People and the Environment

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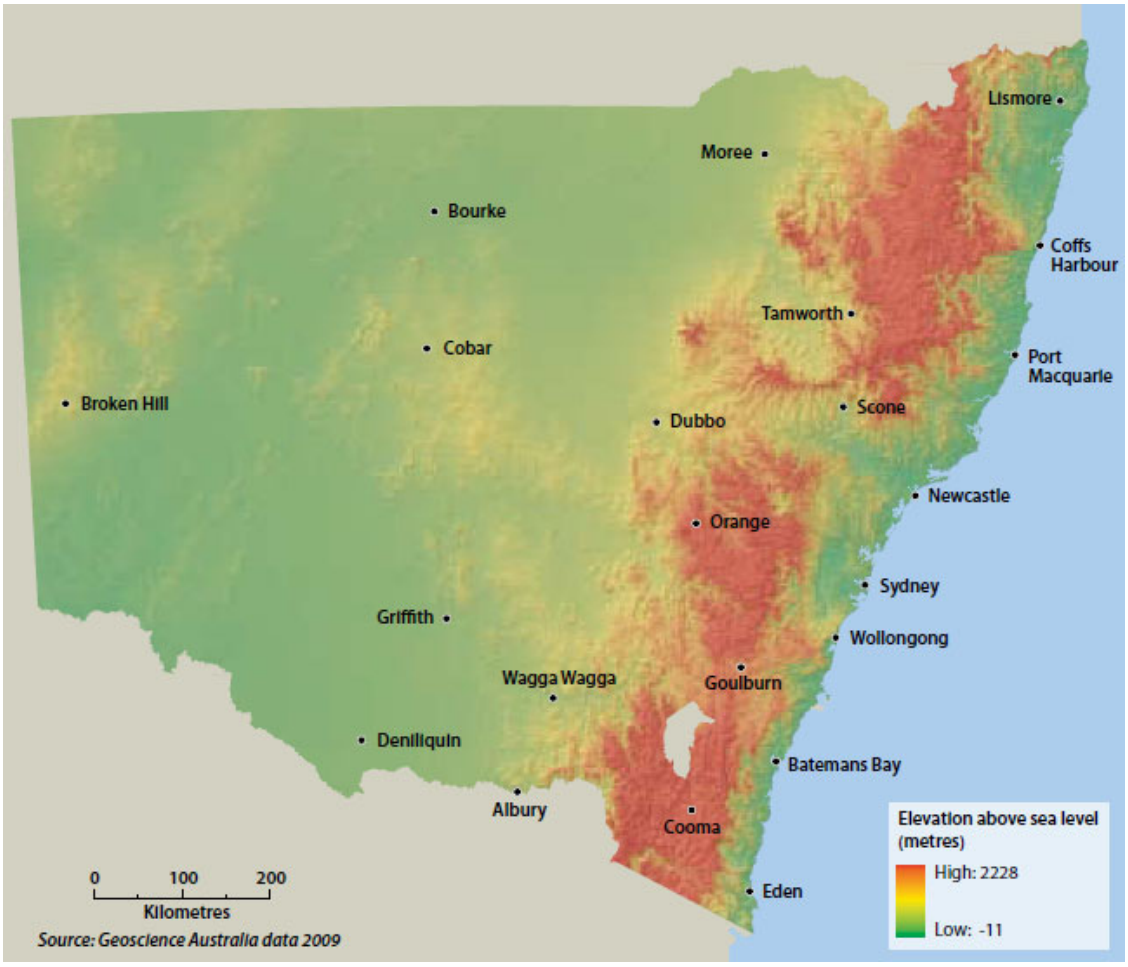
1.1 The physical environment of NSW

New South Wales, Australia's most populous state, is located in the south-east of the Australian continent. The state has an area of 800,642 square kilometres, approximately 10% of the total Australian landmass (Geoscience Australia 2008). Management of the NSW environment is made challenging by the diversity and complexity of the state's landscapes and ecosystems. The fertile agricultural areas along the coast and on the western slopes of the Great Dividing Range contrast with the semi-arid plains in the state's west, while the alpine and highland areas along the Great Dividing Range contrast with the coastal lowlands. NSW also boasts a diverse network of marine parks, including the World Heritage-listed Lord Howe Island.

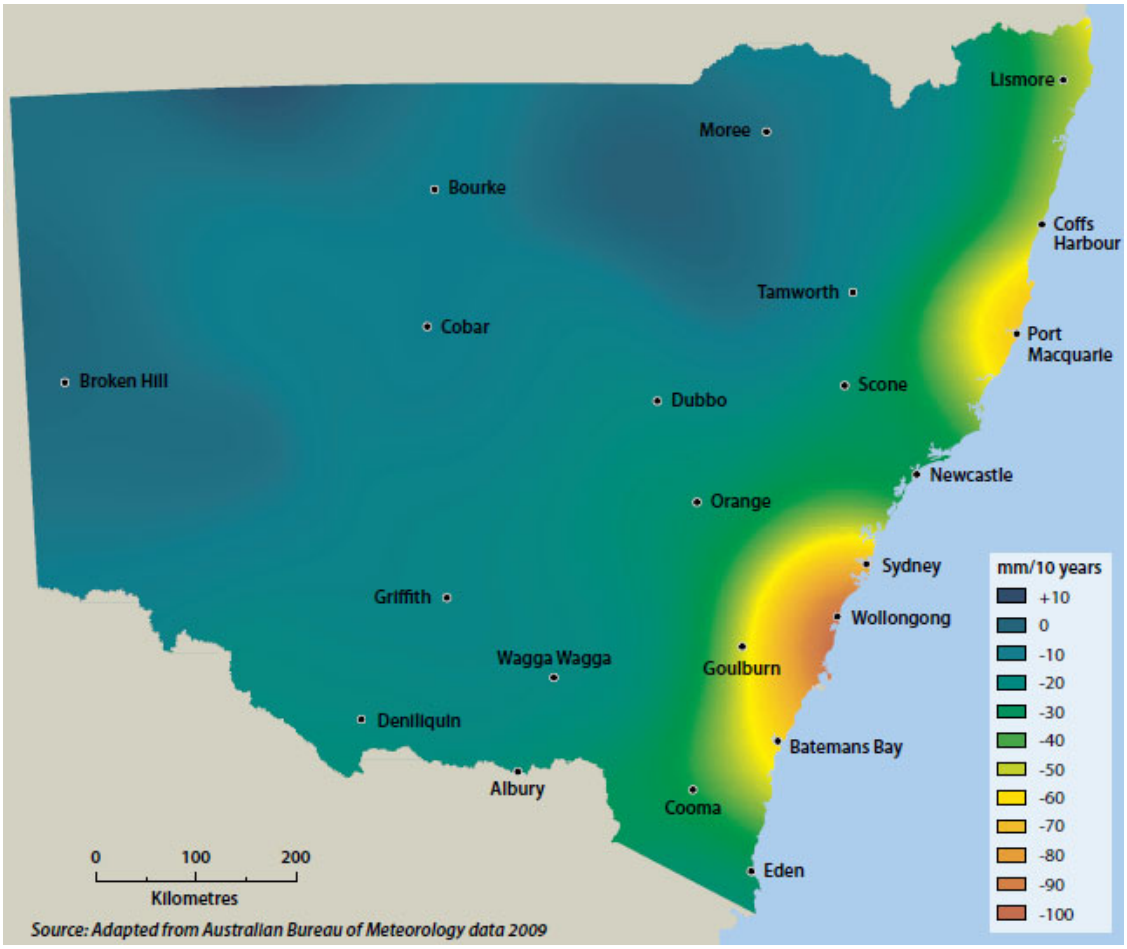
Climatic conditions

The climate of NSW is highly variable. While annual total rainfall across the state has generally decreased over the past 60 years (Map 1.2), NSW has also experienced a variety of extreme weather events, including storms and floods. The north-east of the state experiences predominantly summer rainfall and relatively dry winters. By contrast, agriculture in the south depends on regular rainfall from the cold fronts and cut-off lows that pass through south-eastern Australia during the winter growing season.

Map 1.1:
Relief map of NSW



Map 1.2:
Trend in annual total rainfall, 1950–2008



NSW has four distinct climate zones due to the influence of the Great Dividing Range: the high country, the coast, the western slopes of the range and the western plains. Temperature and rainfall vary greatly across these regions: for example, the higher elevations of the range are the coldest areas, while the north-west plains are the hottest; the east coast receives the most precipitation and the western areas of the state the least.

Natural variations in temperature and rainfall in NSW are influenced by the combined pressures on the eastern Australian climate of the El Niño – Southern Oscillation (ENSO), the Southern Annular Mode and the Indian Ocean Dipole (IOD).

It is now widely accepted that climate change also affects weather patterns, causing drier-than-average conditions and an increase in extreme weather events, such as heatwaves and droughts (CSIRO & BoM 2008); see the Climate Change Chapter for more details. Other atmospheric issues, including air quality, are discussed in the Atmosphere Chapter.

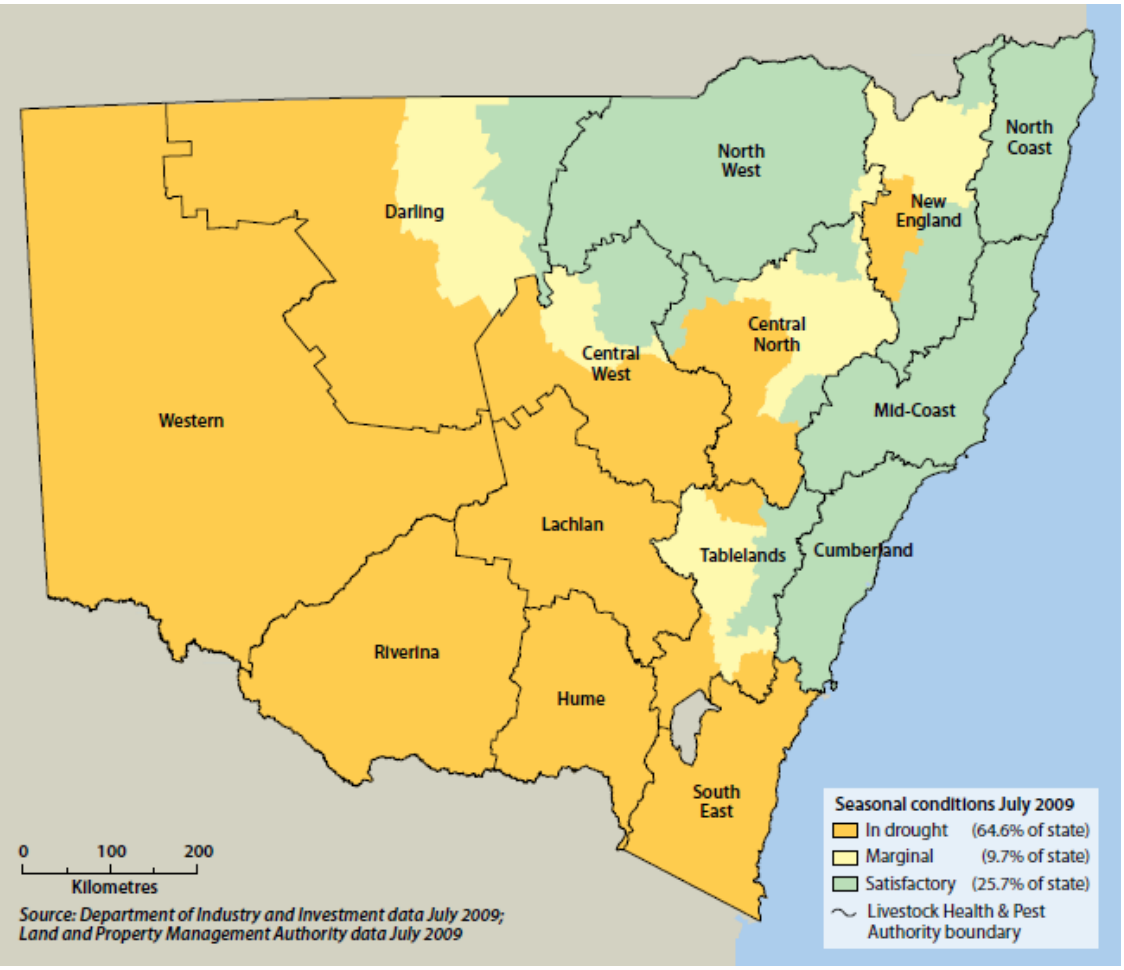
Hydrology

Hydrological issues are closely linked to changes in the climate of NSW. In early 2009, over half of NSW was classified as being in drought (Map 1.3). Drought levels have fluctuated over the past three years, with the worst conditions seen in February 2007 when 96.3% of the state was classified as being in drought. The impact of drought on water flows and the condition of rivers, wetlands, estuaries and coastal lakes in NSW is discussed in the Water Chapter.

Land

Australian soils are among the oldest and most fragile in the world. The health of our soil has a direct impact on the health of the state's biodiversity, water systems and agricultural productivity. There are many complex problems associated with NSW soils, including desertification, soil degradation, salinity, acidification and land contamination. The Land Chapter analyses the pressures, impacts and responses of soil-related issues in further detail.

Map 1.3:
Drought declared areas in NSW, July 2009



Biodiversity

Australia's extreme conditions and geographic isolation have resulted in a unique and diverse range of flora and fauna inhabiting the continent. Australia is home to more than one million species of native plants and animals, but modification of the natural environment since European settlement, including large-scale clearing and the introduction of invasive species, has resulted in high rates of extinction, particularly of mammals. In NSW, over 1000 native species, populations and ecological communities are currently listed as threatened with extinction. Further issues concerning biodiversity in NSW are explored in the Biodiversity Chapter.

Mineral and energy resources

NSW has substantial mineral resources, yielding a broad range of mineral and energy products, including coal, metals, and industrial and construction minerals. The total value of mining production in 2006–07 was $12.3 billion. The minerals industry is the state's largest export industry with coal, copper and gold as minerals and iron, steel and aluminium as processed metals the main mineral industry exports (DPI 2008).

Coal production accounted for approximately 66% of the total value of NSW mineral production in 2006–07. The Sydney–Gunnedah Basin contains most of the coal resources of NSW, with smaller quantities in the Gloucester and Oakland basins. Recoverable coal reserves are estimated to be over 12 billion tonnes. The NSW coal mining industry produced around 170.3 megatonnes (Mt) of raw coal in 2006–07, yielding 131.3 Mt of saleable coal, reflecting a 6% increase from the previous year's production (DPI 2009).

Coal and energy consumption is discussed further in Human Settlement 3.2.

1.2 Population and settlement patterns

The population of New South Wales grew 1.1% in 2007–08 to 6.97 million people. The state is implementing long-term strategic planning measures to guide development and improve natural resource management in response to the increased pressure larger numbers of people will present.

While population growth in the early 2000s was relatively slow, growth rates have increased above average in the last two years, largely due to increases in fertility rates and overseas migration. The state's population is projected to increase to 9.1 million people by 2036, putting further demands on the NSW environment.

The Government's long-term Metropolitan Strategy for Sydney has now been in place for four years and subregional strategies are being developed to guide planning on a local scale. Outside Sydney, regional strategies have been released for areas of rapid population growth, including the NSW coast, while regional conservation plans are also being prepared to reduce the adverse impact of development on the natural environment.

