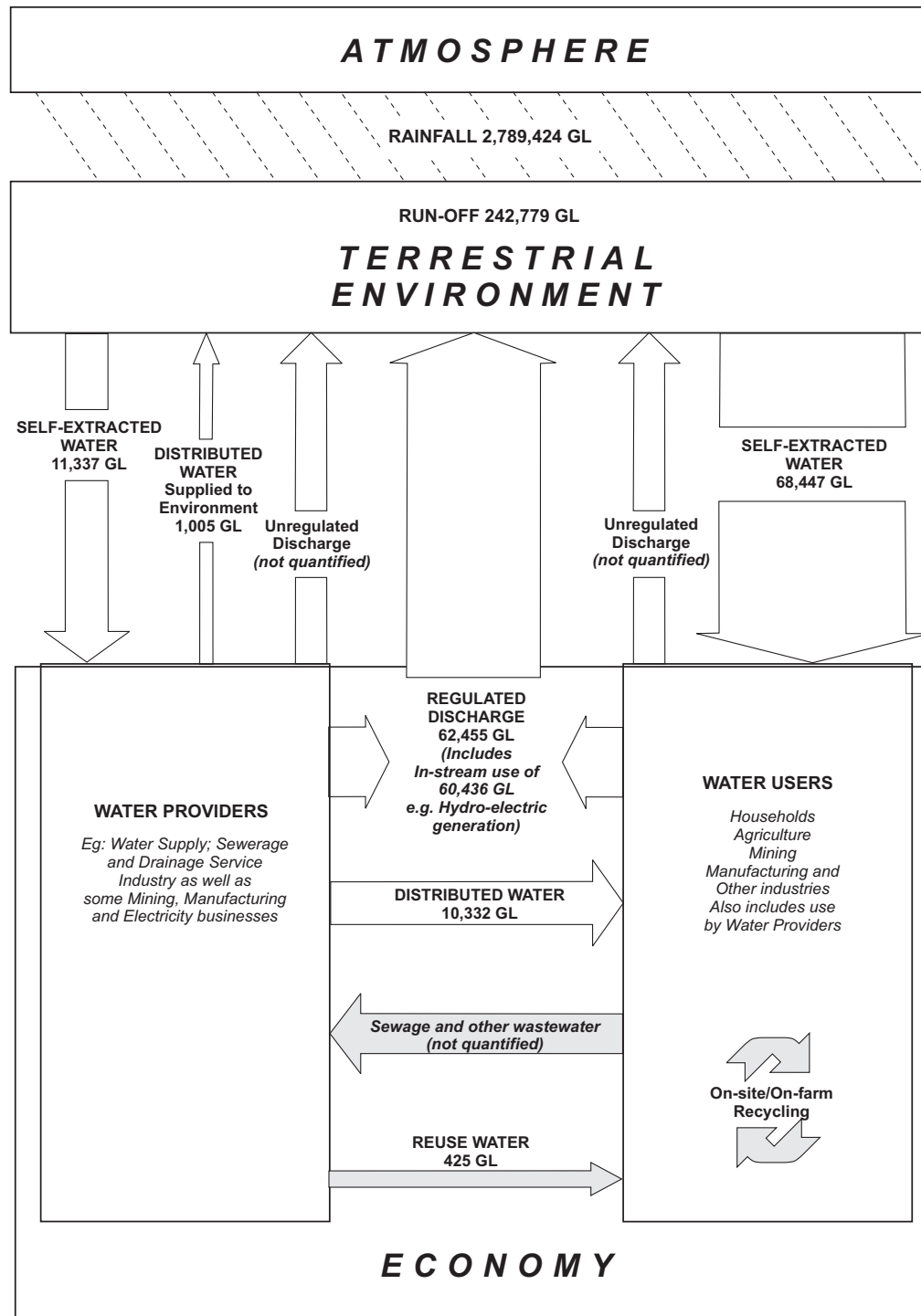
2002-03 to 2004-05



Water Stored in Large Dams



1. Supply and Use of water



Water supply and use, Australia – 2004-05

	Supply (GL)				Use (GL)				
	Self-extracted	Distributed	Reuse	Regulated discharge	Self-extracted	Distributed	Reuse	In-stream	Consumption
Agriculture	-	-	-	na	6,582	5,329	280	-	12,191
Mining	-	12	0.2	227	529	72	7	183	413
Manufacturing	-	11	1,746	110	246	341	13	-	589
Electricity & gas	-	154	7,471	59,924	60,172	115	6	59,867	271
Water supply, sewerage & drainage	-	11,160	414	1,809	11,160	2,045	38,514	-	2,083
Household	-	-	-	na	232	1,874	1,767	-	2,108
Environment	79,734	-	-	na	-	1,005	-	-	-
Total	79,784	11,337	425	62,455	79,784	11,337	425	60,436	18,767

