

our footprint



We are an affluent, high water-use country. We have the largest domestic water footprint of any nation on Earth and it is growing bigger by the day ...



Australians are behaving as if the environment is like the magic pudding in Norman Lindsay's children's book, capable of endlessly supplying our needs and wants no matter how big our appetites are.

Dr Peter Newton, Chief Scientist, CSIRO, the Age, 17 May 2006, p. 10

In gross terms, our use of water across the four recognised categories – agriculture, urban-domestic, industrial, and rural stock and domestic – makes us the third-highest per-capita users of water in the world.¹

Agriculture is the largest user of available water in Australia, accounting for approximately 75% of water used. The remaining 25% is distributed at 12% for urban-domestic use; 8% for industrial use; while rural stock and domestic use represents approximately 5% of the total.²

increased substantially – far more than can be accounted for by population growth alone.⁴

A LARGE ECOLOGICAL FOOTPRINT

The 'ecological footprint' is a concept developed by environmental scientists in Canada in the 1990s. It calculates how much of the Earth's resources, materials and energy each person uses and converts this into the equivalent area of the Earth's surface. If we divide all biologically productive land and sea by the global population, 1.8 global ha is available for each person per year.

Australians are using 7.7 global ha, giving us one of the largest ecological footprints on Earth and Victorians have the largest footprint in Australia.

As we increase our wealth and extend our consumption, we increase the size of our footprint.

The reality is, that if every one on the planet lived like Victorians, we would need more than four planets to support us.⁵

THE LARGEST DOMESTIC WATER FOOTPRINT

Within this broad schema, it's possible to calculate a footprint for each resource being consumed, including water.

Each nation's water footprint has both an internal and an external component. The internal water component is made up of domestic consumption as well as the water that is 'embodied' in the production of the food, goods and services consumed by people in their households. The external component encompasses the volume of water used in other countries to produce the food, goods and services that we import and consume.

In terms of our water footprint, incorporating these internal and external components, we are ranked eighth in the world. However, despite living on the driest inhabited continent, we are ranked highest for our use of domestic and embodied water.⁶

Something that we should all be acutely aware of is that everything we purchase and consume, whether it be an apple or a car, comes with an embodied-water price tag.



In actual volumes, approximately 17 935 GL are used for irrigation; 4754 GL for urban/industrial purposes; and 1369 GL for other rural consumption and production. NSW and Victoria together account for two-thirds of the total water used.³

In recent years we have used more water than ever before. In just 13 years, from 1983–84 to 1996–97, water use in every Australian state and the Northern Territory has

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Because our group is made up of people from our mothers' group, a lot of discussion centred around how we can bring up our children with a respect for water. Little things like how we can teach them through waterplay but also to incorporate an understanding of how precious water is as a resource.

Mothers Watermark Australia group, Box Hill North

THE WATER PRICE TAG

The amount of embodied water in food items, consumer goods and services is illustrated in the following examples. It takes:

- 70 L of water to produce one glass of wine⁷
- 4660 L to produce a large steak⁸
- 2000 L to produce a cotton T-shirt⁹
- 47 600 L to produce a one-tonne vehicle¹⁰
- 23 400 L to produce a tonne of paper¹¹
- 500 L for a large potato¹²
- 50 L for an orange¹³
- 140 L for a cup of coffee¹⁴
- 1400 L to produce a kilo of rice¹⁵

For persons in the lowest 20% of the income range, their weekly electricity usage accounts for 18 L of water. For persons in the top 20%, their electricity usage per week accounts for 36 L of water.¹⁶ When we leave lights on unnecessarily, we are wasting water. This is because there are inherent inefficiencies with respect to the water used in coal-fired electricity generation. When we waste food and other goods, we waste water. A 2003 survey by the Australian Food and Grocery Council revealed that Australians

waste about 2.2 million tonnes of food a year. This food contains sufficient embodied water to supply all households in Sydney and Melbourne with enough water for a year.¹⁷

Another recent report estimates that Australians spent more than \$10.5 billion in 2004 on wasteful consumption. Food accounts for the largest proportion of this spending. Each year we waste \$2.9 billion on fresh food, \$630 million on uneaten takeaway, \$876 million on leftovers, \$596 million on unfinished drinks and \$241 million on frozen food – a total of \$5.3 billion on all forms of food.¹⁸