Use of these long-term strategies is designed to plan for the expected increases in population in a way that will maximise the environmental, social and economic sustainability of NSW.

Introduction

Natural increases and net overseas migration drive population growth in NSW. Demands for housing, transport, employment and infrastructure for waste disposal all increase as the population grows, along with energy and water use. Population growth can also increase fragmentation of fragile ecosystems, especially where per capita consumption is on the rise (see People and the Environment 1.3).

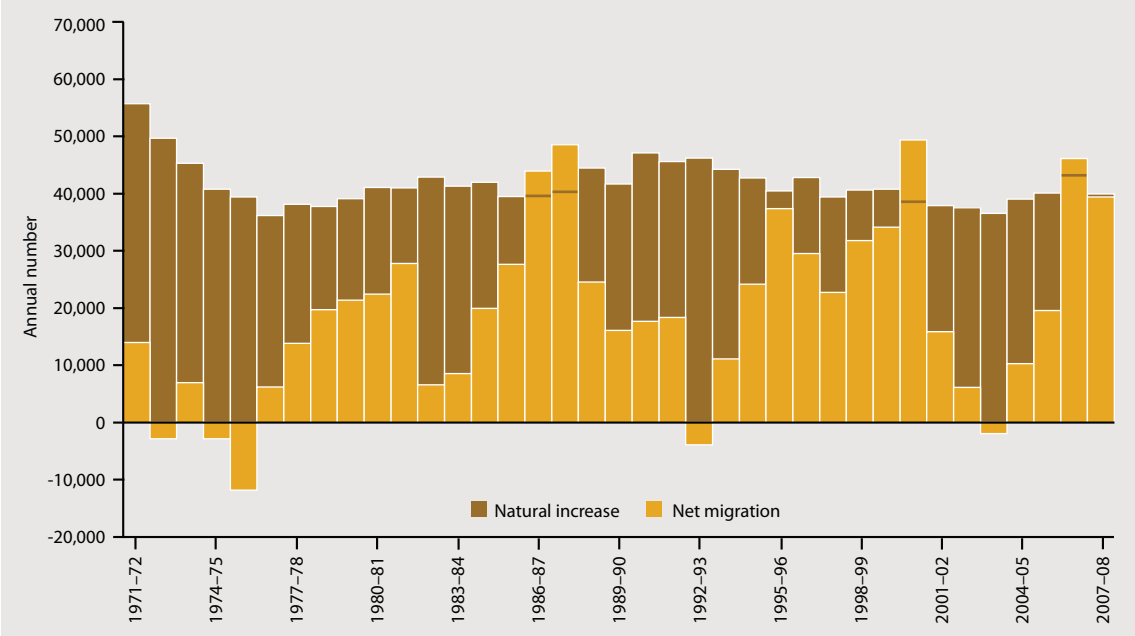
Status and trends

Population distribution and residential density

The preliminary estimated resident population of NSW in June 2008 was 6.97 million, representing just under a third of the total Australian population of 21.64 million (ABS 2009a). In the last two years population growth in NSW has picked up from the relatively slow increases of the early 2000s, with growth in the 2007–08 financial year reaching 79,000 (a 1.1% increase), significantly above the low of 35,000 in 2003–04 (ABS 2008a). This variation in growth is typical of population trends, mainly due to the cyclical nature of net migration, which includes interstate and overseas migration.

There was a major fall in the contribution of net migration to population growth in the early 2000s when net overseas migration fell and net interstate migration increased (Figure 1.1). More recently, the share of net migration has risen with an increase in net overseas migration and a reduction in losses from net interstate migration. While natural increase in 2007–08 was less than 2006–07, natural population growth in NSW is projected to slowly increase over the next two decades, and then gradually decline as the population ages.

Figure 1.1:
Natural increase and net migration in NSW, 1971–72 to 2007–08



Source: ABS 2008a; ABS 2009a

Notes: In some years shown on the graph, natural increase is below net migration.

Gains from net overseas migration and losses from net interstate migration are long-established migration trends for NSW. The population of the state is projected to increase to 9.1 million people by 2036, with 60% of this growth driven by natural increase (births minus deaths) and the remainder by net migration. This number is greater than previous projections due to an increase in fertility in recent years and high levels of net overseas migration (DoP 2008a).

Table 1.1 outlines NSW population trends within four major regions of the state. The Greater Metropolitan Region (GMR_1) encompasses only 2.2% of the total NSW landmass but has 75% of its population. Population growth in Sydney and GMR_1 has remained reasonably steady since 1981, with the lower net migration levels in 2001–06 being offset by substantial increases in 2006–08. The population of Sydney is projected to grow from 4.3 million in 2006 to 6.0 million in 2036. Growth rates in the coastal

Table 1.1:
Average annual population increase and growth rates in NSW regions, 1981–2006

Regions	Average annual population increase (growth rate)									
	1981–86		1986–91		1991–96		1996–2001		2001–06	
Sydney Statistical Division	38,400	(1.1%)	40,300	(1.1%)	41,700	(1.1%)	49,400	(1.2%)	30,700	(0.7%)
Greater Metropolitan Region (GMR_1)	41,400	(1.0%)	48,200	(1.1%)	47,500	(1.1%)	58,000	(1.2%)	37,400	(0.8%)
Coastal regions outside GMR_1	14,100	(3.2%)	17,800	(3.4%)	11,900	(2.0%)	10,400	(1.6%)	8,200	(1.2%)
Inland	3,800	(0.4%)	7,500	(0.8%)	1,700	(0.2%)	5,700	(0.6%)	2,500	(0.3%)
New South Wales	59,300	(1.1%)	73,400	(1.3%)	61,200	(1.0%)	74,100	(1.2%)	48,200	(0.7%)

Source: ABS 2006a

Notes: 'GMR_1' comprises all statistical local areas (SLAs)/local government areas (LGAs) in the Sydney Statistical Division (SD), Newcastle Statistical Subdivision (SSD) and Wollongong SSD.
'Coastal regions outside GMR_1' comprises all SLAs/LGAs in the Richmond–Tweed SD, Mid-North Coast SD and the following LGAs: Great Lakes, Shoalhaven, Eurobodalla and Bega Valley.
'Inland' comprises all SLAs/LGAs not included in either the GMR_1 or coastal regions outside GMR_1.

regions outside GMR_1 have declined, although they are still the fastest growing populations in NSW. Population growth in inland NSW has remained low. While some inland regions (Murrumbidgee, Murray and the Central West) are expected to experience modest population growth to 2036, others (Northern and North-Western regions) are expected to experience population decline (DoP 2008a).

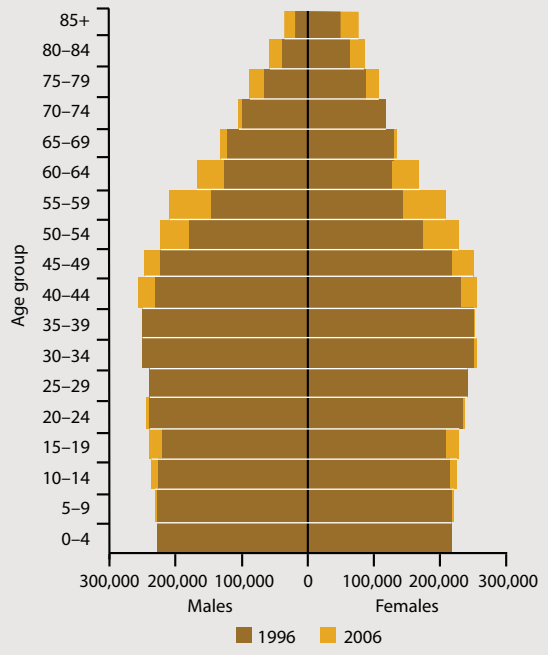
The pressure of population on the environment is enhanced by the number of short-term tourists visiting NSW. In the year ending September 2008, NSW received 2.8 million international overnight visitors, 54% of the Australian total. Of those, 2.7 million people visited Sydney. Additionally, NSW hosted 24.3 million domestic visitors, who spent a total of 82.2 million nights in the state. The large numbers of visitors create additional demands on the natural and built environments of NSW. Monitoring and projecting tourist numbers therefore is an important part of the planning process (Tourism NSW 2008a; Tourism NSW 2008b; Tourism NSW 2008c).

Demographic change and household and family structure

The population of NSW is shifting in age distribution as well as geographic distribution. A key demographic process occurring throughout the state, as elsewhere in Australia, is population ageing: an increase in the proportion of the population in the elderly age brackets (usually defined as 65 years and above). This demographic ageing effect is occurring as a result of past falls in the fertility rate and increasing life expectancy. Figure 1.2 illustrates how the state's population has aged over the 10 years between 1996 and 2006.

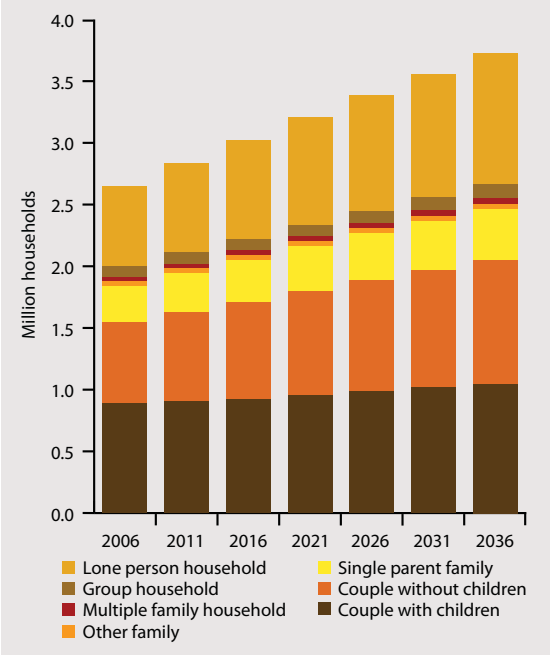
Changes in age structure is a key influence on changing household structure because the propensity to live in different household types varies considerably by age (ABS 2005). Figure 1.3 shows household projections for NSW for 2006 to 2036 (DoP 2008b). Over this 30-year period, the total number of households is expected to increase from 2.65 million in 2006 to 3.72 million, including an extra 740,000 households in Sydney. The largest percentage increases are forecast for lone person households (up 64% by 2036) and couples without children (up 53%). Overall average household size is projected to fall slightly from 2.53 to 2.38 between 2006 and 2036.

Figure 1.2:
Age-sex structure of the NSW population, 1996 and 2006



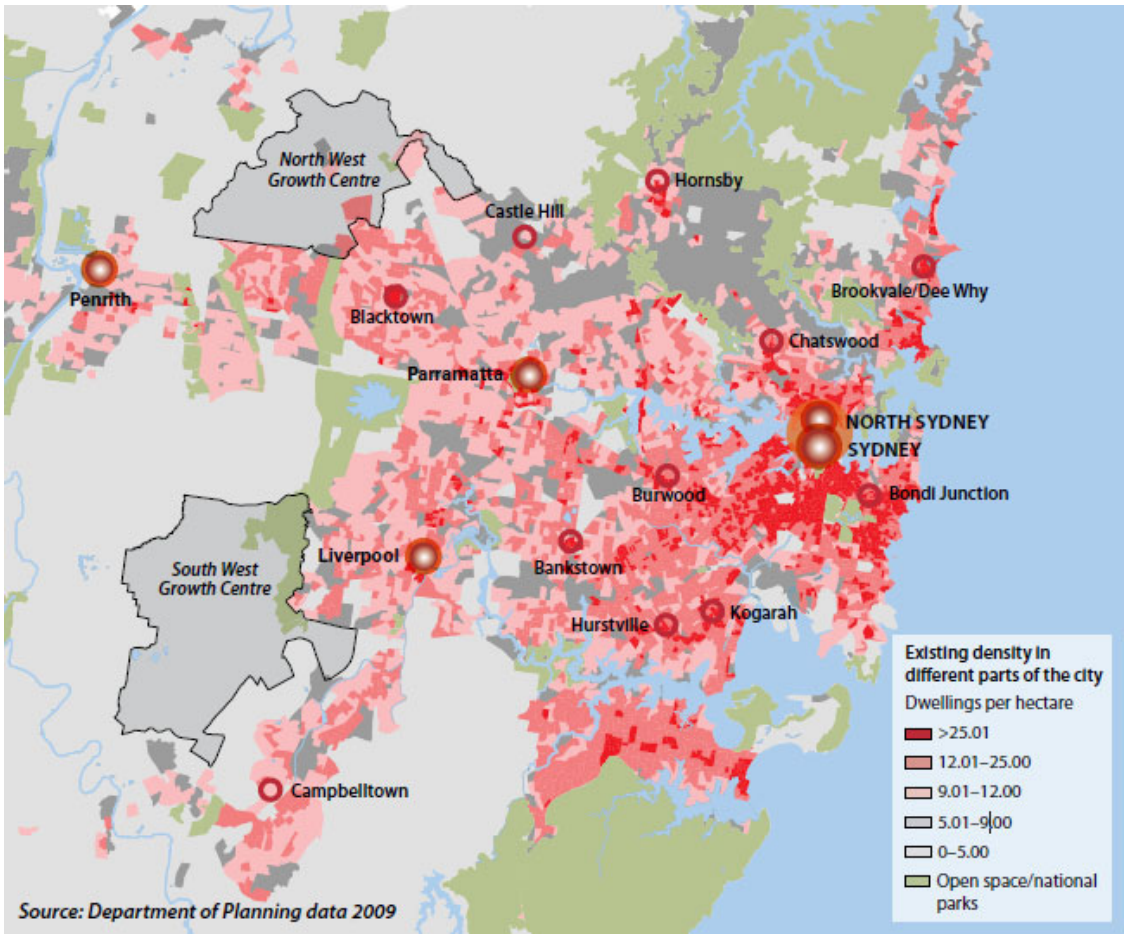
Source: ABS 2006a

Figure 1.3:
Projections of households by type, NSW, 2006–36



Source: Department of Planning data 2008

Map 1.4:
Residential density, Sydney Metropolitan Area



Notes: Map is diagrammatic only.
Whole 2006 census collector districts are shaded rather than actual housing lots.
Density is in dwellings per hectare of residential and commercially zoned land.

Residential density patterns

The density of the eastern part of the Sydney Metropolitan Area is significantly higher than the western portion, but there are clusters of higher density development around centres and train stations throughout the city (Map 1.4). The eastern part has been extensively redeveloped since initial development took place, while in the west many dwellings are the first since the land was developed for housing.

Housing affordability

State Plan 2006: A new direction for NSW lists housing affordability as one of the State Government's environmental priorities (NSW Government 2006a). The development of affordable housing has close links with infrastructure, transport and urban sustainability. Existing urban areas have been the sites of most new dwellings in Sydney since 2003–04. In 2006–07 the share was 84% but this is expected to progressively drop back towards the 70% benchmark on affordable housing under priority E6 of State Plan 2006 (discussed in Responses below). In the 10 years to July 2007, just over 249,000 dwellings were built in the existing urban areas of Sydney, with almost 103,000 (41%) built in transit nodes, the walkable catchment of 800 metres from a rail station and 400 m from a major bus node or light rail stop.

A review of State Plan 2006 commenced in August 2009 and this may adjust some of the plan's priorities and targets.