Water Use 2004-05

- Total water extracted – 79,784 GL
- Water used in-stream (almost all for hydro-electricity) – 60,436 GL
- Water providers extracted 11,337 GL, water users directly extracted 68,447 GL
- Water consumption was 18,767 GL, a decrease of 14% from 2000-01 when it was 21,703 GL

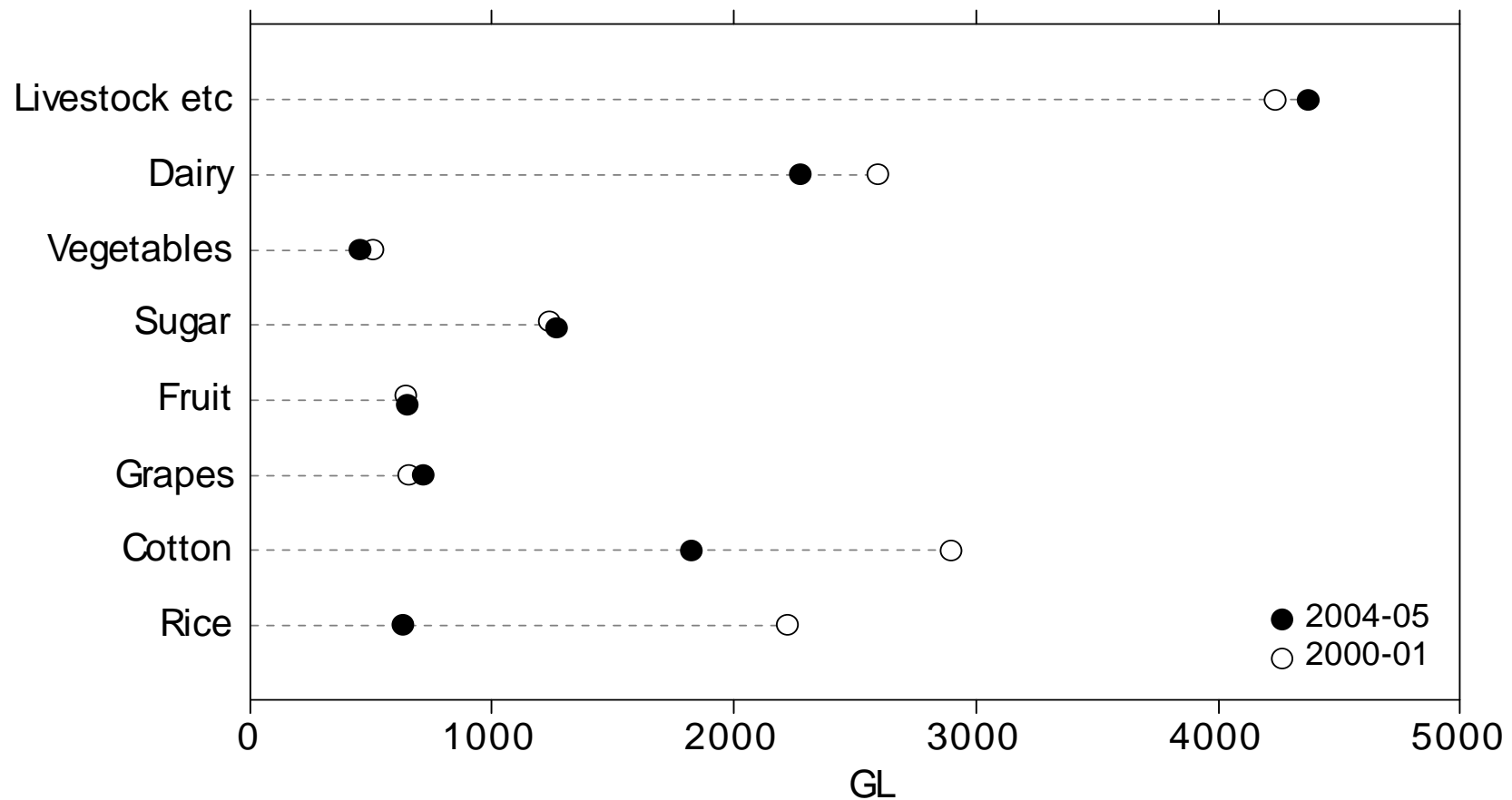
Water Consumption 2004-05

- Total water consumption - 18,767 GL
 - 65% by agriculture (12,191 GL)
 - 11% by households (2,108 GL)
 - 11% by water supply industry (2,083 GL)
 - 3% by manufacturing (589 GL)
 - 2% by mining (413 GL)
 - 1% electricity and gas (271 GL)
 - 6% all other industries (1,110 GL)

Agricultural Water Consumption 2004-05

- Water consumption by agriculture was 12,191 GL in 2004-05, a fall of 23% from 2000-01 when it was 14,989 GL.
- Decrease mostly in NSW (6,795 GL to 4,133 GL)
- The gross value of irrigated agricultural production in 2004-05 was 9.1 billion, down 5% from 2000-01 when it was 9.6 billion.
- The area of irrigated agricultural land decreased 8% between 2000-01 and 2004-05