INCREASING AFFLUENCE & CONSUMPTION

In the past 50 years the average new house size in Australia has almost doubled from 115 m² in 1955 to 221 m² in 2000. In the same period the number of people living in households has decreased, with occupancy rates dropping from 3.6 to 2.6 persons per house.¹⁹

Household size, however, does not accurately predict water use. The determining factor is income levels. Bigger houses mean more space to fill with furniture, spa baths, curtains, lighting, carpets, appliances, paved areas,

gardens, heating and air-conditioning. More widely, Australians take up new technologies (e.g. computers, mobile phones, plasma TVs) at rapid rates. When we extend our consumption of material goods there is an invisible water price tag.

Buying these goods requires large amounts of money. Over the past 25 years, average weekly earnings have grown four-fold, from \$268 to \$1043.²⁰ We earn more but save less. The household savings ratio has decreased over this period, to the point where it is now 'negative', in that household consumption exceeds disposable household income.²¹

Our spending capacity over this same period has been massively augmented by personal borrowing for consumer goods. In 1985 Australians incurred \$571 million on credit cards. In the past 20 years this has grown more than 50-fold to over \$26.5 billion.²²

Consumer goods represent significant amounts of embodied water. A 1998–99 analysis of the ABS *Household Expenditure Survey*, showed that the total water budget of an average Sydney household was about 3 million L.

About half of this household water budget was the water embodied in food; only 11% was water being *directly* consumed in showers, watering gardens and cleaning.

Furthermore, the analysis showed that a 100% increase in household expenditure should result in a 70% average increase in water use.²³

Governments have been busy mounting extensive water conservation campaigns of late, particularly as the levels in the water storages supplying our cities continue to drop. Rightly, these send messages about ways to reduce our *direct* consumption of water.

But these water conservation campaigns do not yet address *total water demand*. This would not only entail acknowledging the extraordinary amount of water that's built into our consumption patterns and lifestyles, but a preparedness to establish in people's minds the obvious link between affluence, resource depletion and scarcity.

Mindsets do take changing. Despite our already large water footprint, there is an established view that if only we got on with augmenting



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water supply we could have all the water we wanted! In releasing a major report card on Australia's urban water supply in May 2007, the chairman of the National Water Commission suggested our cities could have 'unlimited' supplies of water in future if governments stopped relying on rain to fill dams and instead invested in new technology, such as recycling and desalination.²⁴

In the same month the Victorian opposition spokeswoman for water said Melburnians have already cut their water use sufficiently. She argued that if the government had had the foresight to build a dam and a desalination plant, 'we could use as much water as we liked'.²⁵

The challenge is for people to move away, and quickly, from viewing Australia as a Norman Lindsay 'magic pudding', capable of endlessly supplying our needs and wants, to a lifestyle that's less materialistic and consumptive.²⁶