The potential of greenfield release areas on the metro fringe to provide for further residential development has increased over the past three years, mainly as

a result of Government action. Production in these areas has been around 2300 dwellings per year over that period. Stocks of zoned and serviced land have increased and are sufficient to meet demand for more than 16 years. This provides a generous supply buffer and ample scope to accommodate any improvement in the housing market generated by the economic stimulus initiatives and an upturn in the property cycle.

Pressures

Pressures resulting from population growth are complex and need to be managed appropriately. Population growth places extra demands on infrastructure and natural resources, yet also brings economic and social benefits. The Government aims to mitigate the negative impacts of growth through long-term planning strategies. Further pressures resulting from population growth, such as water and energy consumption, transport demands and waste, are discussed in the Human Settlement Chapter.

Responses

Sydney Metropolitan Strategy and subregional strategies

The NSW Government planning strategy, *Metropolitan Strategy: City of Cities – A plan for Sydney's future*, which provides the planning framework for growth in Sydney to 2031, has been in place for four years (DoP 2005). The strategy's Action G5.6 outlines a five-yearly review process to coincide with the census cycle. The first of these reviews is due to commence soon for delivery in 2010.

One of the five core aims of the Metropolitan Strategy is to 'Protect the environment – protect Sydney's unique environmental setting and reduce the use of natural resources and the production of waste'. The strategy's initiatives and objectives E1–E4 establish targets for sustainable growth, seek to protect Sydney's natural environment, achieve sustainable use of natural resources, and protect valuable rural activities and resource lands. In addressing Sydney's environmental challenges, the strategy includes actions to conserve biodiversity, protect air quality, manage with less water, move towards cleaner energy, protect viable agriculture and resource land, and respond to the risk of climate change (DoP 2005).

The metropolitan area of Sydney has been arranged into 10 subregions that combine local government areas sharing similar issues and challenges in planning for growth and managing change.

Draft subregional strategies with 25-year time frames have been publicly exhibited for all of the subregions. These draft strategies provide a broad framework for the long-term development of each area by applying metropolitan housing and job capacity targets at a local level. The proposed strategies also provide context for the preparation of local environmental plans (LEPs), which guide local land-use planning (DoP 2007).

The Metropolitan Strategy and draft subregional strategies employ the concept of 'strategic centres' that focuses on the regional cities of Global Sydney, Parramatta, Liverpool and Penrith, as well as numerous major and specialised centres. The strategies aim to ensure there is at least one significant centre with cultural, entertainment, retail and employment opportunities within easy reach of all in the community. The strategies also require that a significant majority of all new housing is located within walking distance of existing and new centres. This aligns with the target under Priority E5 of State Plan 2006, which seeks to increase the number of people who live within 30 minutes by public transport of a city or major centre (NSW Government 2006a).

Regional strategies and regional conservation plans

The Metropolitan Strategy is complemented by regional strategies that have been released for the Far North Coast, Mid-North Coast, Lower Hunter, Central Coast, Illawarra, South Coast and the Sydney–Canberra corridor. In addition, the Draft Murray Regional Strategy will be released for public consultation in 2009. The regional strategies complement regional infrastructure requirements identified in the State Infrastructure Strategy 2008–09 to provide a coordinated statewide approach to infrastructure management. Councils are required to consider and be consistent with the vision, policies and actions of the relevant regional strategy when preparing their LEPs.

Some of the regional strategies are also linked to regional conservation planning processes so that areas of environmental and conservation value are identified and protected through regional conservation plans. The first of these plans, the *Lower Hunter Regional Conservation Plan*, was adopted by the NSW Government in 2009. Draft regional conservation plans are expected to be released for the Far North Coast and South Coast in late 2009.

Housing affordability

The NSW Government recognises the importance of affordable housing to maintaining a vibrant, healthy and fair community. Under Priority E6 of State Plan 2006, the Government is planning for 640,000 new dwellings to be built in the Sydney Region between 2004 and 2031, with 445,000 of these in existing urban areas and the remainder in greenfield locations. The Government also aims to have 55,000 zoned and serviced lots ready for development by 2009 (NSW Government 2006a).

Using the Metropolitan Strategy and the Metropolitan Development Program, the NSW Government has initiated a number of programs and services to address housing affordability, seeking to meet the targets under Priority E6. In addition to the new dwellings planned for the Sydney Region, the Government is using the regional strategies to plan for at least 300,000 new dwellings in regional areas.

Reforms

State Environmental Planning Policy (Affordable Rental Housing) 2009 was gazetted in July 2009 to encourage the private and community housing sectors to form new partnerships to create affordable housing. The SEPP will help increase the amount and diversity of affordable housing in the state. Low-rise development, such as villas and townhouses, will be permissible in all residential zones on sites close to public transport. Granny flats will be easier to construct under the SEPP as will new generation boarding houses which will feature modern self-contained accommodation. There are also substantial benefits to public housing under the new SEPP. The planning policy is complementary to the Australian Government's Nation-Building Economic Stimulus Plan and will increase the supply of public housing and thus help reduce the demand on private low-rental accommodation stock.

State Environmental Planning Policy (Rural Lands) 2008 has been introduced to provide additional certainty for rural lands across NSW. The SEPP applies to local government areas outside the Sydney metropolitan area, Newcastle, Gosford, Wyong, Wollongong and Lake Macquarie. Councils are not required to review minimum subdivision standards for rural land, but where they do, any new standards will need to be consistent with the principles of the Rural Lands SEPP. Other reforms have improved the plan-making process under Part 3 of the *Environmental Planning and Assessment Act 1979* to:

- encourage a strategic approach to land-use planning, giving a sustainable balance between population needs and protection of the environment
- allow a streamlined approach to better target key issues that need to be investigated and resolved in land-use planning
- better connect to infrastructure planning by councils.

Future directions

From 2006 to 2036 the population of NSW is projected to grow by over 2.3 million as natural increase and net overseas migration drive growth; in this period Sydney's population is projected to grow by 1.7 million people. High levels of net overseas migration to Sydney will continue to be partially offset by net migration losses from Sydney to other parts of the state and interstate. The ageing of the population means that there will be an increasing number of people in the older age brackets, which may considerably alter labour force dynamics and commuting patterns. The environmental implications of the population living in an increased number of smaller households, especially lone person households, are also uncertain.

These trends place pressure on existing urban areas and their infrastructure, as well as biodiversity, native vegetation, green spaces, and rural and resource lands. The Sydney Metropolitan Strategy and supporting subregional strategies will provide a strong, long-term planning framework for managing growth in Sydney over a 25-year period. The strategies aim to contain the urban footprint and concentrate the majority of employment and housing growth in existing and planned centres. An ongoing challenge will be to ensure land use is controlled sustainably by strengthening local and strategic centres in order to more efficiently provide the necessary infrastructure to service the community. Regional strategies provide a similar framework for ensuring housing and employment needs are accommodated while protecting and enhancing the environment in growth areas of NSW.

The first major review of the Metropolitan Strategy is under way with outcomes due to be reported in 2010. The review will ensure that the strategy remains relevant as the key document guiding land-use planning for government in the Sydney Metropolitan Region until 2036. The review will consider and respond to new information and changing circumstances, including the latest population and household projections, and take into account the impacts on the Sydney Region of the global financial crisis, reprioritisation of infrastructure and climate change.

1.3 Sustainability and consumption

The ecological footprint of New South Wales has increased from 6.35 hectares per capita in 1998–99 to 7.02 ha in 2003–04. Over the same period, Sydney's ecological footprint grew from 6.67 to 7.21 ha per capita. While the growth of the ecological footprint of Sydney has slowed, ongoing increases in aggregate consumption in NSW continue to put pressure on resources.

The calculation of the ecological footprint is based on the latest available Household Expenditure Survey from the Australian Bureau of Statistics for 2003–04. For the state as a whole, the growth in the ecological footprint reflects a steady increase in consumption and waste generation over the past 10 years. The growth in Sydney's per capita ecological footprint has stabilised recently.

Total NSW household consumption expenditure has increased from $161 billion in 1999–2000 to $206 billion in 2008–09, reflecting a per capita increase of 17% over the period (adjusted for inflation). The greatest percentage increases in expenditure were on recreation and communications, as well as rent, household services and energy.

Introduction

Definitions of 'sustainability' are many and varied. However, a widely accepted definition of 'sustainable development' is 'development which meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED 1987). This recognises that populations will continue to grow and development will still occur; however the focus of *sustainable* development is to ensure this ongoing growth and development is accomplished without limiting the resources available for future generations.

Sustainability is inextricably linked to consumption, especially in the context of non-renewable resources, such as coal, petroleum and natural gas. The challenge of sustainability is to reduce the ecological impact of consumption, while maintaining or improving the living standards of society.

The NSW Government recognises the need for ecological sustainability and reflects this in its policy and legislation. Section 6(2) of the *Protection of the Environment Administration Act 1991* broadly describes the principles of ecologically sustainable development, stating that it 'requires the effective integration of economic and environmental considerations in decision-making processes'.

This section focuses on the assessment of sustainability as well as consumption trends.

Status and trends

Sustainability

Measuring sustainability requires a thorough assessment of environmental, social and economic indicators weighted to reflect the relative importance of the various components. One commonly used measure, the ecological footprint, estimates sustainability by converting consumption into a single index: the land area that would be needed to sustain a state's population indefinitely. Other measures, such as the Environmental Sustainability Index and the Environmental Performance Index, are also useful for providing comparisons on a global scale. Ecological sustainability should be considered alongside other economic and social measures. A number of economic methodologies used to

measure sustainable development are summarised in Appendix 1.

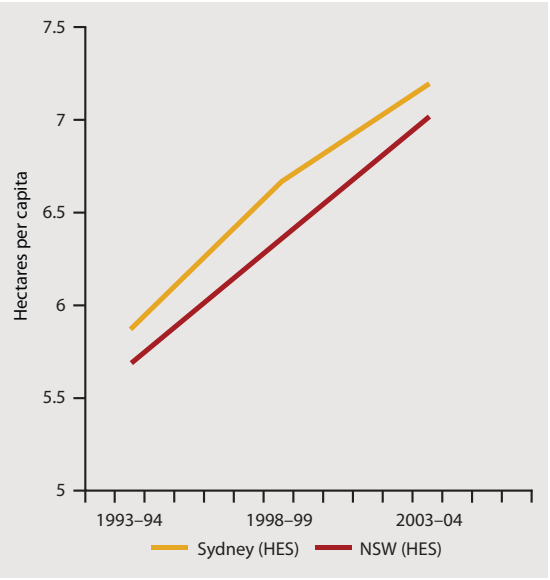
Ecological footprint

The 'ecological footprint' of a population is the notional amount of biologically productive land required to produce the ecological resources the population consumes and absorb the waste it generates. First conceived in 1992 (Rees 1992), the ecological footprint of the state has been discussed in all NSW SoE Reports since 1997.

The ecological footprint for NSW has been calculated using the latest available Household Expenditure Survey (HES) data produced by the Australian Bureau of Statistics (ABS) for 2003–04. While different datasets may be used, the footprint analysis using the HES is the most accurate as the ABS data is based directly on surveyed expenditure data. This differs from the ecological footprint reported in SoE 2006 which was calculated using the 1996 and 2001 Australian Censuses, which provided estimated expenditure data. As a result, the 2006 and 2009 measures are unable to be compared.

The per-capita ecological footprint of Sydney is higher than that of NSW, while the latter is above that of the average Australian ecological footprint. This is probably due to the greater affluence of households and populations in Sydney compared with NSW, and NSW compared with the average Australian household.

Figure 1.4:
NSW ecological footprint



Source: DECCW data 2009

Notes: Figures are independent of inflation.
Sydney (HES) refers to the Sydney Statistical Division.

According to Department of Environment, Climate Change and Water (DECCW) data, the ecological footprint of Sydney in 2003–04 was 7.21 hectares per capita and the NSW footprint 7.02 ha per capita, while the footprint for Australia was 6.90 ha per capita.

The per-capita ecological footprint of Sydney and NSW increased during the study periods shown in Figure 1.4, most likely due to an improving living standard. The footprint of NSW as a whole, however, has increased more than Sydney's in recent years, meaning that the footprint of regional NSW is growing at a faster rate. This is probably the combination of a relative increase in total expenditure in households outside Sydney, which has reduced the difference in spending patterns compared with Sydney, and a large growth in mortgage and housing-related costs in Sydney over the past decade, resulting in less disposable income for its citizens. The most recent 2006 Australian Census indicates that Sydney's ecological footprint is continuing to stabilise (DECCW data 2009).

The most significant components of the NSW ecological footprint are retail trade; hotel, clubs, restaurants and cafes; fresh meat; and meat products. The percentage contribution of these components has not changed since *NSW State of the Environment 2006* (DEC 2006a). Most of the total ecological footprint is due to land disturbance and not greenhouse gas emissions. Indirect upstream ecological footprint contributions are more important than on-site ecological footprints.

Environmental Sustainability and Performance Indexes

A global comparison by the Global Footprint Network found that Australia has the fifth-highest ecological footprint of all nations, which is over three times the global average (Ewing et al. 2008). While the ecological footprint is perhaps the most widely used measure of sustainability, other broad measures such as the Environmental Sustainability Index (ESI) and the Environmental Performance Index (EPI) are able to provide further global context.

The ESI benchmarks the ability of nations to protect their environment into the future (Esty et al. 2005) and is a long-term measure of a country's capacity for ecological sustainability. The ranking is based on 21

indicators from five broad categories: environmental systems; environmental stresses; human vulnerability to environmental risk; social and institutional capacity to respond to issues; and global stewardship.

The most recent ESI calculation in 2005 ranked Australia's performance 13th overall out of 146 countries, which reflects the country's good environmental systems, low vulnerability and high capacity to respond.

The EPI measures a country's current environmental performance, based on 25 indicators across six policy categories: environmental health; air pollution (effects on ecosystems); water (effects on ecosystems); biodiversity and habitat; productive natural resources; and climate change. Australia's performance in 2008 was ranked 46th out of 149 countries, a drop from the 2006 ranking of 20th (Esty et al. 2006; Esty et al. 2008).

While Australia performed relatively well in environmental health, productive natural resources and biodiversity, its overall ranking suffered due to poor assessments of its policies and performance on air pollution, water and climate change. These lower rankings were related to pressure on Australia's water resources, high greenhouse gas emissions per capita due to high fossil fuel energy consumption and exports, and failure to implement ambitious national greenhouse gas emission reduction policies (Esty et al. 2008). This ranking differs from the ecological footprint ranking as 50% of the EPI score came from the environmental health assessment, a measure not included in the footprint calculation. The 2008 EPI also weighted climate change more heavily, which is reflected in the drop in Australia's overall ranking.