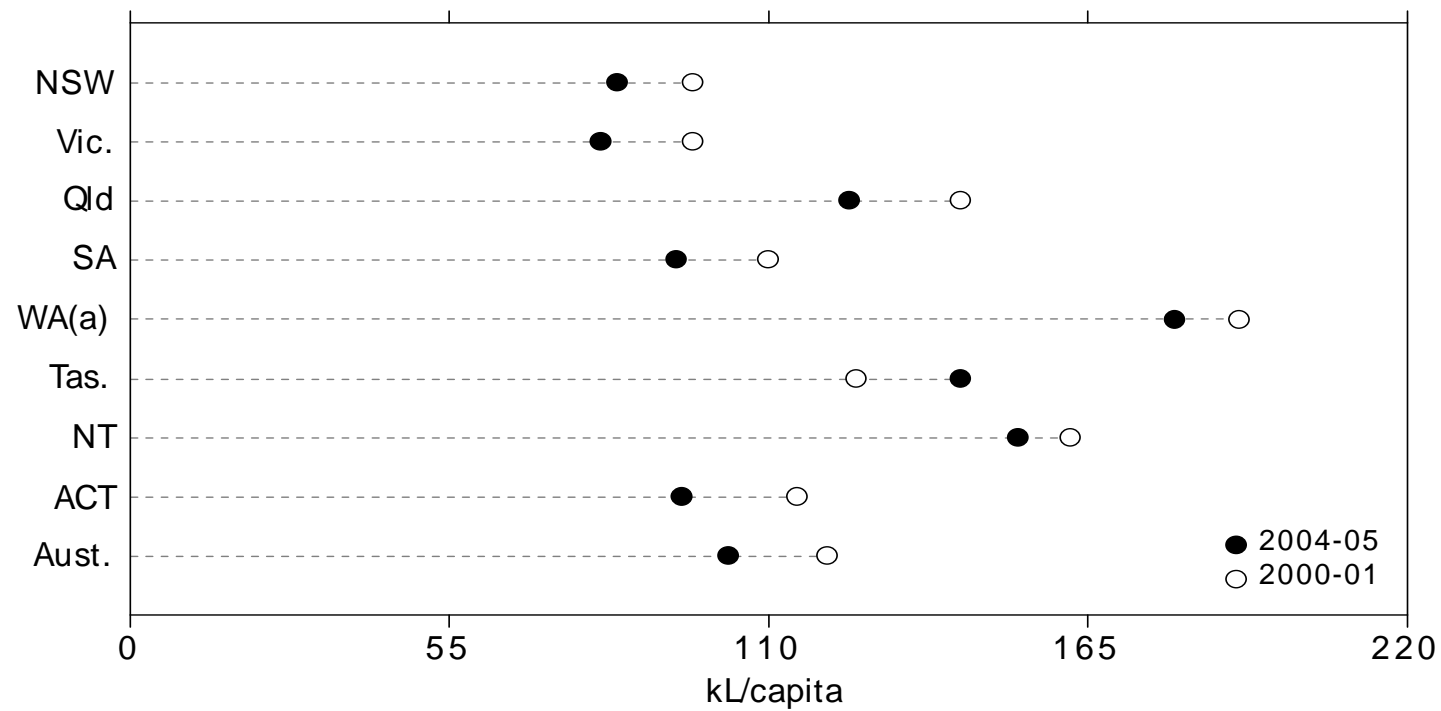
Agricultural Water Use 2004-05



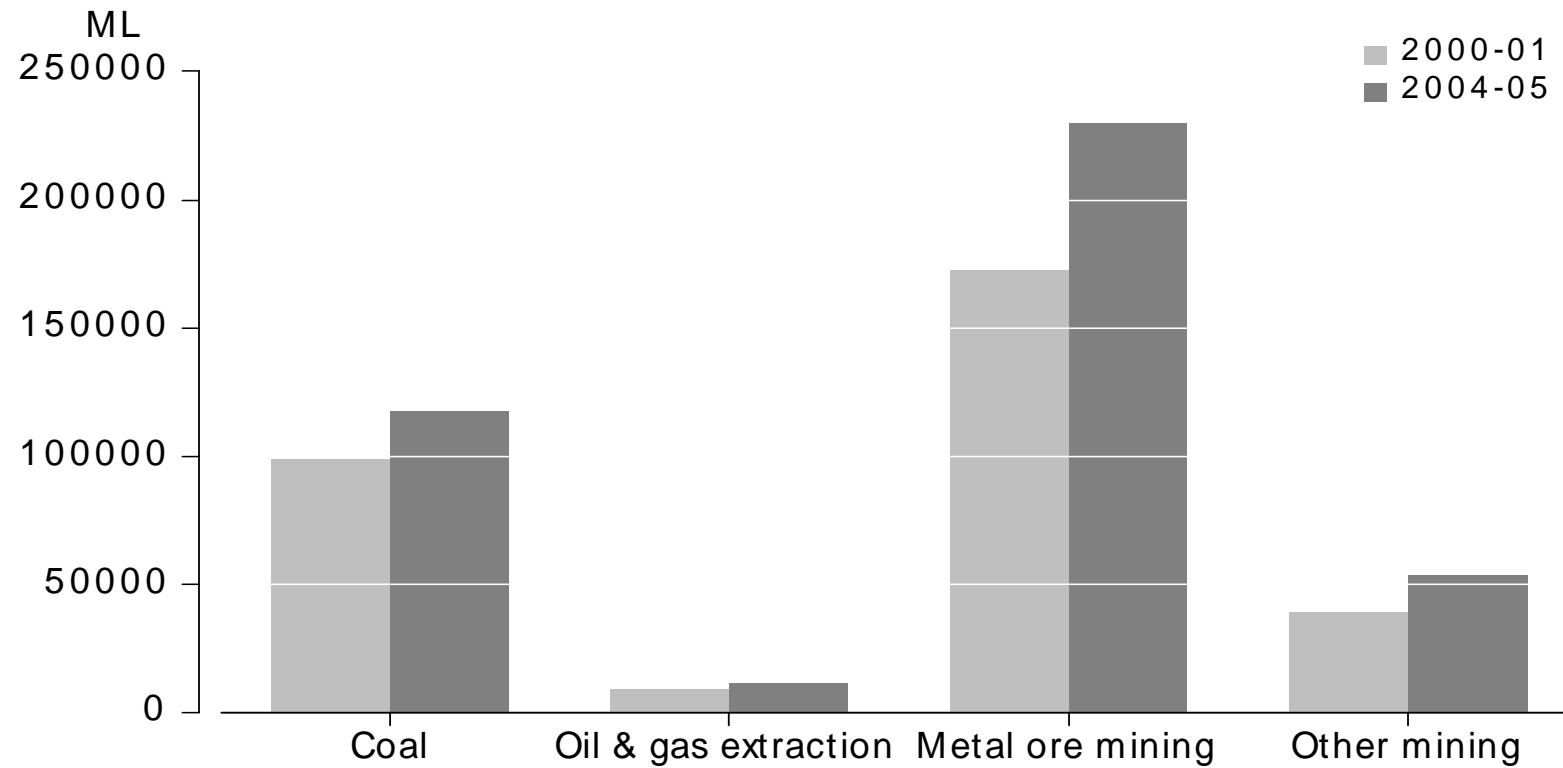
Household water consumption

- Household consumption was 2,108 GL in 2004-05, a decrease of 8% since 2000-01
- Largest decrease was in ACT (15%) followed by South Australia (13%)
- 17% of households had rainwater tanks (48% of households in SA)
- 16 % reused or recycled water