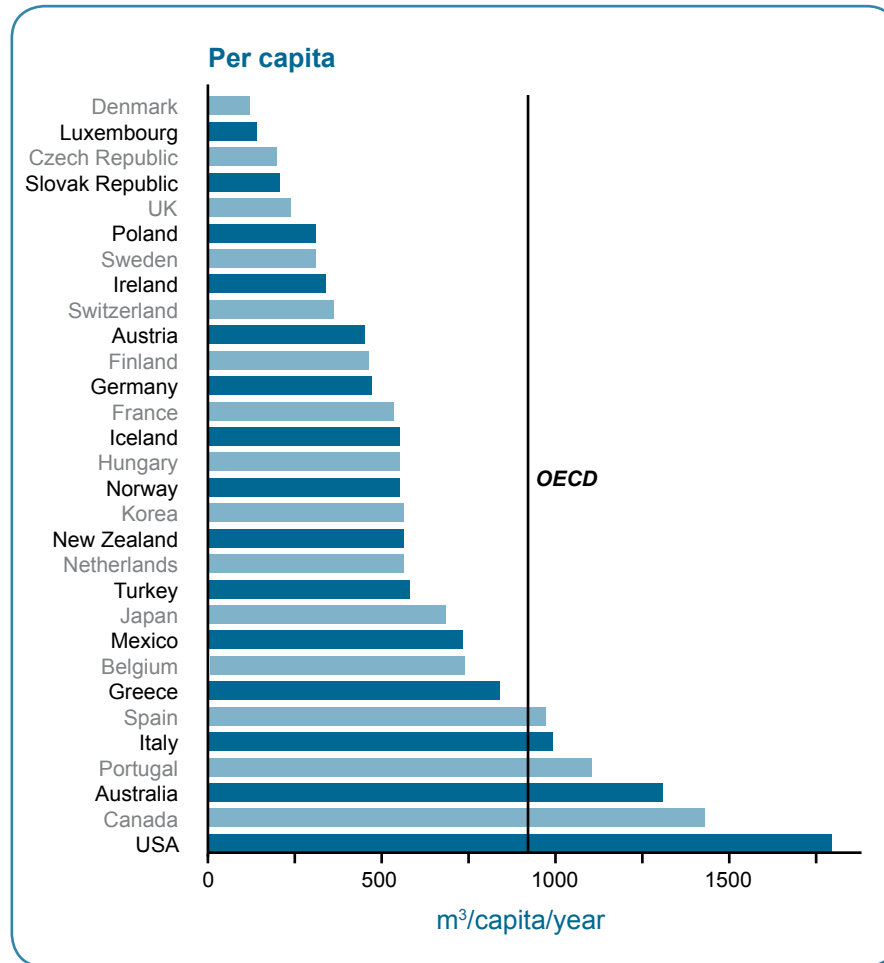


Figure 1. Intensity of water use per capita amongst OECD countries including Australia

Each bar represents the water that is directly consumed plus the water that is used as 'embodied' water, i.e. the food used to grow food and make consumer goods. In 1997 Australia ranked number five, and in 2004 we ranked number three.

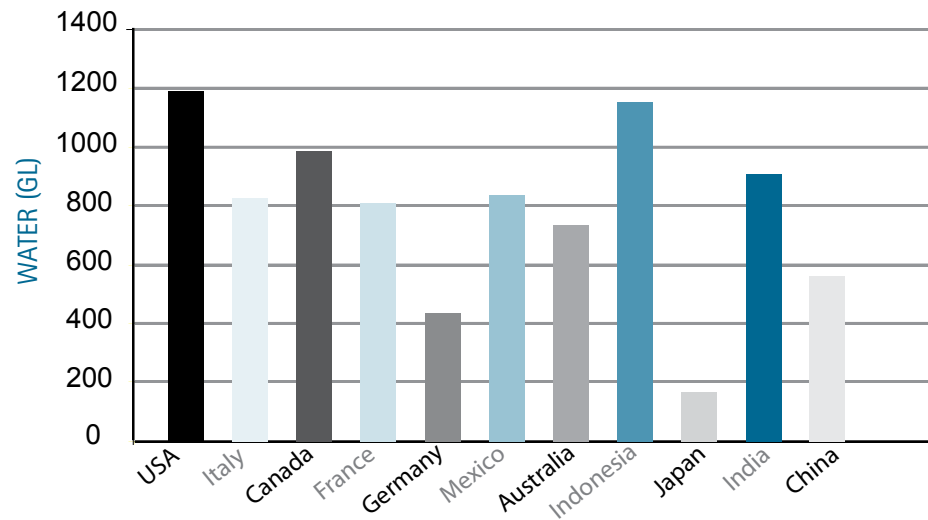
Source: Organisation for Economic Cooperation and Development, *OECD environmental indicators 2004*, OECD Environment Directorate, Paris, 2004, p. 22.