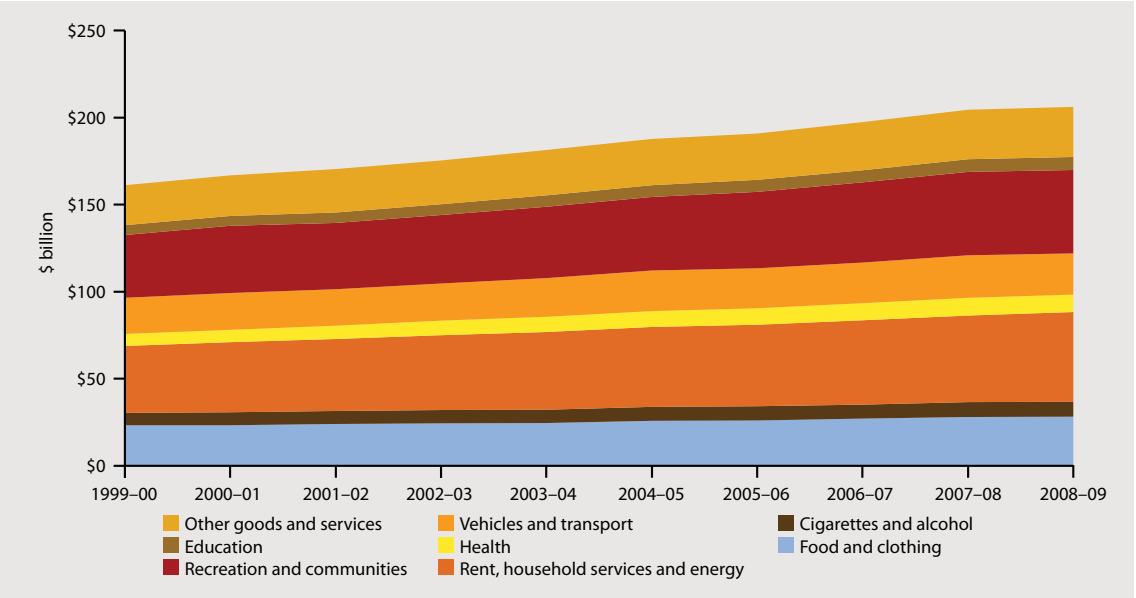
Consumption

Consumption is an important component of economic activity (see People and the Environment 1.4). It is essential, however, that the ecological impact of consumption is minimised.

On a global scale, Australia has a history of high consumption, which has developed due to a high standard of living, a wealth of natural resources and an agricultural industry largely reliant on irrigation. Compared with other Organisation of Economic Cooperation and Development (OECD) countries, Australia has:

- the highest per capita greenhouse gas emissions (Garnaut 2008)
- the second-highest per capita water consumption and sixth-highest primary energy supply per capita (OECD 2009)
- the third-highest per capita generation of waste (ABS 2007a).

Figure 1.5:
Total NSW household consumption expenditure



Source: ABS 2009b

Notes: Figures are independent of inflation.
Time periods are for the year ending 31 March.

General NSW consumption trends

Total NSW household consumption expenditure rose from $161 billion in 1999–2000 to $206 billion in 2008–09 (figures for the year ending 31 March and independent of inflation) (see Figure 1.5). Taking population growth into account, this reflects a per capita increase of 17% since 1999–2000 (ABS 2009a; ABS 2009b).

Expenditure increased across a broad range of categories, with steep rises in recreation and communications, and rent, household services and energy (ABS 2009b). However, the recent impact of the 'global financial crisis' on consumption is apparent, with per capita expenditure on food and clothing, cigarettes and alcohol, vehicles and transport, recreation and communications, and other goods and services all decreasing in 2008–09 from the previous year.

Water consumption trends

Water consumption has fallen in NSW in recent years, largely due to limited water availability, as well as successful water-savings programs. In 2000–01, total water use in the state (including the Australian Capital Territory) was 8783 gigalitres (GL). By 2004–05, this had fallen to 5978 GL, a reduction of 32% over the four-year period (ABS 2006b). In Sydney Water Corporation's area of operations, total water consumption has dropped to levels similar to those in the 1970s. Per capita consumption in this area of operations between 2005 and 2008 decreased 11% from 343 litres per person per day to 306 L. These residential savings are largely the result of water recycling and efficiency programs, reduction in leaks from the supply system, water restrictions and positive community response to water savings (SWC 2008) (see Human Settlement 3.1 and Water 6.1).

Energy consumption trends

The consumption of energy from non-renewable sources has consistently increased over the past 40 years: energy consumption from coal has risen from 350 petajoules (PJ) in 1960–61 to 807 PJ in 2006–07, while that from petroleum has grown from 174 PJ to 567 PJ over the same period (ABARE 2008a). Consumption of energy from renewable sources has had a minimal increase over the last 40 years (see Figure 3.5 in the Human Settlement Chapter). Primary energy consumption in NSW is projected to increase from 1544 PJ in 2005–06 to 2086 PJ in 2029–30 (Syed et al. 2007).

See Human Settlement 3.2 for a more detailed discussion on energy production and use.

Pressures

The need for ecological sustainability must be considered in the context of other competing needs, including economic prosperity and social improvement. People and the Environment 1.4 shows that these needs do not exist in isolation and pressures on sustainability are linked to economic and social pressures.

The need to reduce the state's ecological footprint is also discussed in People and the Environment 1.4. This concept can be broadly applied to overall consumption. It is important that new technologies and land-management practices are developed and refined so that increasing consumption of energy, water and land does not have a negative impact on the state's environment and natural resources. This is a clear imperative in current patterns of energy use, which rely largely on high greenhouse gas-emitting fossil fuels. It is less evident, although the same principles apply, in often expansive land-use practices which place increasing pressure on our natural resources and biodiversity.

Positive community attitudes and actions are critical to achieving sustainable environmental and natural resource outcomes. Community attitudes, actions and education are discussed in People and the Environment 1.5.

Discussions on sustainability are often linked with those on climate change because increases in consumption frequently result in greater greenhouse gas emissions. Climate Change 2.2 analyses these and NSW responses to them.

Responses

Responses to the issues of sustainability and consumption are found throughout SoE 2009. Some specific examples that directly focus on sustainability are provided below.

State Plan 2006

State Plan 2006: A new direction for NSW (NSW Government 2006a) lists a number of priorities for the NSW Government that have specific sustainability components:

- *Priority E1: A secure and sustainable water supply for all users*, which will improve water efficiency, increase water recycling and restore water extraction to sustainable levels
- *Priority E2: A reliable electricity supply with increased use of renewable energy*, which will reduce the environmental impact of energy production

- *Priority E3: Cleaner air and progress on greenhouse gas reductions*, which is linked to Priority E2, and will reduce greenhouse gas emissions by lowering consumption of fossil fuels
- *Priority E4: Better outcomes for native vegetation, biodiversity, land, rivers and coastal waterways*, which aims to make our natural resource industries sustainable.

A review of State Plan 2006 commenced in August 2009 and this may adjust some of the plan's priorities and targets.

NSW Government Sustainability Policy

The 2008 NSW Government Sustainability Policy outlines how the Government will lead by example by ensuring that all Government agencies:

- consider sustainability in their decision-making
- reduce their greenhouse gas emissions
- are more efficient in their use of energy and water, and reduce wider environmental impacts associated with that use
- meet the challenge of rising prices expected for energy, water and waste management
- are more efficient in their use of vehicles
- produce less waste and increase recycling in their activities
- use purchasing power to drive efficiency and environmental sustainability.

Other programs

The Sustainability Advantage Program encourages medium-to-large businesses to adopt sustainable business practices, while NSW Sustainability Compacts are agreements for government-business partnerships designed to improve environmental performance (see People and the Environment 1.5).

The $150-million NSW Greenhouse Energy Efficiency Strategy targets high energy users to reduce their greenhouse gas emissions by using energy more efficiently (see Climate Change 2.2).

The *2006 Metropolitan Water Plan* (NSW Government 2006b), the Building Sustainability Index (BASIX), and the *NSW Waste Avoidance and Resource Recovery Strategy 2007* (DECC 2007a) all focus on reducing consumption (see, respectively, Human Settlement 3.1; Human Settlement 3.2; and Human Settlement 3.4), while other programs are targeting sustainable land management (see the Land Chapter).

Future directions

While the NSW Government has developed a range of programs to reduce water and energy consumption, overall per capita consumption in NSW has continued to increase. With the added effect of population growth, the total consumption of the population of NSW is increasing at a rate that may no longer be sustainable in the future.

The relationship between ecological sustainability, economic prosperity and continued social improvement is complex. People will continually strive for economic growth and aim to increase their standard of living, but it is essential that this growth is environmentally sustainable. This can be achieved through innovative programs improving the efficiency of resource use. However, as well as Government action driving improvements in energy and water efficiency, a shift in social attitudes and actions is required (see People and the Environment 1.5). The true cost of consuming fossil fuels needs to be considered, with the Government using educational tools, market-based instruments and focused regulation to actively drive sustainable outcomes.

1.4 Economics and the environment

Until the global financial crisis triggered a severe economic downturn in late 2008, New South Wales had experienced an extended period of economic growth, with gross state product increasing $7000 per capita in the preceding decade. Growth and downturn pose both opportunities and challenges for the environment.

Economic assessment frameworks can help to explain the complex interactions between the economy and the environment. Economic growth provides a range of benefits for society, including improved environment protection, but also places additional pressure on the environment through a growing demand for land, natural resources and energy.

Most environmental issues have strong connections with the economy and integrated solutions are required. The NSW Government uses a range of measures, including innovative economic instruments and regulations. These aim to improve overall economic efficiency and environmental outcomes. A broad focus on deploying new technology and improving productivity is the key to facilitating economic growth without detrimental effects to environmental quality.

Introduction

In the past, economic development has often been seen as conflicting with the goals of environment protection. Consistent with this view was the belief, and commonly the practice, that environmental matters should be considered separately from wider economic issues. There is now a much wider appreciation of the linkages between economic activity and environmental quality, and acceptance that policies need to take explicit account of these linkages to achieve the best outcomes for current and future generations.

NSW State of the Environment legislation has an important and unique requirement that SoE reporting includes 'an examination of trends in economic analysis and of the costs and benefits (including economic evaluation) of environment protection' (section 10 of the *Protection of the Environment Administration Act 1991*).

Status and trends

Economic growth

Economic growth is the increase in the value of goods and services produced in an economy over a period of time. It is normally measured by the annual percentage increase in gross domestic product or, in the case of NSW, gross state product (GSP). Growth is generally measured in real terms, which excludes the effects of inflation. Sustained growth in the economy can provide a range of benefits for society, including new employment opportunities, higher living standards, and improved infrastructure and community services.

Australia has recently enjoyed a period of economic prosperity, averaging real economic growth of 3.5% per annum over the decade to 2007–08. By comparison, all OECD countries averaged 2.6% growth each year over the same period. Until recently the Australian economy has benefited from a global resources boom, with rapidly developing countries

such as China and India fuelling strong growth in exports of coal, iron ore and other commodities. With a relatively smaller resource and mining industry compared with some other states, NSW posted more modest economic growth than the nation as a whole, averaging 2.8% per annum in real terms over the decade to 2007–08 (Figure 1.6).

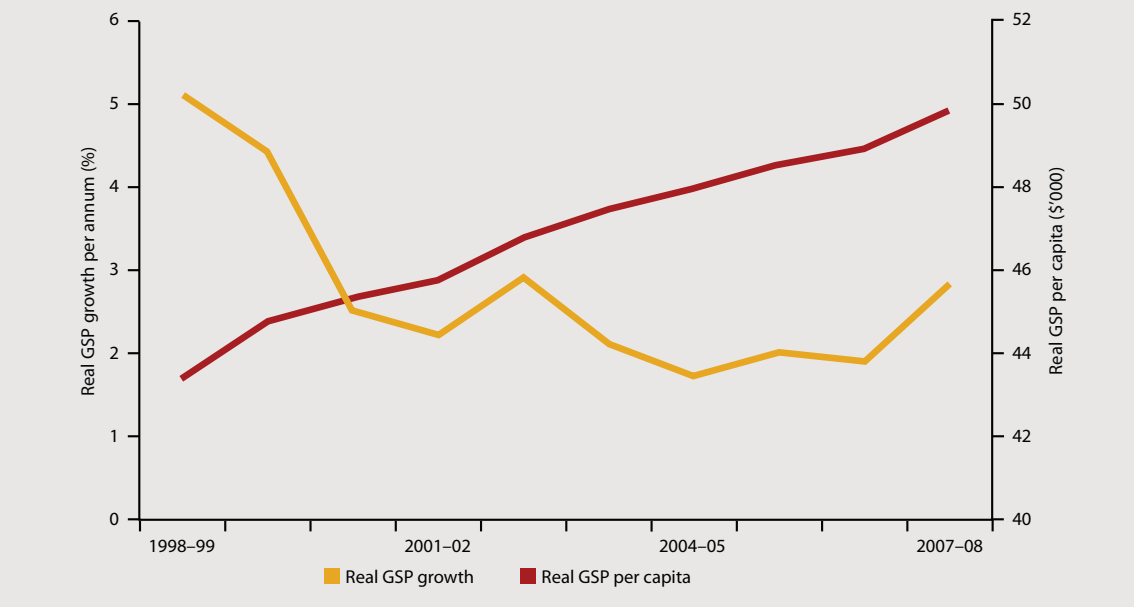
Economic growth has been accompanied by a growing population (see People and the Environment 1.2). The NSW population has been growing at an average rate of about 1% per annum over the past 10 years, well below the state's average rate of economic growth. With the economy growing at a faster rate than the population, NSW has become an increasingly wealthy society. Figure 1.6 shows that real GSP per capita rose from around $43,000 per person in 1998–99 to just under $50,000 per person in 2007–08.

With both total and per capita increases in economic activity, there is a growing need for land, natural resources and energy to produce goods and services. These requirements place the natural environment under increased pressure. A strong economic position, however, can also provide the opportunity to respond to environmental pressures using direct measures, such as remediating rivers, or indirect measures, such as environmental levies.

While the recent economic downturn was less severe than expected, it has contributed to slowing growth in household consumption (see People and the Environment 1.3), which may reduce pressure on natural resources and the environment. However, the environmental implications of an economic downturn are difficult to determine: for example, there is a risk that a fall in disposable income may mean that people are less willing to commit money to explicit environmental considerations in household spending decisions. Furthermore, tighter economic conditions may also result in less spending on direct environment protection and remediation measures. Nevertheless, the 2009–10 NSW Budget showed a continued commitment to the environment and natural resources, with budgeted expenditure of $1.9 billion (32% higher than in 2005–06).

The industry structure of the NSW economy is also important in determining environmental outcomes. Individual industries depend differently on raw materials and energy and generate varying amounts of waste and pollution. A notable trend in NSW over the past decade has been the growing importance of service industries, such as finance and insurance, which now account for over 75% of the value of NSW production. While still significant to the overall economy, the share of output from manufacturing industry has been falling. Manufacturing is a relatively

Figure 1.6:
Economic growth and real gross state product per capita, NSW



Source: ABS 2008b

Notes: Figures are independent of inflation. Reference year for chain volume measures is 2006–07.

energy-intensive industry, so a falling share of output from this sector and a growing share from less energy-intensive service industries contribute to reduced energy consumption per unit of economic activity (see also Figure 1.11).

Approaches to measuring ecologically sustainable development

Indicators such as economic growth and income per capita are useful in providing information about economic progress. However, these statistics generally do not directly report on the state of natural resources and the general condition of the environment, and hence do not permit analysis of whether economic development is sustainable.

As ecologically sustainable development spans environmental, social and economic considerations, a significant challenge exists in measuring the effect of current activities on future generations. Consistent with SoE legislative requirements for an examination of trends in economic analysis, Appendix 1 provides a summary of the recent evolution of economic approaches used to measure sustainable development.