Household consumption per capita 2004-05



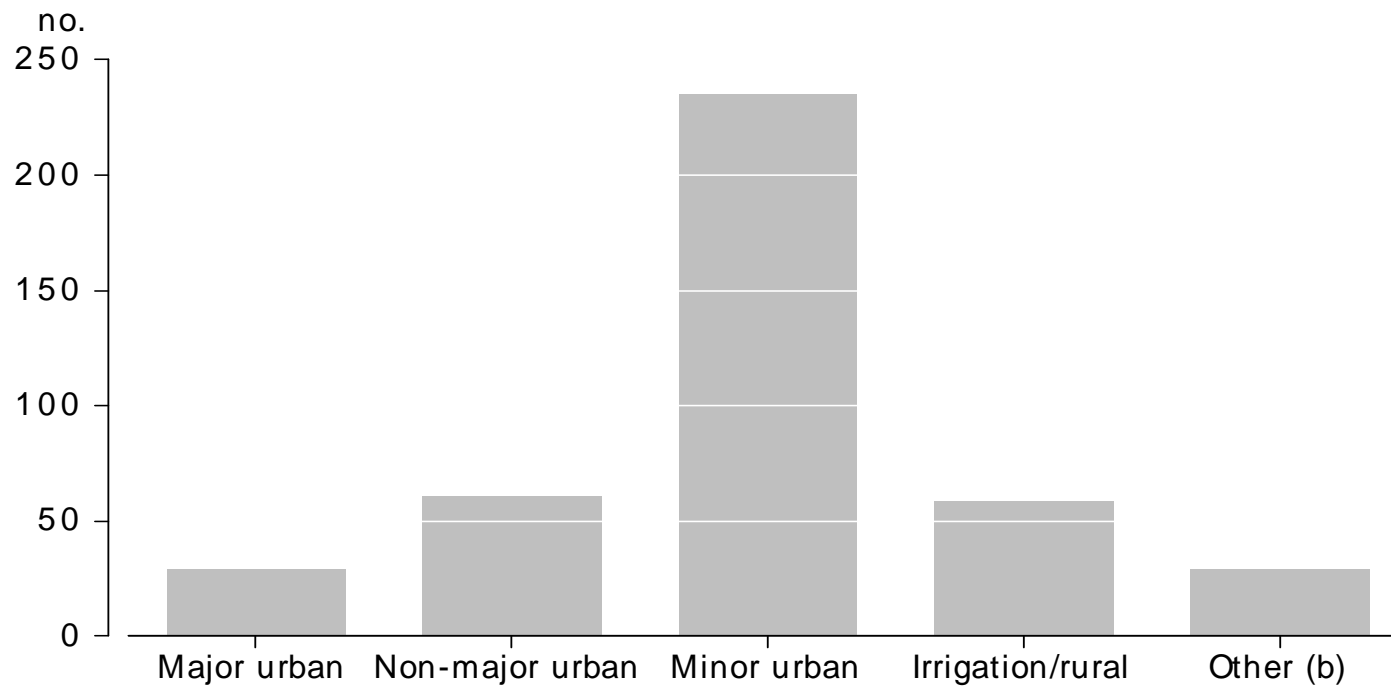
Mining Water Consumption, 2004-05



Water Supply Industry, 2004-05

- In 2004-05 there were 413 water providers
- They supplied 11,337 GL of distributed water, a 12% decrease from 2000-01
- Surface water made up 10,712 GL or 96% of distributed water
- Distribution losses were 2,022 GL
- Water provided to the environment 1,005 GL