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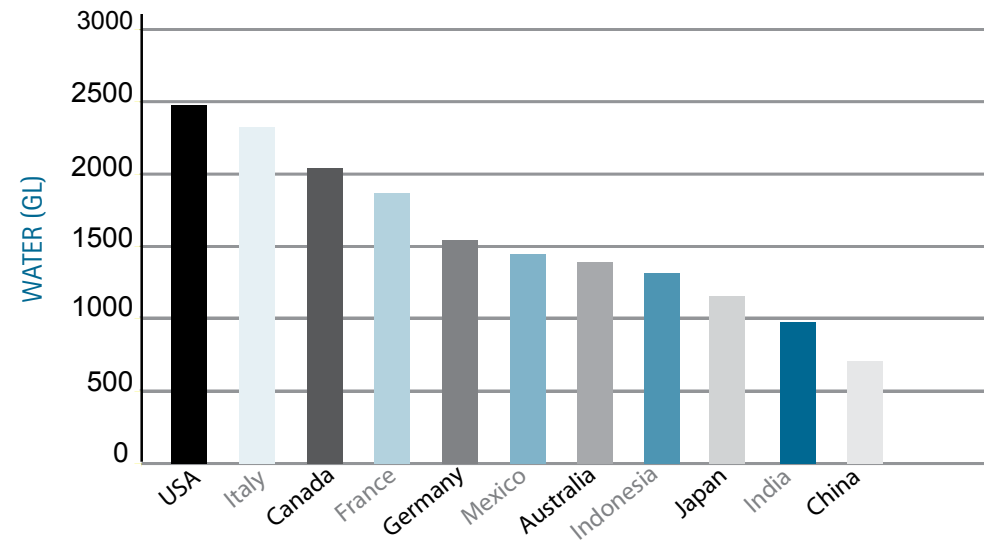
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Agricultural internal water footprint (per capita)



Total water footprint (per capita)



Domestic internal water footprint (per capita)

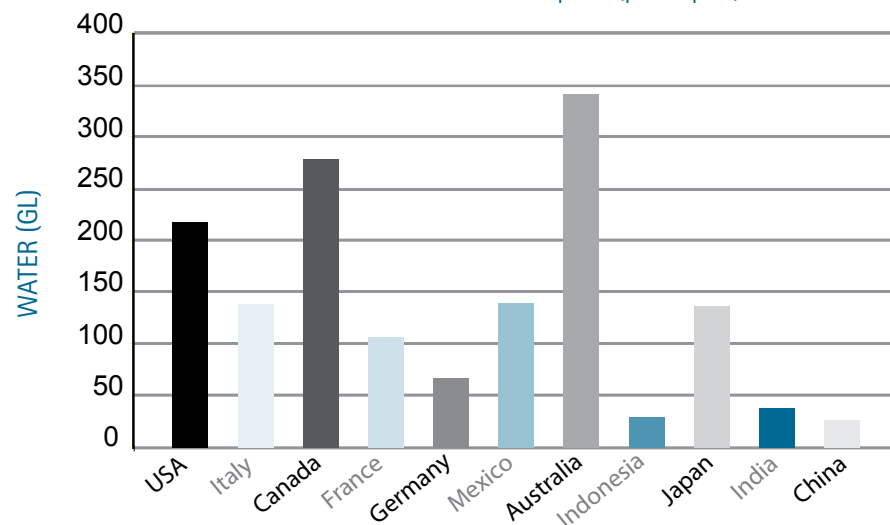


Figure 2. This series of bar graphs compares the water footprint per capita for several nations as well as the sectors that make up this water footprint

While we rank eighth in terms of our total water footprint per capita, Australia's domestic water footprint per capita is the largest in the world.

Source: AY Hoekstra & AK Chapagain, 'Water footprints of nations: water use by people as a function of their consumption pattern', *Water Resource Management*, 2006, vol. 21, no. 1, pp. 1-14.