Appendix 1 provides examples from two broad approaches to measuring sustainability. Economic approaches have in common the notion of increased (or at least undiminished) capacity to sustain current living standards. For example, the Genuine Savings approach to measuring sustainability looks at net changes in capital stocks of produced, human and natural capital. Sustainability in this context requires total capital stock to at least be maintained over time. Such economic approaches are 'weak sustainability' measures, as there are generally no restrictions on substituting between various forms of capital, such as produced capital for natural capital.

Biophysical approaches measure some concept of capacity relative to activity, and assess whether capacity is sufficient for the amount of current economic activity. For example, the ecological footprint measure is interpreted as the total land area required to indefinitely sustain a given population at the current standard of living, and at an average per capita consumption rate. Ecological footprints are discussed in People and the Environment 1.3. Biophysical approaches are based on 'strong sustainability', meaning existing natural capital must be maintained and enhanced. Biophysical measures are limited to the extent that they generally do not address the potential to substitute between various forms of capital, and assume fixed technology and institutional arrangements.

Pressures

Economic drivers of environmental change

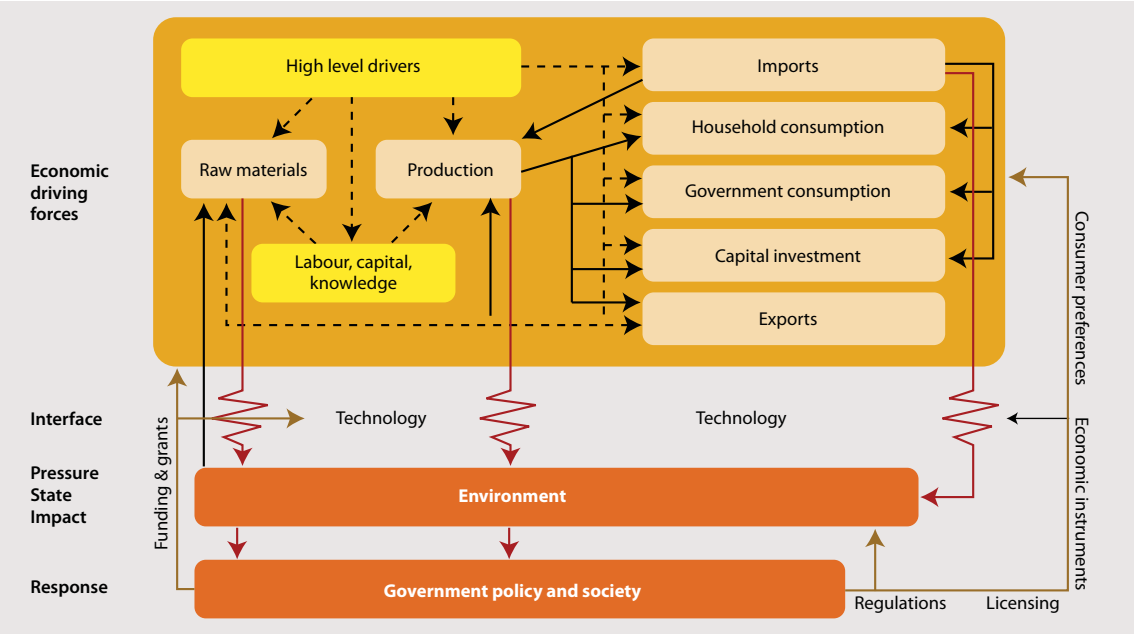
Recognising a link between economic activity and the environment has resulted in the development of environmental assessment frameworks that specifically capture the economy-environment relationship. One such framework is the Driving Forces-Pressure-State-Impact-Response (DPSIR) model originally developed for the European Environment Agency (EEA 1999).

The DPSIR framework consists of a chain of causal links starting with *driving forces*, which are the underlying economic and social factors influencing human activity. Driving forces exert *pressure* on the environment, generally in the forms of resource use, changes in land use and emissions of waste and other pollutants. Pressures alter the *state* of the environment, or have the potential to alter it if they are not managed appropriately. This modified state results in various *impacts* on the health of the environment prompting *responses* to undesirable impacts from society and policymakers. The range of response mechanisms, including regulations, economic instruments and consumer preferences, can affect any part of the framework between driving forces and impacts. Therefore responses can have either an indirect influence on the environment through changing the nature of economic activity, or a direct influence by changing ecosystem processes.

Figure 1.7 presents a modified version of the original DPSIR framework developed by the Department of Environment, Climate Change and Water (DECCW). The focus of this model is economic driving forces and accordingly includes a three-stage process of economic activity. There are other non-economic driving forces which also exert pressure. For example, naturally occurring variability in climate might reduce rainfall in certain areas and affect the quality of NSW river systems.

The solid black lines represent progression through each stage of economic activity. For example, raw materials are used as an input in production and imports may be used in production or consumed directly by households. The solid red lines indicate that each stage of economic activity affects the environment through the technology/pressure/state/impact relationship. The dotted lines represent an influence of one component on another. For example, technology as a high-level driver will influence the capital available to firms to produce output, and interest rates as a high-level driver will influence the level of investment in the economy.

Figure 1.7:
Driving Forces-Pressure-State-Impact-Response Framework



Source: DECCW

The level of demand for the end uses of production also influences future raw material extraction and production; thus there are interrelationships between all stages of economic activity.

Each stage of economic activity is affected by high-level drivers which include population demographics, incomes, interest rates, exchange rates, prices and technology. There are practical difficulties in identifying direct causal relationships between high-level drivers and environmental change. High-level drivers tend to have indirect effects. These drivers affect the scale and composition of economic activity, which in turn varies the pressure on the environment. There are also generally many drivers affecting the same form of pressure, making it difficult to isolate their individual influences. In some cases there is also a lack of reliable data on the state of natural resources, which hampers the process of mapping economic drivers to environmental conditions.

Motor vehicle travel and greenhouse emissions

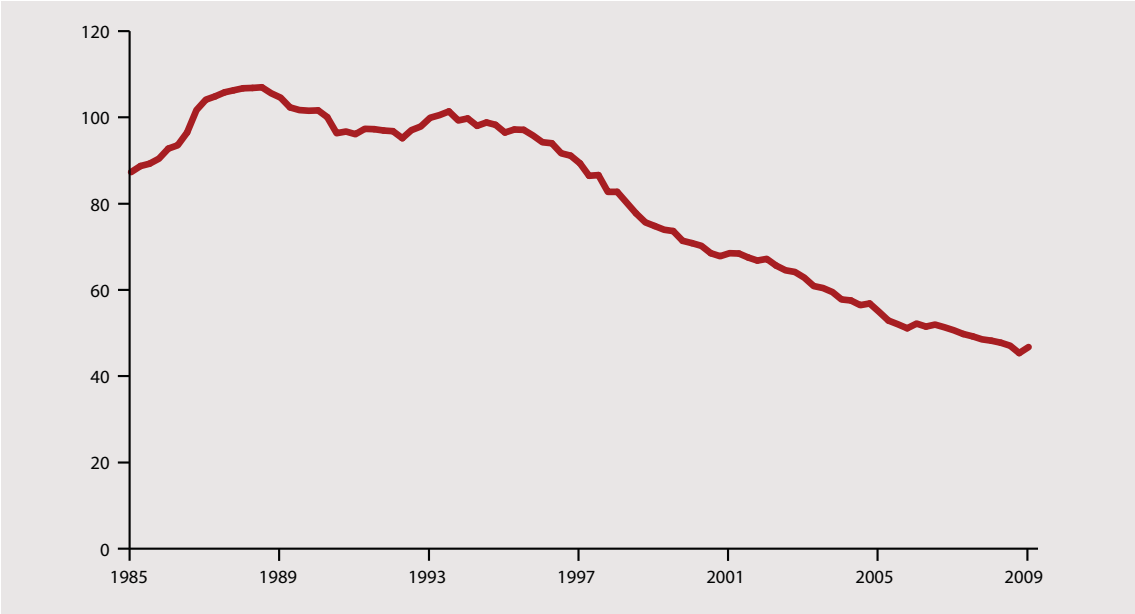
The DPSIR framework is best explained with an example. It is well known that trends in passenger transport will influence the level of greenhouse gas emissions. An overview of transport is provided in Human Settlement 3.3. Economic drivers have played a significant role in shaping passenger transport emissions.

Within Figure 1.7, passenger motor vehicle usage could be considered to be part of household consumption. There are several high-level economic drivers that influence motor vehicle usage. Among the most important are population growth, incomes, the price of motor vehicles and the price of automotive fuel.

In People and the Environment 1.2, the population of NSW was shown to be rising, with much of this increase due to net overseas migration. A larger population of driving age supports greater use of motor vehicles. As per capita real household incomes have also been rising, more people are able to afford to own and operate motor vehicles, which also supports greater usage.

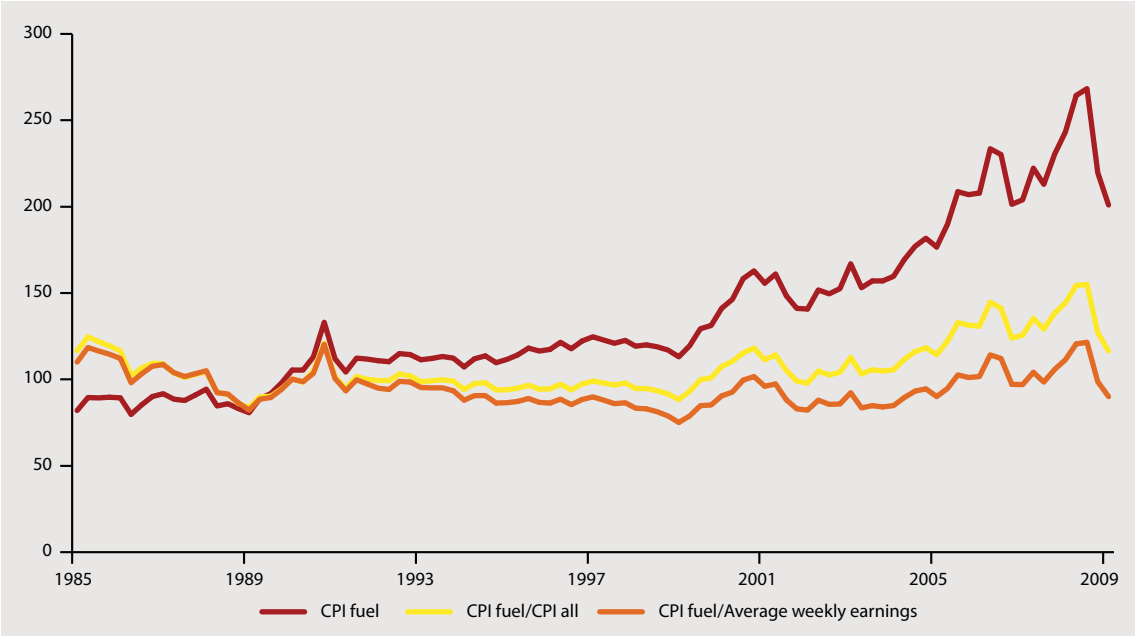
Over time, the affordability of motor vehicles depends on how their prices change relative to incomes. Figure 1.8 plots the purchase price of motor vehicles in Sydney (taken from Consumer Price Index (CPI) data) relative to NSW adult average weekly earnings. The chart shows the 'real' price of motor vehicles rose from the mid-1980s to the late 1980s and then commenced a slow downward trend to the mid-1990s. The downward trend then accelerated sharply to early 2009. Thus as incomes have risen relatively

Figure 1.8:
Motor vehicle price index relative to average weekly earnings, NSW



Source: ABS 2008c; ABS 2008d
Notes: Data begins 1 March 1985.

Figure 1.9:
Fuel price indexes, Sydney



Source: ABS 2008c; ABS 2008d
Notes: Data begins 1 March 1985.

faster than the price of motor vehicles, their real price has fallen, and motor vehicles have become more affordable. It is not surprising that the number of passenger motor vehicles in NSW rose from under 3 million units in 1998 to just under 3.5 million units in 2007 (an 18.1% increase over this period).

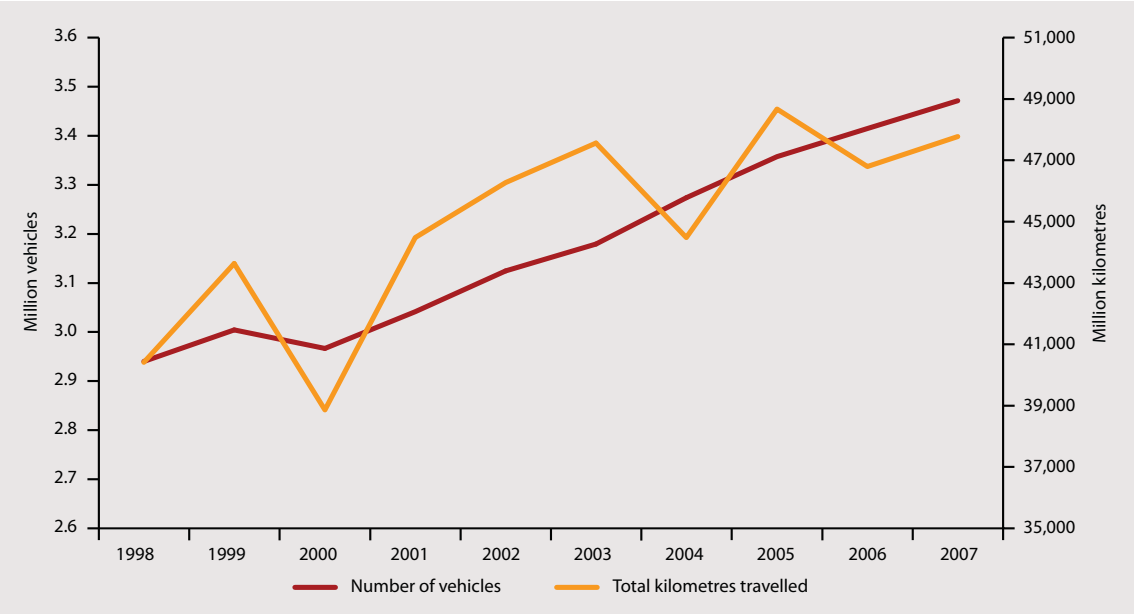
The cost of running motor vehicles depends on fuel prices, vehicle efficiency and usage. Figure 1.9 shows the automotive fuel price index from the Sydney component of the CPI. In nominal terms, the index increased substantially from 1985 to mid-2008 (almost three-fold). Falling oil prices in late 2008 and early 2009 contributed to the sharp decline in the index evident at the end of this series.

The second series in Figure 1.9 compares fuel prices with prices generally. It shows that from around 1999–2000, fuel prices had grown faster than the overall CPI. The fall in oil prices in late 2008 and early 2009 has also affected this series, and by the end of the period the two price indexes have moved overall at very similar rates relative to March 1985. Fuel prices relative to average weekly earnings (real fuel prices) show an overall decline since March 1985. This result is also sensitive to the sharp fall in the fuel price at the end of the series.

Empirical evidence suggests that fuel is relatively price inelastic (for example, Komanoff 2006). This means that consumers are generally not very responsive to an increase in the price of fuel. This is not surprising given the fundamental importance of fuel in the economy and the lack of readily available substitutes. With real fuel prices remaining relatively stable over the last 25 years, running costs are not likely to have had a major influence on motor vehicle usage over this period.