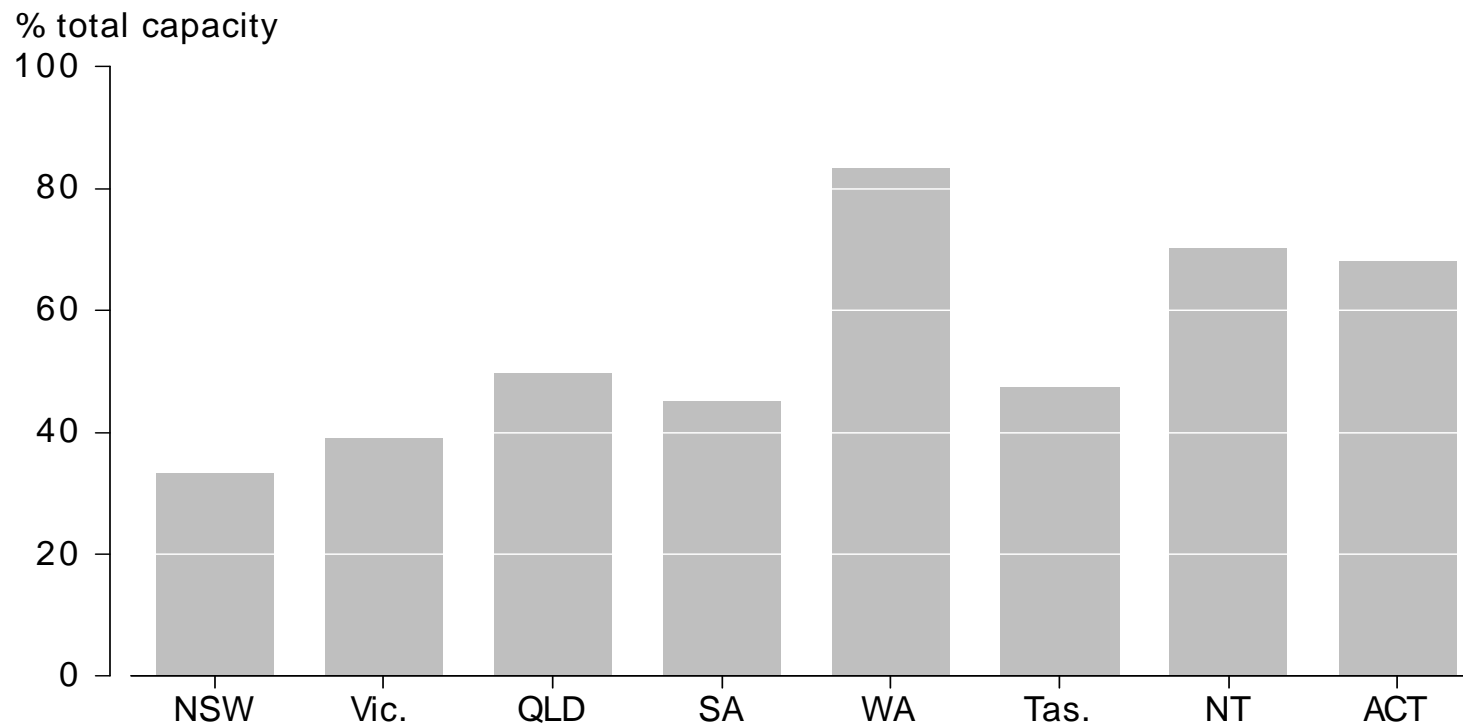
Number of water providers, 2004-05



2. Stocks and water storage infrastructure

- In 2004-05
 - Rainfall estimate was 2,789,424 GL (below avg)
 - Run-off was 242,779 GL (below avg)
 - large dams had a capacity of 83,853 GL
- Large dams contained 39,959 GL at 30 June 2005, 48% of total capacity
- Water consumption in 2004-05 was 22% of storage capacity and 47% of the volume in storage at 30 June.