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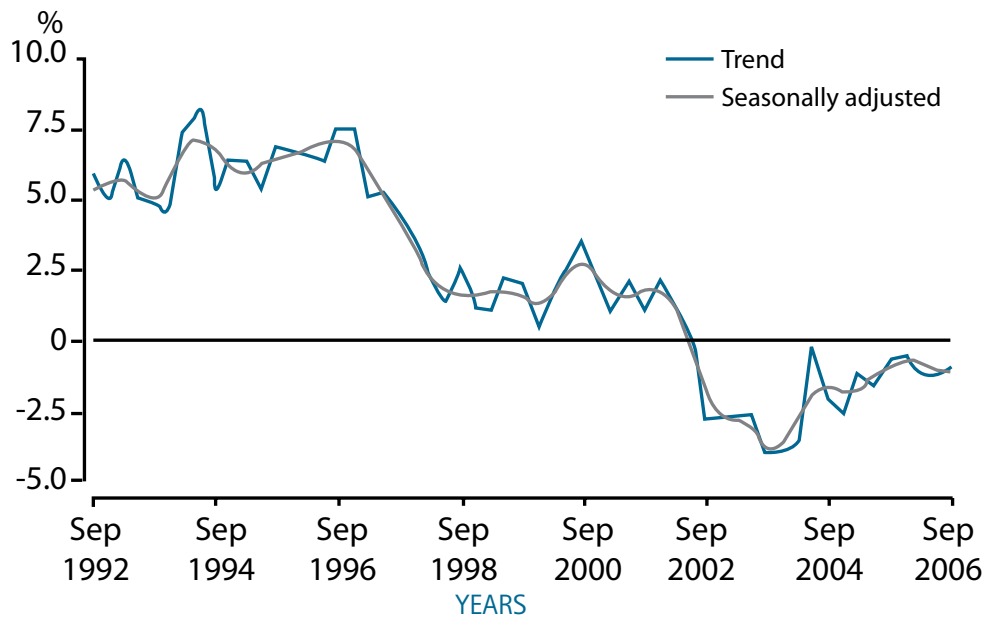


Figure 3. Household saving ratio 1992–2006

The downward trend in household saving ratios has continued, to the point where household consumption is now greater than household disposable income.

Source: Australian Bureau of Statistics, *Australian national accounts: national income, expenditure and product*, cat. no. 5206.0, ABS, Canberra, 2006.

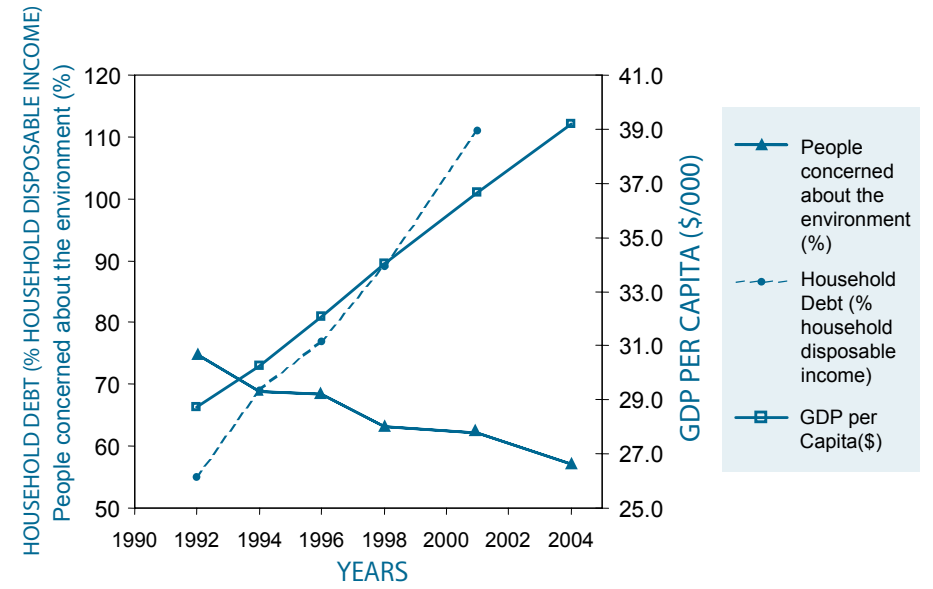


Figure 4. The cross-over: materialism and environmental concern

Over the past decade, the wealth of many Australians has continued to rise. Consumption patterns continue to be fed by rising personal debt. In the same period concern about the environment has declined.

Source: PW Newton, 'Human settlements', theme commentary prepared for the Australian State of the Environment Committee, Department of the Environment and Water Resources, Canberra, 2006, p. 41, <<http://www.environment.gov.au/soe/2006/commentaries/settlements/index.html>>.

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Some other useful sources

- For more information on the ecological footprint, go to: <<http://www.footprintnetwork.org>>.
- World Wildlife Fund, *Living planet report 2006*, <<http://www.wwf.org.au/publications/living-planet-report-2006/>>.