Motor vehicle usage can be measured by vehicle kilometres travelled (VKT), which is a function of the number of motor vehicles on the road and the average distance travelled by each vehicle. Figure 1.10 shows the previously mentioned increase in the number of passenger vehicles in NSW between 1998 and 2007 of 18.1%. Even though there has been a recent slowing in the rate of VKT growth, it also shows that over the period the total kilometres travelled rose by an almost identical percentage (18.2%), meaning the average distance travelled per vehicle hardly changed. It is likely to take a substantial increase in either or both the real prices of motor vehicles and automotive fuel before these trends are reversed.

Figure 1.10:
Number of passenger motor vehicles and distance travelled, NSW



Source: ABS 2007b

One of the main environmental pressures arising from motor vehicle use is the emission of greenhouse gases. The amount of greenhouse emissions originating from motor vehicles is a function of the total VKT and the average emission intensity of that travel. This means that improved technology has the potential to reduce the emission intensity of motor vehicle travel.

There have been some enhancements to motor-vehicle technology in recent times, such as in fuel efficiency. The ABS Survey of Motor Vehicle Usage shows some modest improvements in passenger vehicle fuel efficiency between 1998 and 2007 (ABS 2007b). Improvements have also occurred in new car fuel efficiency from better engine technology, particularly since 2004 (BITRE 2009). However, the environmental benefit from increased fuel efficiency has to date been offset by the increase in VKT, although a recent stabilisation in this suggests a realisation of some environmental benefit. The NSW Government response to greenhouse gas emissions is outlined in Climate Change 2.2.

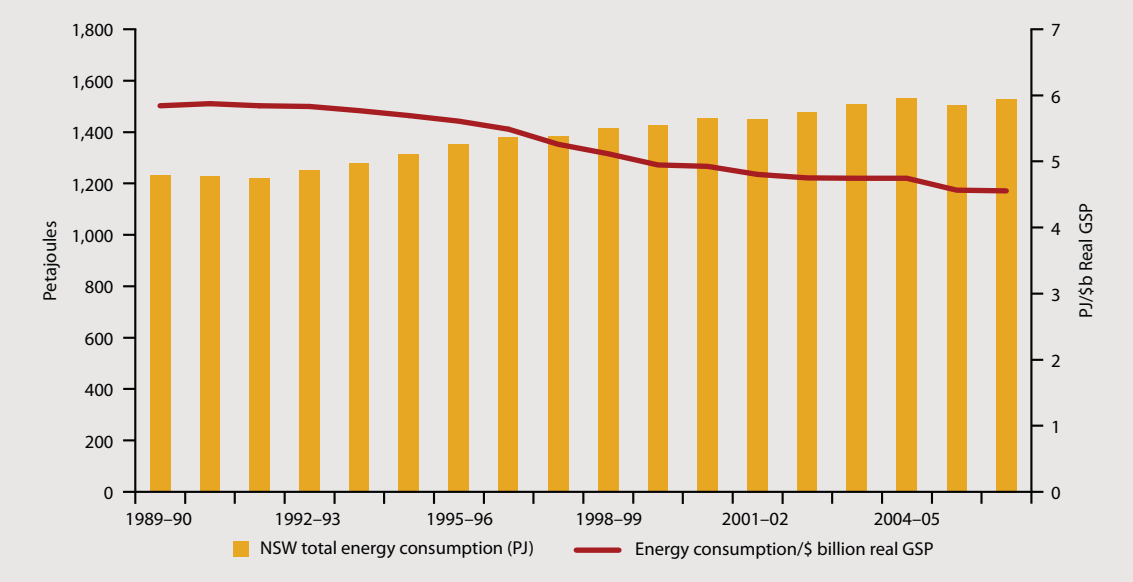
Reducing the economy's environmental impact

The pressure exerted by the economy on the environment depends on the scale of economic activity and the technology applied to these activities. Development of new technology has the potential to gradually reduce the environmental impact created by economic growth. For example, improvements in renewable energy technology and improved energy efficiency may substantially reduce air pollution associated with electricity generation, allowing economic activity to continue with a much lower level of environmental impact.

A particularly important area where this impact reduction would be environmentally valuable is society's use of energy, which produces a large share of greenhouse gas emissions. The environmental pressure caused by extracting primary energy and the combustion of fuels can be improved by developing more renewable (clean) energy sources and improving energy intensity (the amount of energy input required to produce a given output).

The energy intensity of the NSW economy over time is presented in Figure 1.11 as petajoules (PJ) of total energy consumed per billion dollars of GSP. Total energy consumed includes primary fuels (such as coal, oil, natural gas and solar) and derived fuels

Figure 1.11:
NSW total energy consumption and economic activity



Source: ABARE 2008b; ABS 2008b

(mainly petroleum, electricity and natural gas) but excludes the derived energy produced in energy conversion industries. This data also includes energy consumption in the Australian Capital Territory. The effects of inflation have been removed.

Figure 1.11 shows that total energy consumption has generally been growing. While the trend for total consumption is important for the environment, there has been a long-term decline in the energy intensity of the NSW economy. The Australian Bureau of Agricultural and Resource Economics (ABARE) noted recently that a similar trend exists across Australia. ABARE suggests that the decline in energy intensity is due to a relatively greater presence of less energy-intensive industries in the economy, improved energy efficiency and fuel switching (ABARE 2008b).

Looking forward, an important factor in achieving long-term improvements in energy efficiency is technology. Improvements in technology may permanently reduce the amount of energy required to produce goods and services, thus contributing to the reduction of the economy's environmental impact. The findings in another ABARE study (Sandu & Syed 2008) indicate that changing industry structures across Australia have been more significant for the decline in energy intensity to date than technology-related effects which have been relatively small.

Responses

The NSW Government responds to undesirable impacts of a changing environment through a number of measures which are detailed throughout SoE 2009. Within the DPSIR framework, these responses may influence any component of the model shown in Figure 1.7.

Better regulation

The heightened awareness of environmental issues has led to an increase in environmental regulations in most jurisdictions throughout Australia and internationally. The NSW Government has committed to minimising the regulatory burden imposed on businesses as a result of regulation; in particular, it is focused on cutting 'red tape' which is said to exist 'when regulatory requirements are irrelevant, unnecessary, duplicative or inconsistent with other compliance activities' (BRO 2008). The red tape associated with environmental regulations has been referred to as 'green tape'. There are a number of recent examples of green tape reduction initiatives.

The establishment in 2007 of the NSW Better Regulation Office (BRO) was an important initiative towards more effective regulation. The BRO acts as gatekeeper for new regulations, providing quality assurance and ensuring consistency with better regulation principles. The better regulation principles provide the cornerstone for the development of good regulation and are underpinned by sound economic principles.

A review of the Protection of the Environment Operations (General) Regulation 1998 finalised in 2009 resulted in the removal of the need to license certain activities with low environmental risk. These activities are instead being regulated by basic operational standards. This cuts administrative costs for industry while maintaining appropriate environmental controls.

Consistent with better regulation principles, before environmental laws and regulations are made in NSW a regulatory impact statement (RIS) must be prepared and public consultation undertaken. The purpose of a RIS is to ensure that the proposed regulation will provide the best approach for achieving the desired objective. A RIS will include identification of alternative regulatory options and an assessment of the costs and benefits of all options. Where possible, quantification of the costs and benefits is undertaken. Where this is not possible, a qualitative assessment of the anticipated impacts of the regulation and alternative options is described to facilitate a clear comparison of costs and benefits.

BioBanking

The Biodiversity Banking and Offsets Scheme, or 'BioBanking' as it is known, is a market-based economic instrument which has been developed by the NSW Government to help address the loss of biodiversity values and threatened species associated with development. Developers can voluntarily use BioBanking to minimise and offset their impacts on biodiversity. The scheme provides an alternative path for developers to the current threatened species assessment of significance process, enabling urban development to proceed while still accounting for biodiversity and ecosystem needs.

The legislative framework for BioBanking was incorporated into Part 7A of the *Threatened Species Conservation Act 1995* in December 2006. The Threatened Species Conservation (Biodiversity Banking) Regulation 2008 established certain aspects of the scheme's framework which are important for its smooth operation.

In the RIS for the BioBanking Regulation there was an examination of some of the benefits and costs of the scheme. This examination assessed three options, including no regulation, establishing criteria for land which is not suitable to become a biobank site (proposed regulation), and an option to rely on credit generation rules provided by the BioBanking Assessment Methodology (alternative regulatory approach). The proposed regulation was preferred as it was expected to increase the administrative consistency, efficiency and transparency of the BioBanking Scheme while continuing to meet biodiversity objectives. It also allows the scheme to recover some of its operating costs to ensure it is appropriately resourced into the future.

Future directions

The transition to an economy where economic growth is achieved with limited additional environmental pressure will be challenging, but will also create opportunities. To effectively make the transition, the NSW Government and business community must work together to ensure that all businesses are prepared to adapt to the requirements of a low-carbon economy.

Projections show that employment in sectors with high potential environmental impacts (transport, construction, agriculture, manufacturing and mining) will grow strongly in the future, increasing by up to 340,000 new jobs over the next 10 years (Hatfield-Dodds et al. 2008). New workers will need to have the skills and ability to drive sustainable outcomes.

The NSW Government has developed the Green Skills Strategy, to be implemented over the period 2008–10 (see People and the Environment 1.5). The strategy will assist business to become more sustainable and take advantage of new opportunities created by global environmental challenges. Additional programs that drive further uptake of skills and encourage innovation will complement the strategy.

1.5 Social trends

Public concern over issues related to climate change and water shortages has grown rapidly since 2003. While communities and households have actively responded by reducing their consumption of water, behavioural change that lowers fuel and energy consumption has yet to substantially occur.

The focus on environmental issues by the NSW community is becoming more discerning with increasing attention paid to climate change-related issues, including water availability, greenhouse gas emissions and energy use. The NSW Government has responded to public concern about climate change and water availability by targeting projects and actions that address water and energy issues. The Government has also encouraged positive environmental change through economic incentives, community and business partnerships, and targeted regulation.

Education plays a central role in building communities that are informed about environmental issues. The NSW Environmental Education Plan 2007–10: Learning for Sustainability guides the implementation of education for sustainability programs across all levels of the community. A review of the implementation of the plan in April 2009 shows a diverse range of environmental education programs are being offered throughout NSW and that environmental education is increasingly being integrated into environmental and natural resource management programs.

Introduction

It has become clear that positive community attitudes and actions are instrumental in achieving positive environmental and natural resource outcomes. By monitoring and assessing social trends the Government is able to identify issues of concern to the community and to target programs accordingly. People's capacity to participate in environmental action is enhanced through government measures such as the provision of financial incentives and support for environmental groups and their social networks. Education directed at all levels – government, business, schools and the broader community – also plays a key role in shaping community attitudes and encouraging public action.

Status and trends

Community attitudes and actions

Who Cares About the Environment?

Every three years since 1994, the environmental knowledge, attitudes and behaviours of NSW people have been surveyed in the Who Cares About the Environment? program. These surveys have shown consistently high levels of concern about environmental problems since they began: in 2003 and 2006 over 90% of those polled declared that the environment was an important life value to them. While the 2006 survey identified increased environmental knowledge and better understanding of areas such as the greenhouse effect and biodiversity loss, significant information gaps have persisted. For example, the majority of those surveyed in 2006 were still unable to distinguish between

the greenhouse effect and the hole in the ozone layer and only one-third knew about the water- and energy-saving benefits of recycling (DEC 2006b).

A supplementary survey in 2007, focusing specifically on climate change and water issues, provides the most recent data about the NSW community's environmental attitudes (DECC 2007b).

People who considered water supply, conservation and drought as a major *State Government* issue increased substantially from 12% in 2006 to 31% in 2007. In the same survey, these issues were also nominated by 67% of respondents as one of the two most important *environmental* issues for NSW.

This change in community attitudes has also translated into community action: 79% of respondents in 2007 said they often make an effort to reduce water consumption, compared with 65% in 2003 (Figure 1.12). The main reason for reducing water consumption was a greater awareness of drought-related water shortages, with regulation and education also seen as influences.

In the past few years, the community has also shown an increasing awareness of climate change. In the 2007 supplementary survey, 7% of respondents nominated climate change as one of the two most important issues for the *State Government*, whereas no one had nominated it in 2006. In addition, the number of respondents nominating climate change as one of the two most important *environmental* issues rose substantially from 5% in 2003 to 13% in 2006 to 26% in 2007.

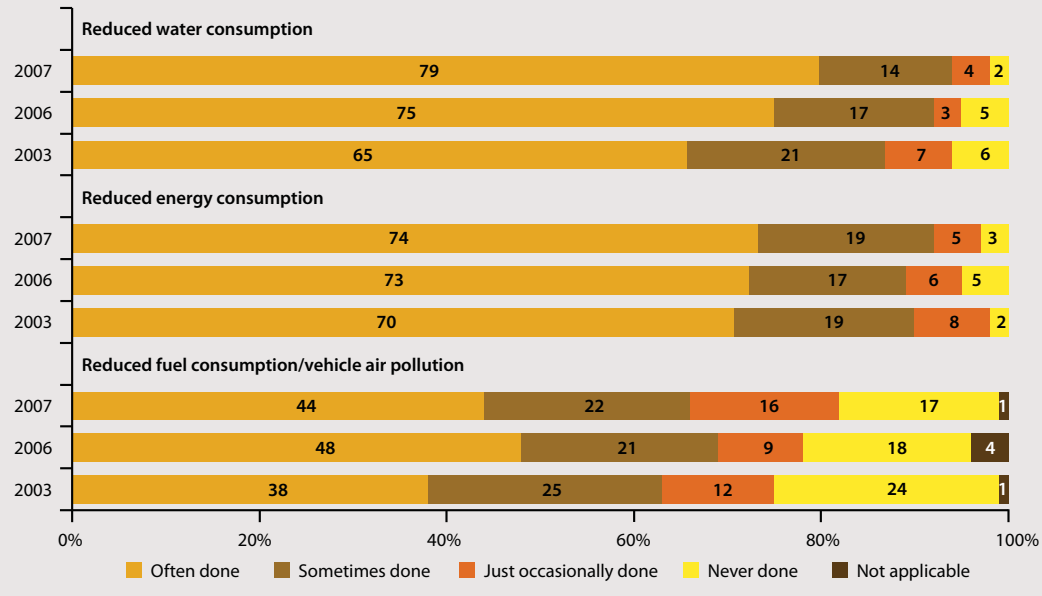
This increased awareness of climate change has not yet been reflected in other proactive behaviours. The increase in the number of people who frequently act to reduce their consumption of energy and fuel has been minimal (Figure 1.12). Respondents indicated the main reason for taking active steps to reduce consumption in these areas was to save money, although there is evidence that education through advertising and media reports, and concern for the environment is having a growing impact.

Environmental issues survey

Since 1994, the Australian Bureau of Statistics has released a number of publications presenting information on the environmental behaviour and practices of Australian households. These publications have focused on three themes: energy use and conservation; water use and conservation; and household waste management and transport use.

The 2008 survey on energy use and conservation identified a number of trends towards increased environmental awareness (ABS 2008e). GreenPower

Figure 1.12:
Frequency of activities to reduce consumption in the last 12 months



Source: DECC 2007b

is a federal accreditation program for electricity retailers' renewable energy products, first established in NSW in 1997. Awareness of GreenPower has risen in NSW from 26% of households in 2005 to 49% in 2008. Willingness to pay extra per annum to buy GreenPower electricity has risen from 22% to 31% in the same period. However, the number of NSW households actually paying for GreenPower in March 2008 was 5%.