Large dam storage levels 30 June 2005

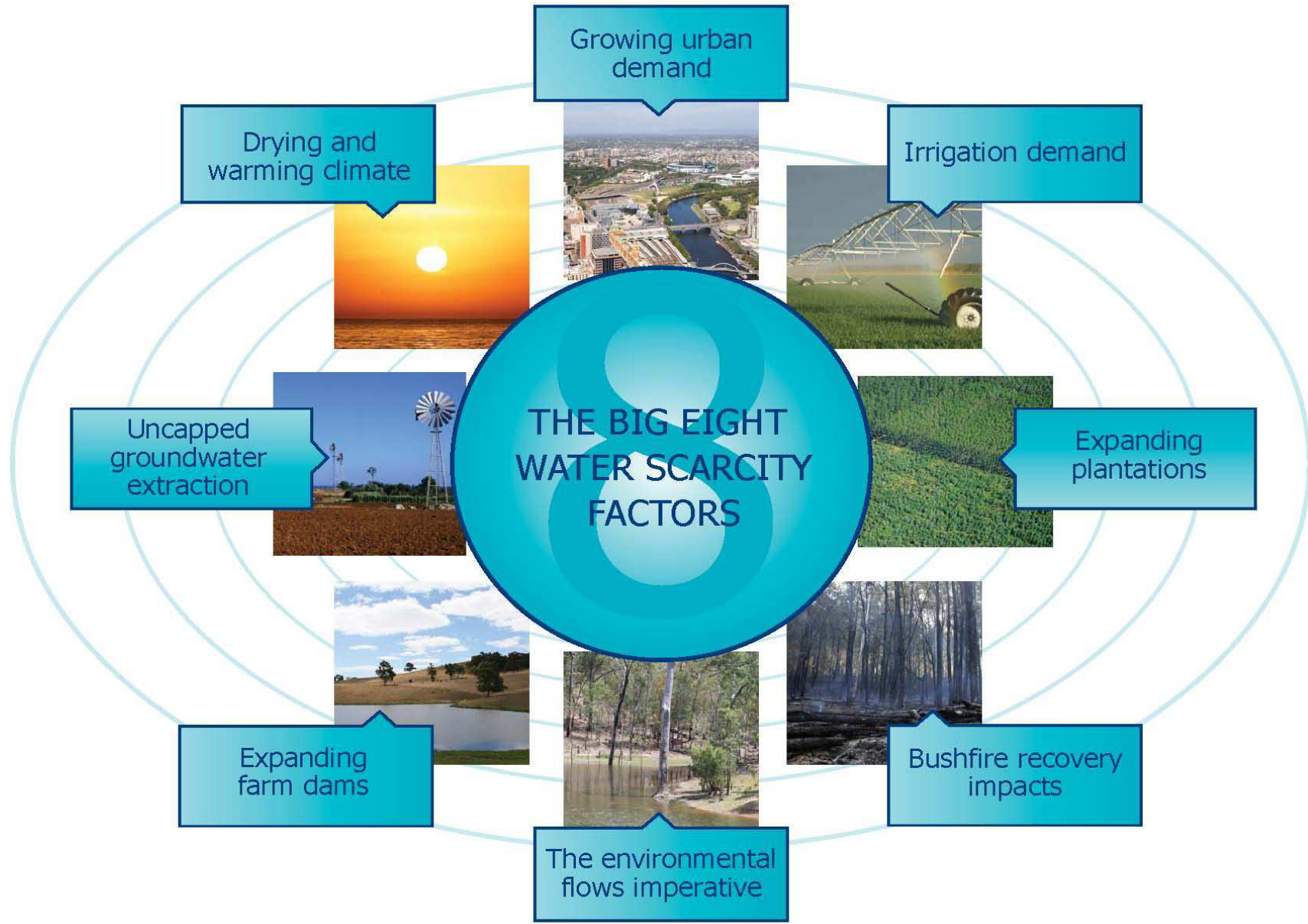


3. Entitlements and Trading

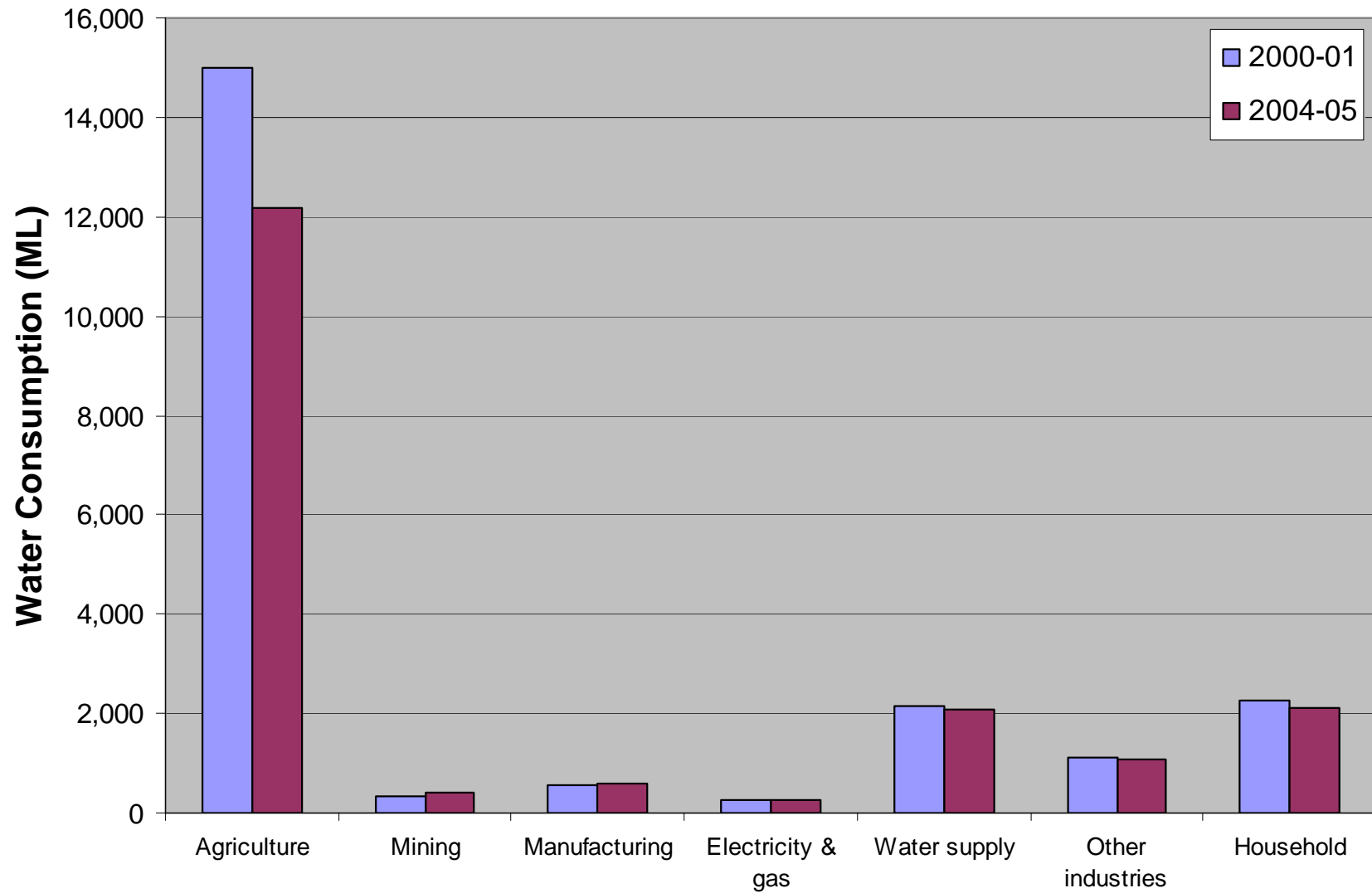
- There were 223,556 water access entitlements with a total entitlement volume of 29,831 GL
- 13,456 temporary trades (1,053 GL)
- 1,802 permanent trades (248 GL)
- Most trades in Victoria
- The 1,301 GL traded represented 7% of water consumption and 4% of entitlement volume

Why are water accounts useful?

- Help our understanding of how water is used and how this use is changing over time
- Predicting future water needs
- Assessing impacts of water use:
 - Allocating water resources efficiently
 - Improving water efficiency
 - Understanding the impacts of water management on all users
 - Linking water availability to its use



Water Consumption



Why the central statistical agency?

- Measures of physical availability of water will soon be produced by the Australian Bureau of Meteorology
- However, ABS has expertise in collecting and disseminating data
 - especially economic data
 - and in *integrating* economic and other data, which is an important aim of SEEA type accounting

The future

- Demand for more timely and frequent information
- Demand for regional level data
- Demand for greater disaggregation of industry data
- Surface-ground water splits
- Development and application of water accounting standards

Thank you

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