Some other environmentally proactive behaviours have increased substantially in recent years. The percentage of NSW households using energy-saving light bulbs rose from 37% in 2005 to 66% in 2008. Over the same period, the household use of solar energy to heat hot water systems increased from 2.5% to 5% (ABS 2008e). The number of households with rainwater tanks increased from 13% in 2004 to 16% in 2007, the main reason for their installation being to save water. A total of 58% of households had a water-efficient shower head in 2007 compared with 43% in 2004, while the number of houses with dual-flush toilets rose 8% over the same period to 76% in 2007 (ABS 2007c). Since 1996, the percentage of NSW households engaging in some form of waste recycling or reuse activities at home has increased from 90% to 99% (ABS 2006c).

Volunteers

Positive community attitudes towards the environment are shown by the large number of volunteers who participate in environment-related activities in NSW. The State Government supports the NSW Landcare Committee, which plays an important role in natural resource management. Landcare groups work with catchment management authorities (CMAs), particularly to involve the community in implementing CMA catchment action plans (see Responses below). As of May 2009, NSW had 1985 active Landcare groups with a total of 56,940 members, most of them involved in on-ground works and awareness and education (Landcare NSW 2009).

Other volunteer groups, such as Coastcare, Bushcare and Conservation Volunteers Australia, are equally valued. Clean-Up Australia Day has had consistently high numbers of participants over the last decade, with more than 600,000 volunteers turning out nationally in 2009.

NSW also has over 33,000 Crown reserves that have been set aside for public use, with more than 700 of them managed through reserve trusts. Nearly 3,500 volunteers serve on reserve trust boards, while many others give their time in support activities. These volunteers make a significant contribution to the environmental, social and economic welfare of NSW.

Business attitudes and actions

In 2007 an industry survey by the Australian Industry Group analysed business understanding of environmental issues and commitment to environmental practice (AIG 2007). In NSW, 12% of the companies surveyed reported that they were well informed on risk management associated with climate change and Government programs to help reduce greenhouse gases. While 27% of businesses said they understood the concept of an emissions trading scheme, only 7% indicated that they understood what its impacts would be. Very few of the NSW companies surveyed (3%) were aware of the volume of greenhouse gases they emitted. Overall, large firms were generally more informed on environmental issues than smaller firms.

While 78% of the firms surveyed believed they had a responsibility to lower carbon emissions, only about half reported that they had adopted measures to lower greenhouse gases.

Education

The NSW Government is committed to ecologically sustainable development as a means of meeting the challenges of environmental sustainability. Environmental education has a vital role to play in achieving this goal as it helps people to understand complex environmental issues and builds their capacity to take positive action.

NSW environmental education efforts have been integrated through the *NSW Environmental Education Plan 2007–10: Learning for Sustainability* (NSW Council on Environmental Education 2006). The plan guides the implementation of education for sustainability programs across all levels of the community by focusing on seven key outcomes for environmental education. The first annual review of the implementation of *Learning for Sustainability* produced the following preliminary findings for each outcome:

- Most of the major new environmental and natural resource management programs introduced in NSW have incorporated a substantial component of environmental education.
- Significant progress has been made in coordinating sustainability education for schools, with 21% of NSW schools registering on the Sustainable Schools NSW website by the end of June 2008 (see Responses).
- Partnerships and collaborative delivery of environmental education activities are widespread.

- Programs addressing the needs of culturally and linguistically diverse communities, Aborigines and Torres Strait Islanders, youth and specific local government areas are being offered by NSW organisations, as are initiatives that target the general community. Programs also exist that are tailored to the needs of the disabled and disadvantaged communities.
- Professional development and training for environmental educators is being offered through a range of providers. Environmental training opportunities at universities are particularly numerous, with an estimated 10,000 places in environment-related courses offered by universities in NSW in 2007–08.
- Environmental education programs are being evaluated by businesses, governments, community groups and tertiary institutions with about half of those for 2007–08 indicating they had been formally evaluated.
- The ultimate aim of the Environmental Education Plan and the preceding six outcomes is increased active and informed participation of NSW people in creating a sustainable future. Who Cares About the Environment? surveys show strong progress in this area (see Community attitudes and actions above).

Natural resource management and communities

Natural resource management (NRM) is the sustainable use and management of natural resources such as land, water, plants and animals, and the systems that they form. Sustainable management of natural resources is vital to achieving ongoing environmental, social and economic wellbeing.

The condition of natural resources depends on people and their interaction with the landscape (NLWRA 2004). There are fundamental interrelationships between natural resources, and social and economic outcomes. The community's capacity to achieve natural resource outcomes is directly affected by economic sustainability and social wellbeing, which in turn are fundamentally dependent on the underlying condition of natural resource assets (NRC 2005).

Under Priority E4 of *State Plan 2006: A new direction for NSW* (NSW Government 2006a), the NSW Government seeks better outcomes for native vegetation, biodiversity, land, rivers and coastal waterways. Two targets under Priority E4 focus on the community, with the Government aiming:

- to ensure natural resource decisions contribute to improving or maintaining economic sustainability and social wellbeing
- to increase the capacity of natural resource managers to contribute to regionally relevant natural resource management.

A review of State Plan 2006 commenced in August 2009 and this may adjust some of the plan's priorities and targets.

Economic sustainability and social wellbeing

Natural resource decisions and outcomes underpin human activities and contribute to economic sustainability and social wellbeing. Determining the impact of improved resource condition and availability is difficult, however, due to the more intense and immediate effects of population changes, drought, market forces and changes in land use.

Natural resource decisions are felt most strongly in communities where the local economies are highly dependent on primary industries. This is especially true for drought-affected areas in NSW where natural resource decisions noticeably and directly affect the local communities. This can be contrasted to the larger coastal urban areas where recognised benefits from natural resource condition centre largely on recreational pursuits.

Throughout NSW, community cohesion is strengthened by natural resource management networks, environmental education and community involvement that improve local environments. Better quality local ecosystems strengthen both local industry and community values: improving water quality, for example, benefits fisheries and local tourism, as well as community recreation and aesthetics.

Natural resource management capacity

The capacity of private landholders to manage natural resources underpins sustainable land management in NSW. Like the previous target of economic sustainability and social wellbeing, measuring any increase in the capacity of natural resource managers is difficult. Capacity to sustain and improve natural resources at the landholder level is dependent on a number of drivers of behaviour, ranging from human characteristics, such as motivation, education and attitude, to social, cultural, financial and physical considerations which affect people's ability to develop and implement management strategies and action.

Landholder capacity is enabled by more and stronger social networks, increased access to information and positive community attitudes toward natural resource management. Consistent Government programs and continuity in programs, agencies, staff, funding and priorities also increase landholder capacity and commitment to NRM. Constraining factors include drought, uncertain financial markets and increasing pressures from noxious weeds and feral animals. Refer to Appendix 2 for further analysis.

Pressures

Pressures affecting social behaviour and community attitudes towards environmental action are complicated and varied. Decisions about whether to engage in positive environmental behaviours are affected by people's values, their knowledge and their intrinsic motivation.

The Who Cares About the Environment? survey in 2006 analysed in detail the drivers and barriers to behavioural change (DEC 2006b). The likelihood of adopting specific behaviours is influenced by people's awareness and understanding of the environmental consequences of those behaviours. Limited awareness and lack of understanding may act as a barrier to behavioural change.

Positive environmental behavioural change often relies on an individual linking the behaviour to a good environmental outcome. In many cases, it also depends on the individual not being personally 'inconvenienced' by adopting the behaviour, in terms of economic cost, time or effort. Behaviours are also often entrenched and the perceived value of the behavioural change must also be great enough to shift the status quo.

Legislation appears to be a powerful driver for people taking up positive environmental behaviours. Whether a peer or social group regards a behaviour as normal can also encourage or deter behavioural change. The level of engagement in positive behaviours may be affected by such everyday factors as a person's workplace or their place of residence.

Responses

The NSW Government has responded to increased public concern about water shortage and climate change by directing a number of new projects to reduce the use of water and energy and increase sustainability. A number of long-running projects have also shifted in direction to target the current issues. These projects often focus on creating partnerships between the NSW Government and local government, communities and businesses to achieve common and beneficial environmental outcomes. Continuation of the statewide community education campaign, Our Environment – It's a Living Thing, also supports partnerships with local government, community organisations, businesses and individuals across the state.

Community attitudes and actions

Sustainability Advantage Program

Since early 2007, the Sustainability Advantage Program has been supporting medium-to-large organisations to identify and implement environmental projects that also add business value. By December 2008, the program had 280 participants drawn from industry sectors as diverse as agribusiness, building products, aged care, education and government. Sustainability Advantage provides support in the form of workshops and training, technical support and facilitated networks. To the end of December 2008, participating members had reduced emissions of the greenhouse gas carbon dioxide by 6000 tonnes overall and saved $3.6 million by cutting their use of energy, raw materials, water and fuel, and improving their management of waste.

Energy Efficiency Strategy

In 2008, the NSW Government announced the NSW Energy Efficiency Strategy, which includes the programs below targeting business and community actions (see Climate Change 2.2).

The Energy Saver Program is a $20-million expansion of the existing Sustainability Advantage Program for businesses. This initiative is enabling Sustainability Advantage to grow to 1000 companies and increase its focus on energy efficiency by adding a Resource Efficiency Module.

Another NSW initiative, the Energy Efficiency for Small Business Program, encourages small businesses to implement energy-efficient improvements by assisting them to develop energy action plans and offering rebates. The program is open to organisations that use up to $20,000 of electricity per year or employ up to 10 full-time staff. It offers an assessment of the energy used by the business and a brief action plan outlining energy-saving opportunities, together with a rebate of up to $5,000 towards the costs of implementing the actions in the plan, based on the levels of electricity used.

The Energy Efficiency Training for Trades and Professionals Program, which is linked with the NSW Green Skills Strategy, aims to increase the

supply and uptake of energy-efficient tradespeople and professionals who are able to implement energy efficiency practices in industry, government and the community.

The Energy Efficiency Community Awareness and Information Program provides practical advice on how to save energy at home and at work.

Other programs

Residential Rebate Program: This is part of the NSW Government's Climate Change Fund (see Climate Change 2.2) and provides rebates to encourage residents to make their homes more water- and energy-efficient.

Environmental Trust grants are offered to both community groups and state and local government agencies to support exceptional environmental projects that do not receive funds from the usual government sources. In 2008, over $35 million was made available for projects, including those focusing on urban sustainability, restoration and rehabilitation, education and research.

NSW Sustainability Compacts are voluntary negotiated agreements between the NSW Government and leading Australian businesses that operate in NSW. Generally signed at Ministerial and CEO level, the compacts commit the parties to work together to improve the environmental performance of the business signatory, its supply chain and its industry sector as a whole.

Biodiversity Banking and Offsets Scheme or 'BioBanking' establishes a market-based approach to help address the loss of biodiversity and threatened species (see People and the Environment 1.4 and Biodiversity 7.2).

NSW BikePlan: The Premier's Council for Active Living is finalising this plan to encourage more people across the state to use bicycles as a clean and healthy transport choice. The plan will update and replace the NSW Government's *Action for Bikes: BikePlan 2010* (RTA 1999).

Education

Green Skills NSW

The NSW Government is putting in place development strategies to ensure that the NSW workforce has the skills and knowledge to support the transition to a low-carbon and more sustainable economy. Under Green Skills NSW, a newly established taskforce, with members from government, industry, unions, environmental advocates and training providers, is putting in place a plan of action to support a future green economy in NSW. From July 2009, Green Small Business Incentives has been offering subsidies for specific training that provide the skills to manage small businesses more sustainably, as well as adapt to a low-carbon economy.

Schools

The NSW Government understands that it is important for NSW schools to adopt sustainable practices and deliver sustainability education programs. The Sustainable Schools NSW website was developed in late 2007 and provides support for schools, their partners and the community in realising a positive environmental vision. Teachers' kits have also been developed to educate students about biodiversity, national parks, historic sites and wetlands.

The NSW Government has developed specific programs to educate school children about environmental issues. Examples include:

- Active for Air, which provides primary school students with a range of knowledge and skills to help them and their school community reduce their reliance on motor vehicles for short trips and replace them with healthy physical activity
- AirWatch, which educates secondary students about the factors affecting air quality, how it affects their lives and what they themselves can do to improve it.

With funding from the Environmental Trust, the Eco Schools Program provides grants to schools to involve their students and community in developing and implementing environmental management projects. A total of $150,000 was made available for the Eco Schools Program in 2009.

As part of the Climate Change Fund (see Climate Change 2.2), the NSW Government announced the $20-million School Energy Efficiency Program and the $20-million Rainwater Tanks in Schools Program.

Water for Life

Water for Life is an integrated educational component of the NSW Government's Metropolitan Water Plan. Community campaigns, innovative on-the-ground water education projects, and training and resources are being delivered as part of Water for Life to secure Sydney's water supply (see Human Settlement 3.1).

Natural resource management and communities

Catchment management authorities

The NSW Government has created a regional model for natural resource management to maintain healthy rivers, productive soils, diverse native species and thriving communities throughout the state. Thirteen catchment management authorities (CMAs) have been established under the *Catchment Management Authorities Act 2003* to devolve operational, investment and decision-making natural resource functions to the catchment level. Key roles for CMAs include preparing catchment action plans (CAPs), managing incentive projects to implement the plans and assisting landowners to prepare property vegetation plans (see Biodiversity 7.1). CAPs provide a strategic framework for natural resource management in the catchment and direction for future investments.

The Natural Resources Commission (NRC) was established to provide independent advice to the NSW Government on managing the state's natural resources in an integrated manner so that landscapes continue to be resilient, function effectively, and support environmental, social, economic and cultural values. In 2008 the NRC began an ongoing program of audits to assess whether CAPs are being implemented effectively, in compliance with the NSW Standard for Quality Natural Resource Management and the statewide targets for natural resource management in State Plan 2006 (NSW Government 2006a).

Future directions

Focusing on social trends, community engagement and community action will assist the NSW Government to continue to respond to issues of rising environmental concern. While community environmental concerns will always be influenced by concurrent social and economic concerns, continued monitoring of social trends will assist development of sustainable policy.

Further development and analysis of indicators of social trends will allow the Government to gauge community attitudes more accurately and plan appropriately. Monitoring business attitudes will also be important in strengthening partnerships with business.

The latest social data shows increasing levels of public awareness and knowledge of important environmental issues. It will also be important, however, to strengthen links between the community identifying the environmental issue and then committing to appropriate actions that address it. This is true for businesses as well: companies need to commit to sustainable behaviours. A willingness to participate in positive environmental behaviour needs to translate into actual participation in the behaviour through educational programs, government, community and business partnerships, and regulation.

1.6 Culture and heritage

The percentage of land in New South Wales protected primarily for Aboriginal cultural values has increased five-fold over the past three years. Heritage listings continue to be the main mechanism for managing heritage throughout the state. The number of items on the State Heritage Register is continually increasing.

While additions to the State Heritage Register have previously been driven by community nominations, the NSW Government has developed a more strategic and systematic approach to target state listings through a thematically-based program.

Additionally, almost 3% of NSW is protected for Aboriginal cultural values. Increased knowledge and information gathering, providing a contextual base, is required to improve the protection and promotion of cultural values.

NSW indicators

Indicator and status	Trend	Information availability
Percentage of land in NSW protected primarily for Aboriginal cultural values and supported by local Aboriginal communities	Improving	✓✓
Number of new places listed on a NSW statutory list for non-Aboriginal cultural values since the last report	Improving	✓✓✓

Notes: Terms and symbols used above are defined in About SoE 2009 at the front of the report.

Introduction

'Heritage' is the collective environment, traditions and assets that we inherit from the past and preserve for the use and inspiration of future generations. Heritage is linked with culture, which frames our understanding of the past and influences the decisions we make about what should be preserved. What is regarded as heritage can vary between different people and groups from different cultural backgrounds.

The traditional definition of heritage refers to places and objects and does not take into account less tangible assets, such as the languages and spiritual history of our Aboriginal nations. To deal with this, there has been a shift towards using the term 'cultural values' when describing those heritage assets that do not fit the traditional definition.

Heritage and cultural values are protected through a suite of mechanisms that range from regulation by legislation, statutory registers and permit systems, to government policies, programs and grants, to non-statutory agreements and partnerships, and finally local community activities.

Protection, use of, and access to Country are central to the wellbeing of Aboriginal people. 'Country' is the term used to describe both the land and waters, including the sea, to which Aboriginal people have a strong cultural connection. This relationship makes culturally appropriate management of Country and its resources an essential part of protecting Aboriginal cultural values.

Status and trends

Heritage listings on registers and schedules continue to be the main mechanism for managing heritage items throughout NSW. Aboriginal cultural values, typically identified through the development process, are also now protected by a number of additional mechanisms. While both the number of heritage items on the State Heritage Register and the amount of land protected for Aboriginal cultural values have increased in the past three years, data on the condition of the protected heritage is limited. At present, this paucity of data and the variability in local council management of heritage via local environmental plans (LEPs) also impedes accurate reporting of the number of heritage items destroyed or demolished.

Heritage listings

Responsibility for heritage management in NSW is largely shared between local government, State Government agencies and the Heritage Council of NSW. Local government is responsible for managing the bulk of heritage items through listings on heritage schedules in their LEPs. State agencies also have a statutory requirement to prepare a Heritage and Conservation Register of assets under their care and management under section 170 of the NSW *Heritage Act 1977*. The Heritage Council, with the support of the Department of Planning, is responsible for listing heritage items of state significance on the State Heritage Register under the Heritage Act and managing them.

The Australian Government manages listings (including World Heritage properties) on the National Heritage List under the *Environment Protection and Biodiversity Conservation Act 1999*. Additionally, community and professional bodies, such as the National Trust and some Aboriginal land councils, also maintain heritage registers. While these have no statutory effect, they are an important record of community support for individual items.

State Heritage Register

The State Heritage Register recognises the most significant heritage places and objects across NSW. These are known as items of 'state heritage significance' and reflect the diversity of heritage sites in NSW. A total of 47 new items were added to the register from January 2006 to December 2008, taking the overall number of listings to 1538.

The number of recent additions to the register has been lower than in the early 2000s, partly due to the complexity of listing the entire town of Braidwood in 2006. Braidwood and its setting are an excellent surviving example of a town from the Georgian period, dating from the late 1830s.

Other listings on the State Heritage Register over the past three years have included:

- five colonial landscapes of the Cumberland Plain and Camden, all dating from the earliest period of European settlement in NSW
- two highly significant Aboriginal burial sites – the graves of Yuranigh near Molong and Windradyne at Bathurst
- Brewarrina Aboriginal Mission site, a place of high integrity to many Aboriginal people across NSW because of its cultural, spiritual, social and historical values
- the wreck site of the Japanese midget submarine *M24* following its discovery by recreational divers off Sydney's northern beaches in 2006.

Other lists

The Historic Houses Trust (HHT) is a statutory authority entrusted with the care of key historic buildings and sites in NSW. The HHT currently manages 14 sites and properties and, through a broad range of programs, attracted over 2.1 million visitors to its museums, gardens, parklands and urban spaces in 2007–08 (HHT 2008).

In 2005, the HHT established the revolving Endangered Houses Fund, a program that identifies significant at-risk properties and removes them from the threat of demolition or unsympathetic development using a model of acquisition, conservation and sale. Under this fund, the HHT recently completed conservation work at 'Glenfield' in Casula, while two other projects – 'Exeter Farm' at Glenwood and 'Nissen Hut' at Belmont North – are under construction.

The Australian Heritage Council manages the National Heritage List, which includes places of outstanding heritage significance to the nation. Thirty-one NSW sites were on the list in December 2008, with recent additions including Bondi Beach, Australian Alps National Parks and Reserves, Cyprus–Hellene Club–Australian Hall, and the Myall Creek Massacre and Memorial Site.

Managed by UNESCO's World Heritage Centre, the World Heritage List contains sites considered to be of 'outstanding universal value'. Sydney Opera House was inscribed on the list in June 2007, Australia's first 20th century building to achieve this honour. It joins

the four other NSW sites on the list: the Gondwana Rainforests of Australia, Lord Howe Island, Willandra Lakes and the Greater Blue Mountains area. A number of Australian convict sites, including four in NSW, have also been nominated for inclusion, with a decision by UNESCO's World Heritage Committee expected in 2010.

Aboriginal heritage management

Traditional definitions of heritage – referring to places, items or objects – do not adequately address the complexity of Aboriginal heritage management. Aboriginal heritage is linked closely with the natural environment and contains traditions and assets, both tangible and intangible. The strong relationship between Aboriginal people and their lands makes culturally appropriate management of Country and its resources a critical part of protecting Aboriginal cultural values.

While development in NSW can have an adverse impact on cultural values, it is usually as the result of development applications as part of local government planning processes that Aboriginal culture and heritage are identified for protection. Thus appropriate planning and controls enable development applications to trigger heritage assessment and management of identified cultural values.

Through mechanisms such as Aboriginal Places, Aboriginal Areas, Conservation Agreements, Memorandums of Understanding, Joint Management Agreements and State Heritage Register listings, over 2.33 million hectares of land (about 2.9% of NSW) is protected for Aboriginal cultural values, a five-fold increase since 2005.

The Australian Government also protects land through the Indigenous Protected Areas (IPAs) Program, with two IPAs declared in NSW, covering over 5000 ha.

To date, the NSW Government's Joint Management Program is the most successful program ensuring Aboriginal people are fully involved in identifying and protecting Aboriginal cultural values on public land. Jointly managed lands represent the highest proportion of public land protected for cultural values in NSW (Table 1.2).

Pressures

Development needs caused by population growth, particularly in metropolitan areas and coastal zones, place pressure on the protection of heritage. Conversely, rural and regional areas are experiencing population and job decline that can result in a lack of active uses for heritage items, limit conservation capacity and also reduce their protection.

Mixed land tenure in NSW requires a cohesive suite of mechanisms for protecting cultural values. A particular challenge is in ensuring cultural values on private land are identified so they can be protected.

A balance is required between increasing the public's awareness of and visits to natural and cultural sites with ensuring the preservation and protection of those sites. It is essential that heritage sites are actively managed with cultural sensitivity.

Table 1.2:
Quantity of land protected for Aboriginal cultural values

Type	Hectares			
	2005	2006	2007	2008
Aboriginal Places	15,791	15,791	15,954	18,259
Aboriginal Areas	33,261	33,329	33,335	33,335
Conservation Agreements	2,192	5,047	5,047	5,616
Memorandums of Understanding	141,851	141,851	249,091	249,091
Joint Management Agreements	267,761	332,529	1,985,748	2,027,665
State Heritage Register-listed places	586	849	849	849
Land protected	461,442	529,396	2,290,024	2,334,815

Source: DECCW and DoP data 2009

Notes: This does not include land owned by Aboriginal communities.

Responses

Legislative review

A major review of the operations and focus of the NSW *Heritage Act 1977* occurred in 2007 with comment and input from both experts and the community. At the conclusion of the consultation, an expert panel released *A Review of the NSW Heritage Act 1977*, which detailed recommendations and an assessment of responses. Recommendations included applying greater fairness and rigour in the heritage listing process; retaining key elements of the current system, including local and state listings; streamlining legislation; and basing listings on thematic and regional studies.

The NSW Government announced the release of a draft Bill to amend the *National Parks and Wildlife Act 1974* and the *Threatened Species Conservation Act 1995* in April 2009. With respect to heritage, the National Parks and Wildlife Amendment Bill 2009 makes a range of amendments to:

- modernise and streamline the protection of Aboriginal cultural heritage and related regulatory processes
- make enforcement provisions more consistent with other environmental legislation.

Fishing has been an important part of Aboriginal culture for tens of thousands of years. Currently, the *Fisheries Management Act 1994* does not specifically recognise or provide for cultural fishing. The State Government is proposing amendments to the Act to formally recognise cultural fishing as a legitimate fishing activity in NSW. Amendments will also include a definition of cultural fishing and specific provisions to provide for it.

Heritage programs

Thematic Listings Program

State Heritage Register nominations have traditionally originated from the community and sometimes when items were under development pressure. While this has ensured community involvement, nominations have been largely considered by the Heritage Council in an ad hoc manner.

To maintain a balanced and credible State Heritage Register, the Heritage Council is implementing the Thematic Listings Program 2009–10. This introduces a strategic focus to listings, in accordance with agreed priority themes, which will assist in filling gaps in the register and ensuring adequate representation of each theme by key items of state significance.

Nominations for places that do not fall within agreed themes will still be received but thematic listings will be a priority. The Heritage Council will consider pursuing priority listing themes beyond 2010 until a more robust and comprehensive register is achieved.

Heritage Grants Program

The Heritage Grants Program, managed by the Heritage Council of NSW, supports highly valued, cared for, and well maintained and managed heritage items of significance to NSW. The program's focus is to assist heritage owners and managers to look after their heritage items and places and to maximise leverage of the successful delivery and uptake of *Heritage Act 1977* and Heritage Council funding initiatives. The funding is targeted to State Heritage Register items protected under the Heritage Act or as part of Aboriginal and local government heritage management programs.

A comprehensive evaluation of the Heritage Branch 2006–08 Grant Funding Program was completed in late 2008. Project outcomes and key performance indicators were established for program reporting and evaluation, which will be used to assess and improve future NSW Heritage Grants Programs funding offers.

Heritage and the community

The NSW Government has focused on maximising the community's engagement with items listed on the State Heritage Register, while also targeting tourism. A web-based project, NSW Heritage Tourism On-line, was developed in 2007–08, seeking to motivate and inspire tourists to visit state-listed heritage destinations in NSW. The project delivers on an agreed national heritage agenda desire for greater on-line heritage data and greater public access and appreciation of heritage places.

Aboriginal cultural values

Two Ways Together

The NSW Government has recognised that reform of Aboriginal cultural heritage approvals and assessment processes is required. As part of its commitments under the NSW Aboriginal Affairs Plan, *Two Ways Together*, a review of the *National Parks and Wildlife Act 1974* and other relevant legislation is under way to focus more strongly on the conservation of Aboriginal heritage rather than solely on the conservation of Aboriginal objects and gazetted Aboriginal places.

The Government is also working to strengthen Aboriginal communities in line with Priority F1 of *State Plan 2006: A new direction for NSW* (NSW Government 2006a): *Improved health and education for Aboriginal people*. A 'toolkit' to strengthen community wellbeing is being developed to enable communities to assess and prioritise government services, infrastructure and community-driven actions. The toolkit will provide communities with the information needed to negotiate with government and make well-informed and sustainable planning decisions for their future.

A review of State Plan 2006 commenced in August 2009 and this may adjust some of the plan's priorities and targets.

The Government has also embarked on an extensive project to improve the administration of existing cultural heritage regulation. Part of this project has involved the development of guidelines to ensure that decisions to issue Aboriginal Heritage Impact Permits (AHIPs) are transparent and that AHIPS themselves are consistent, reasonable and enforceable. Revised community consultation requirements for AHIP applicants to clarify and reaffirm the need for proponents to consult with affected Aboriginal communities are also being prepared.

In another initiative, the NSW Government is preparing a *Two Ways Together* Aboriginal land and natural resource management action plan to develop clear policies, principles and tools to improve socioeconomic outcomes for Aboriginal people by enhancing their participation in land and natural resource management.

Aboriginal Land Management Framework

The NSW Government is working towards an Aboriginal Land Management Framework (ALMF) that strengthens Aboriginal connections to Country. Initial public consultation in early 2009 sought the views of the Aboriginal community on access to and use of public lands, as well as how communities can be involved in managing them. The Government is hoping to reach a common understanding with Aboriginal communities about what programs and initiatives will help improve connections to Country.

In addition to expanded joint management of the conservation reserve system, the ALMF will examine formal protection of land for Aboriginal cultural values using a range of mechanisms. These will include new Indigenous Protected Areas, Aboriginal Areas, Conservation Agreements on private lands and Aboriginal Places. Increased joint management on other public tenures is also an aim of the ALMF.

Aboriginal Place Program

The Aboriginal Place Program is another way of recognising and legally protecting Aboriginal cultural heritage. Under the *National Parks and Wildlife Act 1974*, any land may be declared an 'Aboriginal Place' if the area is or was of special significance to Aboriginal culture.

The NSW Government has also continued funding the Protecting Our Places Program through the Environmental Trust. Over the past three years, $1.5 million has been made available to Aboriginal organisations for projects to protect land that is culturally significant to Aboriginal people as well as educate Aboriginal and other communities about the local environment and its value. Protection of heritage and cultural values has also been facilitated through the Environmental Trust's Restoration and Rehabilitation, Eco Schools and Environmental Education programs.

Land Alive

The NSW Government Land Alive project gives Aboriginal landowners extra capacity to participate in the BioBanking Scheme. Land Alive provides landowners with a chance to create jobs and business opportunities, while generating funds for the ongoing management of land.

Indigenous Heritage Program

The Australian Government Indigenous Heritage Program also provides funding for indigenous projects across Australia, helping community groups and individuals identify, conserve and promote cultural values. Eight projects totalling $460,000 were funded in NSW in 2008–09. These projects included development of the Wilsons River Experience Walk, development of a strategic plan for protection of significant sites within Githabul Country, and the hosting by NSW of the Australian World Heritage Indigenous Network meeting and culture camp in the Greater Blue Mountains World Heritage Area.

Future directions

The goal for heritage management is that the future people of NSW will be able to have a comprehensive insight into the health and vibrancy of the state's heritage. This includes being able to ascertain whether representative examples of their heritage are being conserved, whether this conservation is adequate, and whether they provide inspiration and benefit to the citizens of the state. To achieve this goal, current processes would need to be developed to improve the identification, classification and preservation of cultural values in NSW.

The capacity of government to report on heritage and cultural values may be improved by fostering deeper relationships between NSW Government departments, local government and Aboriginal communities. While there are constraints on the roles and responsibilities of state and local governments in this area, increased community engagement and reporting on community-based heritage could enable collective progress on protecting cultural values across NSW. Furthermore, data collection and sharing on the condition and destruction of heritage items needs to be improved between the NSW Government and local government to enable accurate assessments to be made on heritage condition.

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